



Stanford Business

AUTUMN 2017

TRANSFORM



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A LETTER FROM

DEAN JONATHAN LEVIN

Stanford Seed Branches Out

Earlier this fall I visited India to launch a new Stanford Seed program and to spend time with alumni and friends of Stanford in the business, government, and nonprofit sectors. The trip was an inspiring reminder of the power and the responsibility that Stanford GSB has to contribute to the world through the purposeful work of our faculty, staff, and students.

The GSB established Stanford Seed (the Stanford Institute for Innovation in Developing Economies) six years ago with an aspirational goal: to foster economic development by enabling private sector business growth. Robert (MBA '60) and Dottie King provided the founding gift, along with a vision for how Stanford could educate business founders and leaders in emerging markets and contribute to greater global prosperity. Over the last 15 months, I have watched Seed expand and thrive under the leadership of Faculty Director Jesper Sørensen, Stanford GSB Associate Dean Raj Chellaraj, and Executive Director Darius Teter, who joined the team in June.

The cornerstone of the institute is the Seed Transformation Program (STP).

It is a yearlong program aimed at small and medium-size businesses, selected for their potential to grow and contribute to their societies. Faculty from the business school work with company CEOs in four week-long educational sessions, interspersed with facilitated training that engages each company's senior management team.

Stanford Seed opened its first program for West Africa in Accra, Ghana, in 2013. Last year, we established an East Africa program in Nairobi, Kenya. This fall we opened the India program in Chennai and are expanding to Southern Africa. More than 150 companies will go through the STP program this year. Their leaders will become members of an ongoing Seed Transformation Network that we established last fall.

An important part of Stanford Seed is to measure and track the performance of Seed's companies, which have demonstrated strong growth in Africa since completing the program. These companies have raised more than \$25 million in external capital, 60% of them have added employees, and 40% have expanded their product lines or geographic markets.

One of our current Seed priorities is to integrate and support faculty and students from around Stanford University who are interested in global development. Students from the GSB and other Stanford schools now have the opportunity to complete eight-week summer internships with Seed companies. Last summer, 21 students participated, including Markus Koenig, MSx '17, who worked with Accents & Art in West Africa to develop the company's growth and expansion strategy.

Two summers ago, Tamer Shabani, BS '14, MS '16, interned at Ghana-based Hubtel, and has joined the company full time as a manager of strategy and development.

Our efforts to promote cross-Stanford collaboration gained momentum this fall when we established the Center on Global Poverty and Development, in partnership with the Stanford Institute for Economic Policy Research. The new center brings together more than 100 faculty from across Stanford, with the goal of accelerating work on public policy and private sector solutions to global development problems. Under the guidance of Faculty Director Grant Miller, the center is supporting regional programs on India and China, along with multi-faculty initiatives on "Firms, Productivity, and Economic Growth" and "Data for Development." The latter includes a new course where students work with faculty using novel datasets to study poverty and social and business infrastructure in the developing world.

At the launch of Seed in India, I recalled an episode from my first day as a Stanford freshman, in the fall of 1990. One of the first students I met was a fellow freshman, Jaideep Samant, from Mumbai. We had dinner that night with his brother Rajeev Samant, a recent Stanford alum. A few years later Rajeev went back to India and took over the management of land his family owned in Nasik. He planted teak, which takes 18 years to grow, and while he was waiting, he planted grapes. He soon hired a vintner from Napa Valley and started making wine. As with all great entrepreneurial stories, there were many iterations and improvements, but eventually they started selling wine under the label Sula Vineyards, named after Rajeev and Jaideep's mother. Today Sula is the largest winery in India.

I told the first cohort of Seed India business leaders that the story illustrated how the combination of inspiration, perseverance, a little luck, and a Stanford education can lead to great things. Whether in India or around the world, it is my hope that all of the students and participants in our programs dream up new ideas and turn them into reality, as we work to provide them with the skills and tools to realize their dreams. ▲

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



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an easy target for hackers.

Some of them have an IQ of 1,000, but some of them have an IQ of 10.”

— **Hau Lee**

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Stanford Business

INSIGHTS AND IDEAS
FROM STANFORD
GRADUATE SCHOOL OF
BUSINESS

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Cover illustration, Cartographic Flora, by Giles Revell.

FROM THE EDITOR

TRANSFORM

It was easy to find stories matching our theme of transformation for this latest issue of *Stanford Business* magazine. The impactful work of Stanford GSB alumni, faculty, and students provides an embarrassment of riches for our editors and writers to choose from. ▶ You will find a selection of these stories on the following pages, and more still on our website. ▶ Gayatri Datar is one of the changemakers featured. She entered Stanford GSB in 2013 with a far-reaching dream in her back pocket. She specifically chose the business school for Stanford's multidisciplinary *Design for Extreme Affordability* course and the tools it could offer her to do the difficult work of transforming her ideas into reality. ▶ The narrative written by senior editor Steve Hawk in our World section brings readers to Rwanda, where Datar's company is changing impoverished lives one paved floor at a time. It also explores the courses and programs that inspired Datar and, perhaps most important, gave her and her team the resources, framework, and road map that eventually led her to found EarthEnable. ▶ The company and product are among several innovations that have emerged from the *Design for Extreme Affordability* course at Stanford and the Center for Social Innovation fellowships offered to MBA students at the business school. We describe a selection of them on page 48. ▶ But we chose to dive more deeply into this one to create a sort of case study for change. ▶ Lest we forget how hard change can be, we hope that the stories and photographs from East Africa convey the remarkable grit, creativity, and lesson plans that help bring it about. ▶ We love to hear from you.



Stirring (Cambridge), by Nicholas Nixon

ENGAGE

Readers Share Their Thoughts on Intelligence

I commend you for the recent article by Martin J. Smith ["Why Your Doctor Needs an MBA," Summer 2017] citing Dr. Christopher Krubert on the need for some integration in medical training of organizational and business understanding. As a physician who has attended the GSB and has written financial columns for doctors for 15 years, I know that raising awareness of the need for more integration is sorely needed.

An MBA for most MDs can be overkill as part of a young physician's preparation,

however. What is needed is the weaving of organizational and business-world elements into the day-to-day fabric of MD training that is pertinent to the specific landscape of American medicine.

The value is threefold:

1) The cost of health care can be substantially reduced. For instance, the average practicing physician has little idea of what the tests he or she orders cost. This information is not considered important within the training programs, and therefore to the profession. But the most expensive medical instrument remains the pen and its ill-informed use can be wasteful.

2) A lack of preparation for dealing with costs and how "to get things done" in an increasingly complicated

corporate and insurance environment (more than 50% of doctors are now salaried) can have a direct effect on our patients' health, positive or negative, as the case may be.

3) Doctors go into practice with little idea about how to find a job, how to advance their careers once they get there, and little awareness of personal financial development, leading to more unnecessary costs and frustration. The most attentive audience I have ever had for a talk was a gathering of graduating residents, who'd asked me to give advice on how to find a job and get started in a career.

Changing the culture of medical training to accomplish the necessary changes will not be easy — primarily

because senior physician administrators and teachers got where they are by being good at navigating the current system, not by challenging it. Building cost pressure will have a long-term salutary effect, but, like so many things in medicine, such progress will be unplanned, irregular, uneven, and slow. In the meantime, your magazine can help by continuing to focus attention on this growing need.

Sincerely,
—JEFFREY BROWN, MD, CPE
Menlo Park, California
(*Executive Short Program, 1987*)

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STANFORD BUSINESS

ONLINE

EDITED BY STEVE HAWK



Elsie Dogbegah

YOUTUBE

“I started with three women at a table in a rented apartment and 20 pounds of peanuts.”

Elsie Dogbegah, owner of Home Fresh Foods in Ghana, an agro-processor of African ethnic foods, shares her passion for creating a woman-centric business.

Watch more: <http://stanford.io/elsie>

WEB

Cultivate Optimism Through Word Choice
Using the right language can help patients hasten recovery.

Read more:

<http://stanford.io/optimism>

YOUTUBE

Political Instability and Globalization Are Linked

Job automation and rising tensions in the labor force will spark future volatility.

Watch more: <http://stanford.io/globalization>

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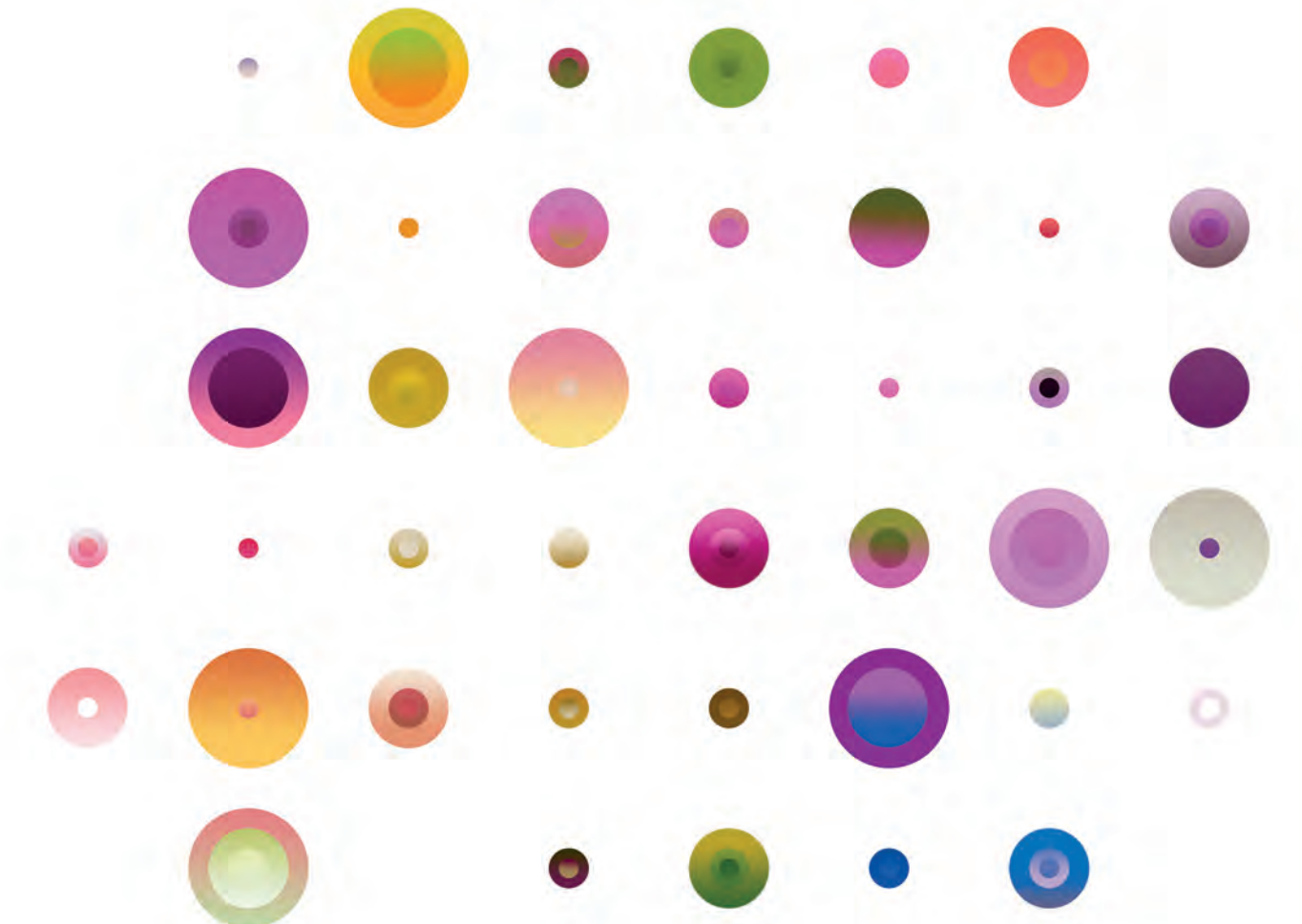
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Lives



“Working from home is a

**future-
looking
technology.**

I think it has enormous potential.”

— Nicholas Bloom PAGE 8

PRODUCTIVITY

The Bottom-Line Benefits of Working from Home

A study of telecommuting in China shows “massive improvement” in performance and employee retention.

BY SHANA LYNCH

Working from home gets a bad rap. Google the phrase and examine the results — you’ll see scams or low-level jobs, followed by links calling out “legitimate” virtual jobs.

But Stanford GSB professor Nicholas Bloom says requiring employees to be in the office is an outdated work tradition, set up during the Industrial Revolution. Such inflexibility ignores today’s sophisticated communications methods and long commutes, and actually hurts firms and employees.

“Working from home is a future-looking technology,” Bloom told an audience during TEDxStanford, which took place in April. “I think it has enormous potential.”

To test his claim, Bloom studied China’s largest travel agency, Ctrip. Headquartered in Shanghai, the company has 20,000

employees and a market capitalization of about \$20 billion.

The company’s leaders — conscious of how expensive real estate is in Shanghai — were interested in the impact of working from home. Could they continue to grow while avoiding exorbitant office space costs? They solicited worker volunteers for a study in which half worked from home for nine months, coming into the office one day a week, and half worked only from the office.

Bloom tracked these two groups for about two years. The results? “We found massive, massive improvement in performance — a 13% improvement in performance from people working at home,” Bloom says.

Two reasons led to that uptick: First, people working from home actually work

their full shift. In the office, people might be delayed by traffic, take a long lunch with a colleague, or leave work early to let a repair person in. They are less likely to be on the clock for the full workday.

Second, Bloom says, people at home are able to concentrate better. “The office is actually an amazingly noisy environment. There’s a cake in the break room; Bob’s leaving, come join. The World Cup sweepstakes is going on. Whatever it is, the office is super distracting.”

Also, his study found that resignations at the company dropped by 50% when employees were allowed to work from home. “Not only do the employees benefit (by working from home), but the managers benefit because they can spend less of their time painfully advertising, recruiting, training, and promoting.”

Bloom says the experiment led Ctrip to roll out a work-from-home option to all its employees. The company reported that it made about \$2,000 more profit per person at home, Bloom says.

Bloom hopes this example helps kill the negative stereotypes of working from home. “For employees, they’re much more productive and happier. For managers, you don’t have to spend so much time recruiting and training people. For firms, you make far more profit. For society, there’s a huge saving of reducing congestion, driving times, and, ultimately, pollution.

“There’s not much to lose, and there’s a lot to gain,” he says. ▲

Nicholas A. Bloom is a professor of economics (by courtesy) at Stanford GSB.



MARKETING

How a Marketing Technique Can Help Cancer Patients

What the customer wants should matter in health care, too.

BY SACHIN WAIKAR

How are choosing among dishwashers and cancer treatments similar?

Both decisions involve the customer — or patient, in the latter case — weighing tradeoffs among different attributes: For the dishwasher, it might mean thinking about price versus quality and speed of washing; for cancer treatment, it will likely involve considering the potential effectiveness alongside the potential side effects of receiving chemotherapy, radiation, or other interventions.

The similarity between product decisions and treatment decisions motivated Stanford GSB professor emeritus V. “Seenu” Srinivasan and UCLA-based coauthors Christopher Saigal, Sylvia Lambrechts, and Ely Dahan to apply a well-established marketing approach to better understand patients’ cancer treatment preferences by placing them in the role of a customer.

Their study, “The Voice of the Patient Methodology: A Novel Mixed-Methods Approach to Identifying Treatment Goals for Men with Prostate Cancer,” found that the marketing approach reliably uncovered the treatment considerations of greatest importance to prostate cancer patients, including those a more conventional approach likely wouldn’t have revealed. Combining such information with other treatment-efficacy data could greatly improve treatment-related decision making.

The motivation for the research grew in part from Srinivasan’s long-standing interest in “conjoint analysis,” a statistical approach to understanding how people make decisions when faced with tradeoffs. He and

V. “Seenu” Srinivasan is the Adams Distinguished Professor of Management, emeritus, at Stanford GSB.

Photograph by Gabriela Hasbun



V. "SEENU" SRINIVASAN
Treat patients as
customers; give them
what they want.

his coauthors believed analytical approaches could be used to develop a smarter way of matching patients to treatments based on what patients say matters most to them. “Doctors often say to patients, ‘This is what I would recommend,’” Srinivasan says. “But we need to incorporate more of what the patient wants.”

To do that, the researchers applied the marketing approach known as the “voice of the customer,” typically used by companies to understand the product attributes that matter most to customers. “The problem in product development and marketing,” Srinivasan says, “is that you have engineers and product people thinking about what matters to them and using their own terminology, rather than taking a customer-focused approach.”

This “producer bias” can also happen in medicine, where the “stakes are much higher than for buying a dishwasher,” Srinivasan says. “Doctors have limited time with patients and have opinions on what they think is best, based on their toolkit. So they sometimes point out advantages of that treatment without presenting a full list of possible approaches and risks, and without understanding what the individual patient wants out of the treatment.”

To assess which medical treatment attributes — how a given therapy is associated with survival rates, side effects, and other areas — were most important to patients, the researchers crafted a “voice of the patient” protocol for prostate cancer patients.

That meant having long, one-on-one conversations with 30 prostate cancer patients about what they valued most in a treatment, especially around issues like life span and side effects such as sexual dysfunction and incontinence. “We took hundreds of quotes from those interviews, eliminated redundancy, then asked

another group of 15 patients to group the quotes based on similarity,” Srinivasan says. “The similarity information was analyzed by a statistical ‘clustering’ technique to get treatment attributes to be considered going forward.”

The approach uncovered attributes typically considered important to cancer patients — mortality rates and urinary symptoms, for example — but also those that a conventional approach might not reveal. In the latter group were whether the treatment involved an incision and how actively the patient felt involved in the decision-making process. “Those probably wouldn’t have come up without the ‘voice of the patient’ method,” Srinivasan says.

After understanding the key attributes to consider, conjoint analysis could be used to understand the importance a particular patient places on each attribute. For example, if a physician knows her patient is eager to be involved in decision making, she may talk to him very differently than to another favoring a more passive, just-tell-me-what-to-do approach. Knowledge that a patient is fearful of an invasive treatment would help shape the conversation, as well.

“The idea of getting more patient input into treatment decisions isn’t new, but this specific technique is,” Srinivasan says. “This is the way to go in the future to ensure that relevant attributes are included.”

“Doctors often say to patients, ‘This is what I would recommend.’ But we need to incorporate more of what the patient wants.”

Specifically, information obtained systematically on patients’ preferences about treatment attributes — such as through a digital questionnaire administered by a technician — could be combined with data on effectiveness and side effects of each treatment option for that patient based on demographic profile, medical history, and other factors to guide treatment discussions in a much more powerful way.

“A large number of people have been treated for prostate cancer,” Srinivasan says. “We can use big data to understand treatment effectiveness and side effects based on patient characteristics, then marry that with patient preference data to develop very specific treatment plans more likely to result in what the patient wants.”

One major benefit of this approach is increased patient satisfaction because the physician is more likely to take into account the attributes that matter most to a given patient. A second major advantage of this approach would be improved efficiency: A physician could be armed with all the necessary information, including the patient’s preferences, before even meeting with the patient, saving both parties significant time. “There are large potential cost savings,” Srinivasan says.

In short, applying an established marketing technique to high-stakes medical decisions such as cancer treatment may potentially create large value for all parties. ▲

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ENTERPRISE

An Unlikely Journey from Mongolia to the Boardroom

**The CEO of a global development fund
discusses his unconventional path — and
why impact investing often fails.**

BY BILL SNYDER



BEYOND GROWTH
Economic
development
should foster open
societies.



Bernd Thaller

Successful careers in business don't always follow a straight line. Many people take a conventional path to success: They start with a double major in college, continue their education in graduate school, and then land a first job at a startup or an established company that launches the newly minted MBA's career.

Then there are people like Sean Hinton.

Now CEO of the Soros Economic Development Fund, Hinton navigated a series of zigzags that took him from music school to the steppes of Mongolia and then the offices of McKinsey & Co. But working for that high-powered consultancy was just a prelude to a career as an impact investor, focused on what he calls "insoluble problems" and spurring economic development in post-conflict nations.

Hinton's unlikely journey from yurt to the executive suite in one of the world's leading foundations left him with an unconventional outlook that might have shocked his erstwhile colleagues at

Sean Hinton is CEO of the Soros Economic Development Fund.

McKinsey. “There is a name for transactions where one person does well at the expense of others. It’s not investment. It’s thieving,” Hinton said during a recent talk at Stanford GSB’s Global Speaker Series, in which he shared his views on impact investing and the diverse paths to a successful career.

Although his remark about “thieving” might sound radical, Hinton does not portray himself that way, nor does he think economic development and social justice are incompatible. “The space in which economic development can enable social justice is a vibrant and contested space ... filled with opportunity,” he says.

FROM A YURT TO A C SUITE

Hinton did not set out to be a social investor. He wanted to be a conductor. While he was studying music at the Guildhall School of Music and Drama in London, a fellow guest at a dinner party suggested he study music in what was then known as Outer Mongolia. This was back in the days before Google, so Hinton went to the library to read up on Mongolia — he wasn’t even sure where it was, he says.

But the idea struck a chord, and coincidentally the British Consul was offering a scholarship to study in Mongolia. Hinton was awarded a nine-month stipend and wound up spending seven years “in and out of Mongolia,” including a two-year stay with a nomadic family in that country’s remote western mountains.

Eventually, at the prompting of yet another dinner guest, Hinton applied for a position at McKinsey. He got the job — and learned a lesson about career planning.

“You couldn’t draw the straight line from music to McKinsey,” he says. “There was a set of things you’d have to do, and it wasn’t go to Mongolia. There wasn’t a strategic model or a career counselor that would’ve given that advice. And yet, it was the shortest distance.”

GROWTH FOR GROWTH’S SAKE?

After stints as a principal of Terbish Partners, a consultancy he founded in 2007 to focus on mining and energy investments in China and Mongolia, and as an adviser to Goldman Sachs, he joined the Open Society Foundations in 2015 to lead the Soros Economic Development Fund. The Open Society Foundations is an international network of agencies that make grants with the aim of promoting education, social justice, and a free media. It has an annual budget of nearly \$1 billion.

Hinton says that he and his colleagues question the conventional thinking about social investment — that economic growth is a goal in and of itself. Nor should we believe that economic development and democracy naturally go hand in hand, that if “you do one, the other comes — you get more democracy, you get more economic growth. (But) it hasn’t worked out like that,” he says.

Instead, economic development should be used as a tool to develop open societies, he says.

THE AMORALITY OF INVESTMENTS

Capital is, of course, needed to ignite development, but it’s not enough to jump-start social progress, says Hinton. “Anybody who is invested in an emerging market impact business knows that very

often the failure is not because of a lack of capital. The failure is almost always the policy environment in which that investment takes place or the lack of capacity in that society to absorb and to work with those investments.”

A common reason for failure, says Hinton, is the tendency to proceed with projects without engaging local people and institutions. “Decisions are made in rooms in which the people who are the so-called beneficiaries of these investments and so-called beneficiaries of these interventions are not present. They’re not designing the outcomes. They’re not even in the conversation.”

That, he says, is a recipe for failure. Case in point was a 10-year project by an agency that builds roads, schools, clinics, and internet infrastructure in Sri Lanka. It failed. At a meeting in Sri Lanka, a government minister explained that the locals were never involved in the process. Hinton recalled him saying, “They never asked us what we wanted. We don’t have cars to drive on the roads. We don’t have teachers to be in the schools. We have this economic development that you gave us. But we’ll burn it all down if we’re not involved.”

Hinton believes that there will be significantly more impact investment in the future. But it’s worth asking whether such investing will address the root causes of inequality. Historically, social investment, even when well intentioned, has often failed to benefit the people it has targeted. Unless those lessons are learned and social investors shift their strategy, they may well fail again, Hinton says. ▲

“There is a name for transactions where one person does well at the expense of others. It’s not an investment. It’s thieving.”

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You Gonna Eat That?

A free food-sharing app aims to go global with a hyperlocal focus.

BY MARTIN J. SMITH

A child of “Iowa hippie entrepreneurs” who made up her surname, entrepreneur **Saasha Celestial-One** grew up with a mother who taught her how to salvage discarded or unwanted items for use or resale. “Letting nothing go to waste is built into my DNA,” says Celestial-One, who received her MBA from Stanford Graduate School of Business in 2004.

The idea for OLIO — named after a synonym for hodgepodge— came from Celestial-One’s cofounder, Tessa Cook, a fellow 2004 Stanford GSB grad who had a lightbulb moment after cleaning out her refrigerator during a 2014 move from Switzerland to London. Cook had six sweet potatoes, a whole cabbage, and some containers of yogurt that she didn’t want to throw away, but she had no easy way to connect with someone who could use the food.

Cook told Celestial-One about her idea for a food-sharing app, and in February 2015 they founded OLIO, which offers a free app designed to connect neighbors and local businesses with each other so surplus food can be shared rather than thrown away.

Their research suggests that one-third of all food is ultimately thrown away,

and many people, like the cofounders, are “physically pained” by the idea of discarding perfectly good food.

Cook and Celestial-One have since raised \$2.2 million. Their app has been downloaded by 177,000 users — 89% of them in the United Kingdom, 4,200 in the United States, 5,200 in Sweden, and the rest scattered in 80 countries.

We asked Celestial-One about the lessons she’s learned during her dive into social entrepreneurship.

Can you share a few memories from your unusual childhood, and tell us how that relates to what you’re doing with OLIO?

I grew up relatively poor, and my mom was extremely resourceful about making ends meet. The two of us became micro-entrepreneurs, salvaging things of value to sell. I remember going to the dumpster behind a local nursery, climbing in, and handing all of the plants to my mom. She’d take them home, repot them, and put them on the front lawn for sale. We also went to houses that were being torn down and salvaged toilets. At one point, we had six or seven toilets on the front lawn, and of course I was mortified.

What were some of the startup challenges OLIO faced? The problem we’re trying to solve is particularly challenging. We have created a hyperlocal marketplace for items that are often of low transaction value and/or perishable. Because surplus food is so low-value, we knew we’d have to reach the scale required to make it work. It’s particularly challenging because we’re not a charity. Everyone wants food to go to people who are really, really hungry, and of course we do too. But the fact is the scale of food waste far exceeds food poverty. So from an efficiency perspective, it’s just doesn’t make sense to dispatch a volunteer across town to pick up three bananas. The only efficient outcome is to have someone within walking distance come by and collect it. So there’s this perception barrier to overcome, convincing people to use the app who think their three bananas don’t really make a difference. But at scale, they do.

Your first investor was SimpleWeb, a British app-development agency. What was your approach to getting that initial backing? Neither Tessa nor I comes from a tech background, so we knew we needed a developer to build the app. Tessa approached other entrepreneurs in our network and asked whom they had worked with. We got an introduction. They’re a small startup themselves, and they loved what we were doing, but they couldn’t just give us cash. So they took a small equity stake in OLIO in exchange for building 50% of the minimum viable product.

You’ve attracted a number of investors since then. What do they have in common? If within the first 10 minutes of hearing our idea they feel compelled to share a personal anecdote about being traumatized by food waste, we’ve found that they’re a kindred spirit and we can probably find a way to work together. If not, it’s highly unlikely they’ll get what we’re trying to do.

What do you wish you knew starting out that you’ve since learned? We haven’t pivoted, per se, but we have made huge strategic changes to what we first envisioned. We thought our users might feel like we were abandoning our original idea. I wish I’d known that users and investors will roll with you through those changes as long as you explain your thinking. They’re incredibly forgiving, and it might spare you

Photograph by Manuel Vasquez

SAASHA CELESTIAL-ONE
"It's critical that your
social impact metric and
your commercial metric
are in lockstep."



some agony to know that when it comes to making big strategic decisions, your users won't flock away and your investors will support you.

How do you and Cook divide responsibilities? As CEO, Tessa focuses on the app, fundraising, recruiting, and strategy. As COO, I focus on building the network of users and volunteers, HR, finance, and legal.

As you expanded your team, what were you looking for in terms of experience, skill, passion, and cultural fit? With the exception of our three in-house tech developers, all of our team members started out as volunteers. They proved

themselves irreplaceable, and we found roles for them that suit their skill sets. The most important thing is that they share a conviction as strong as Tessa's and mine and an appreciation for the enormity of the problem we're trying to solve. That's what gets them out of bed at 4 a.m. on a Friday to go to the wholesale fruit market to collect the food that would've been thrown away, and handing it out at dawn.

Any advice for other entrepreneurs who want to do good while also doing well? It's absolutely critical that your social impact metric and your commercial metric are in lockstep. With OLIO, it's a network, so the more users we have, the more value it has. And by definition, the more things

that are shared, the fewer things that are going to landfills. Also, don't just think about traditional paid routes for promotion. There's a lot of value to be had from working with large organizations that have corporate-responsibility objectives. Hello Fresh, the ready-to-make meal delivery service, is a good example. They put a flyer for OLIO in 10,000 delivery boxes for free. Normally you'd have to pay for that. But you can persuade people to do things if they're convinced it's the right thing to do. ▲

Saasha Celestial-One and Tessa Cook earned MBAs from Stanford GSB in 2004.



JUST WARMING UP The Embrace incubators have helped save more than 200,000 premature babies. The plan is to reach 1 million.

HEALTH

Embrace Core Values and Success Will Follow

The CEO of a child-saving social enterprise says any challenge can be overcome if you're "rooted in purpose."

BY JENNY LUNA

One out of every 10 babies in the world is born premature. One million die each year, many due to lack of warmth. Jane Chen, who earned her MBA from Stanford GSB in 2008, wanted to change that. "No baby should die from being cold," she says.

This core value was the center of her team's project for Stanford's interdisciplinary *Design for Extreme Affordability* class in 2007. Chen and her team designed an inexpensive incubator that offered a low-cost way to keep premature babies warm. Their inspiration came from the concept of a tiny sleeping bag that heats up to regulate a baby's body temperature. Embrace Innovations, born with help from Stanford GSB's Center for Social Innovation, has saved more than 200,000 premature babies and hopes to increase that number to 1 million.



But from the start, Chen faced challenges of all sizes. First, her team's truck got a flat tire on the way to deliver their very first product to a maternity home in rural India. Next, Embrace Innovations nearly lost its funding. And working with foreign governments proved difficult. But Chen took a "never give up" attitude that has helped her company prosper.

At an eCorner discussion at Stanford School of Engineering, Chen discussed persistence, the power of serendipity, and why she chooses to see the beauty in the world.

WE ARE DEFINED BY VALUES, NOT SUCCESSES

Chen believed in a cause greater than herself — that no baby should die from

being cold. When challenges of design, distribution, and finances faced Embrace Innovations, she made it a point to continually return to this foundational value. "Being really rooted in your purpose will get you through your toughest moments," she says. Staying connected to the why of what you're doing will give you the tenacity to keep going.

STEP BACK AND RE-EVALUATE

When things get tough, change your perspective and realign with your goals, she advises. As Embrace Innovations grew, Chen was spending much of her time writing government contracts. The tedious paperwork often left her feeling mired in bureaucracy. But she realized that by going into the retail market, Embrace Innovations could still support its primary humanitarian efforts.

"We thought, 'What if we could leverage our technology and create a product for the U.S. market?'" she says. The team drew inspiration from other one-to-one giving models, in which companies match each purchased item with a free or donated one for someone in need (think Toms shoes or Warby Parker glasses). Embrace Innovations used its design and thermal wax technology to create Little Lotus — temperature-adjusting blankets and swaddles to sell domestically. With each sale of Little Lotus in the U.S., the company was able to donate an Embrace warmer to a premature baby abroad.

IT'S THE COURAGE TO CONTINUE THAT COUNTS

Recently, Chen took up surfing, a sport where, she says, she spends more time falling off her board than staying on. "It's so humbling," she adds. Having the courage to "get back out there," whether it's for the next ocean wave or the next wave of enterprise, is the sign of a strong entrepreneur. "You will inevitably fail," says Chen, "and you need to have the courage and the persistence to get back out there, learn from your mistakes, and try again."

"Being really rooted in your purpose will get you through your toughest moments."

BELIEVE IN SOMETHING FULLY

Chen takes this idea from Paulo Coelho, one of her favorite writers. Coelho champions the idea that when you follow your dreams, you're helped in unexpected ways. For example, when a deal with a potential investor fell through at the last moment, leaving Embrace Innovations with only one week's worth of funding left, Chen called on Salesforce CEO Marc Benioff, someone she'd coincidentally met at a meditation session nine months earlier. The chance connection led to Benioff (whose own child had needed an incubator) coming in as an angel investor and keeping the company afloat.

CHOOSE HOW YOU SEE THE WORLD

Social entrepreneurs are often exposed to extreme poverty, violence, and disease. "After living in India for a few years, I could see myself becoming really jaded and pessimistic," Chen says. But choosing to see the beautiful things — a doctor's commitments to his patients, a parent's love for a child — kept her going. "I encourage you to see the world through a lens of beauty, because that will give you the optimism to keep changing the world." ▲

Jane Chen earned her MBA from Stanford GSB in 2008.

MINDFULNESS

How to Derail the Train of Negative Thinking

Five strategies for interrupting those self-destructive inner monologues.

BY LUKE STANGEL

Stop for a moment and think about this: What do you actually think about yourself?

There's the shiny, confident exterior you show the world, but at the end of the day, when you're alone with your thoughts, what do they say to you?

Executive coach and Stanford MBA Shirzad Chamine asked more than 100 CEOs at a seminar this question, which they answered anonymously on flashcards. During a recent talk at Stanford Engineering's eCorner, he read some of the answers aloud:

"I'm rarely at peace with myself."

"I'm self-destructive and I don't know why."

"I don't love myself very much."

"I'm feeling very sad and lonely, and the anti-depressants I'm on don't seem to be helping."

"I battle with constantly ranking and judging everyone around me, in all settings, all the time."

Chamine has spent the majority of his career trying to understand the drivers behind our most critical thoughts and whether it's possible to escape them. Over time, he developed an analogy of how the human mind works that he uses to help others break out of self-destructive mental loops and become happier and more productive at work and in life.

At his recent talk, he shared five strategies to help people who want to challenge their negative thoughts.

LEARN HOW TO MEDITATE IN STRESSFUL SITUATIONS

Everyone listens to a private, running inner monologue of positive and negative thoughts. Chamine says if you pay attention to your inner monologue, you can begin to understand what triggers your negative thoughts and consciously put yourself on a more positive mental track.

Meditation is a good first step; it allows you to focus on that voice and shift your inner perspective. The majority of people who meditate do so early in the morning, when things are quiet and they're preparing

Shirzad Chamine earned his MBA from Stanford GSB in 1988.

Illustration by Christopher DeLorenzo



themselves for the day ahead. But one long commute, four harried meetings, and six urgent deliverables later, those calming, positive thoughts are long gone for most people.

“You need to learn how to activate that brain in the middle of war, in the middle of challenges, in the middle of crises,” Chamine says. “Most meditators don’t learn how to activate that brain when they really need it.”

He shared a practical tip to spark mindfulness and calm in any situation: Slowly rub your index finger against your thumb, so that you can feel the individual ridges of your fingerprint. Try it for 10 seconds at a time. Focusing on that sensation can help ground you and break a negative mental cycle.

LISTEN TO YOUR MENTAL CRITICISM, BUT DON'T DWELL ON IT

In your worst moments in life, you likely heard your inner voice turn dark, preying on your insecurities and anxieties, causing feelings of anger, disappointment, shame, guilt, and regret. Those reactions are valuable, up to a point, in that they provide feedback about a mistake to avoid in the future.

But left unchecked, negative inner monologues can stretch out, taking days, weeks, or even longer to work out. It’s important to recognize constructive internal feedback at the moment it happens, but not allow those thoughts to run rampant in your mind.

“Is it good to feel pain? Of course!” Chamine says. If you put your hand on a hot stove and you don’t feel pain, you’ll burn your hand to the bone, he says. Feeling pain is a good warning. “The question is: How long would it be good for you to feel the pain before you remove your hand from the hot stove? And the answer, hopefully, is a split-second. Just long enough to know that there is a problem here. It’s the same with negative emotions.”

Registering negative emotions as feedback, and then consciously returning to a more positive frame of mind is crucial for achieving your full potential.

“Your highest performance comes from the brain that is calm, centered, focused, able to see possibilities and be creative,” Chamine says. That’s not possible when you’re stuck in a negative feedback loop.

RECOGNIZE ALL THE FORMS YOUR MENTAL CRITICISM COMES IN

In the course of his work, Chamine identified a handful of types of negative voices that are capable of sabotaging your happiness, productivity, and positive feelings of self-worth — a group he calls Saboteurs. The dominant Saboteur everyone carries with them is the Judge — the voice inside you that judges your own actions and the actions of everyone else.

Armed with the power of perfect hindsight, your inner Judge berates you for mistakes you should have seen coming and criticizes you for falling short of your goals. Some people allow their inner Judge to become such an integral part of their life that it becomes their dominant personality trait.

Hiding behind the Judge is a host of smaller Saboteurs — the Controller, the Restless, the Stickler, the Pleaser, the Avoider, the Victim, the Hyper-Vigilant, the Hyper-Achiever, the Hyper-Rational.

Chamine examines each in detail in his bestselling book, *Positive Intelligence*. He says an easy way to understand which Saboteurs rule your life is to complete the following sentence: “To survive and succeed, I should _____.” Your answer can provide insight into what actually motivates you.

Chamine says some of the world’s most outwardly successful people are ruled by their various Saboteurs. Using negative emotions as fuel to push them, they’ll ultimately fall short of their true potential, he says.

“So long as the Saboteurs are pushing you to your level of success, you will never be happy, because every step of the way is littered with negativity,” he says. “Your path to highest performance is not through the Saboteurs.”

LISTEN TO YOUR INNER SAGE

The counterbalance to each person’s cast of Saboteurs is a calm, positive, optimistic

voice that Chamine calls the Sage. Rather than picking apart every mistake you make and every shortcoming you find in the people around you, your inner Sage instead tries to see the positive in every negative.

“One of the number one tools that high performers use, every time life throws [challenges] at them, one of the ways they quickly recover to a positive place ... is to ask the question, ‘How do I turn this into a gift and opportunity?’”

Looking for the gift, no matter how small, in each negative experience helps reframe the thoughts associated with the experience.

In his work, Chamine describes five attributes, or powers, of each person’s inner Sage: the power to empathize, explore, innovate, navigate, and activate.

These powers work together to create a more positive internal worldview and allow you to focus on what’s in front of you, rather than worrying about what’s next.

TAKE IT ONE STEP AT A TIME IN THE RIGHT DIRECTION

Your path is fundamentally yours to chart, Chamine says. There’s no map to self-actualization; it’s a process that’s done one day at a time and, more granularly, one thought at a time.

In his lecture, he likened charting your path to standing at the edge of a dark forest, with a lighthouse in the distance. Getting to the lighthouse is a goal taken one step at a time.

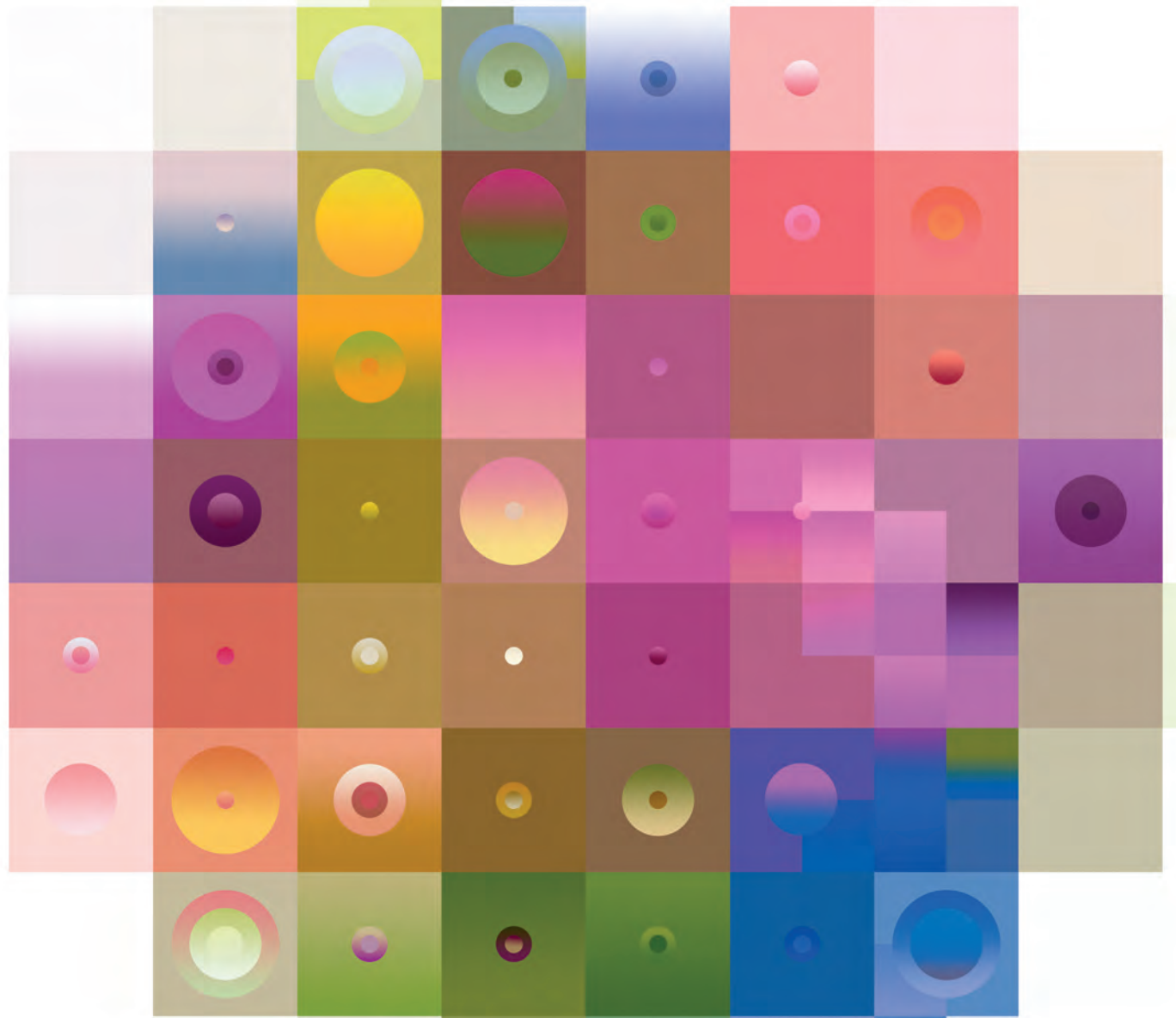
“At any given step, take the step that has more light in it,” he says. “Only after you take that step, the step after that will reveal itself.”

After each step, he says, you will get “closer and closer to the lighthouse, to your true self, to your final self-actualization.”

But nobody ever gets to the lighthouse, Chamine says. The value lies in the journey to improve how you think about yourself and your world.

“You begin to run into people around you who are on a similar path and who can help you with that path, and you begin to discover amazing things because you’re paying attention to every step,” Chamine says. “Self-actualization ... following your calling is not about one destination that one day you’re going get to. It’s about every step.” ▲

Organizations



“Technologists who love one type of technology or business model have a hard time saying, ‘That’s over.’

**But you
have to disrupt
yourself.”**

Giles Revell

— George Kurian PAGE 36

PERCEPTION

Create Real (Not Imagined) Diversity

Beware the “spillover effect” that makes you exaggerate how diverse your team really is.

BY CHANA R. SCHOENBERGER

You may think you have a good sense of how diverse your team is. But new research shows that your brain may be tricking you into seeing more diversity than is actually present.

Stanford GSB professors Margaret A. Neale and Lindred L. Greer, along with doctoral student David P. Daniels, found that when people perceive one type of diversity within a group — even something as mundane as height or shirt color — they are more likely to say the group is diverse in other ways, like race or gender, even when it isn't. This is because of heuristics, or decision-making shortcuts that our brains use so that we don't have to go through a time-consuming process of analysis every time we're faced with a series of options. We don't realize our brains are reducing choices to mental shorthand; the results just seem reasonable to us as we rush on to the next decision.

“We generalize individual dimensions of diversity in ways we might not even know we're doing,” Neale says.

Understanding the human thought process around diversity matters to business leaders because they and their employees may be overestimating how much diversity is present, both in their workforce as a whole

and in project teams. An insufficiently diverse group could respond less capably to challenges, which is why companies are increasingly looking beyond the public-relations benefits of diversity to understand how it can help their performance.

“We don't know how biased we are,” Neale says. “After all, we don't have the luxury of a control condition — knowing how we or others would have behaved under different circumstances. We believe that what we perceive is real and objective.”

In the paper “Spillover Bias in Diversity Judgment,” the researchers detailed a series of experiments they ran to determine whether people could accurately judge how diverse a group was. In one experiment, participants were shown three faces with different racial characteristics, then asked later how diverse the faces were by race and by gender. Although the gender makeup of each image was the same (two men and one woman), subjects who were shown racially diverse faces perceived more gender diversity.

In another experiment, participants were given T-shirts in different colors to wear while they worked in teams of two women and two men to assemble a LEGO kit. Again, although the gender makeup of each team

was identical, participants in teams with more diverse shirt colors told the researchers that their team had more gender diversity. The study found similar evidence of spillover bias in other experiments, each of which established that people who observe one kind of diversity are likely to think a different kind of diversity is present.

These snap judgments about diversity also influenced experiment participants' views on affirmative action. Subjects were told about a fictional company, which had either high or low racial diversity. They were then told that the company had an affirmative action policy to correct bias against women in hiring practices. When asked how they felt about this gender-preference policy, subjects who had been told about a more racially diverse workplace and who also perceived an organization as more gender diverse said they thought the hiring program was more fair.

These findings are valuable to both academics and executives, Neale notes. For many years, researchers have struggled to find a correlation between a group's level of diversity and its outcomes. To date, there have been few studies that establish a clear link between how diverse a team is and how well it does on various measures. The trouble, Neale says, may be in how people's biases affect their observations of diversity.

“Perhaps some of the problems of whether diversity is good or bad is because people are making false assumptions about how diverse their teams really are,” she says.

For executives, Neale suggests trying to root out spillover bias.

“Managers need to be much more intentional: Is my team diverse? On what dimension? Is that the dimension I care about?” she says.

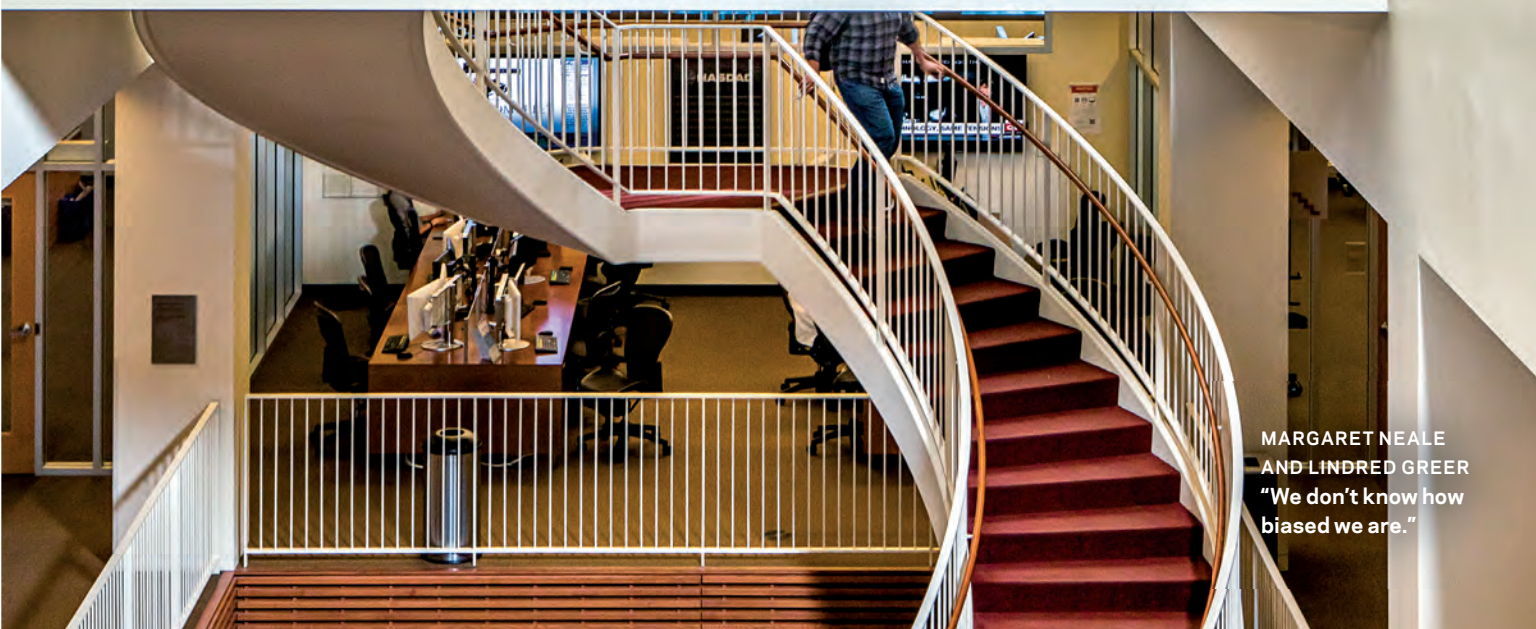
The way to overcome these built-in biases is to think about why you're choosing, or not choosing, a particular person for a role, Neale says. She suggests managers ask themselves: What decision would we make if we thought our team wasn't sufficiently diverse? What characteristics or experience should we prioritize when we make our next hire?

“The kind of diversity you need differs according to the problem your team faces,” she says. ▲

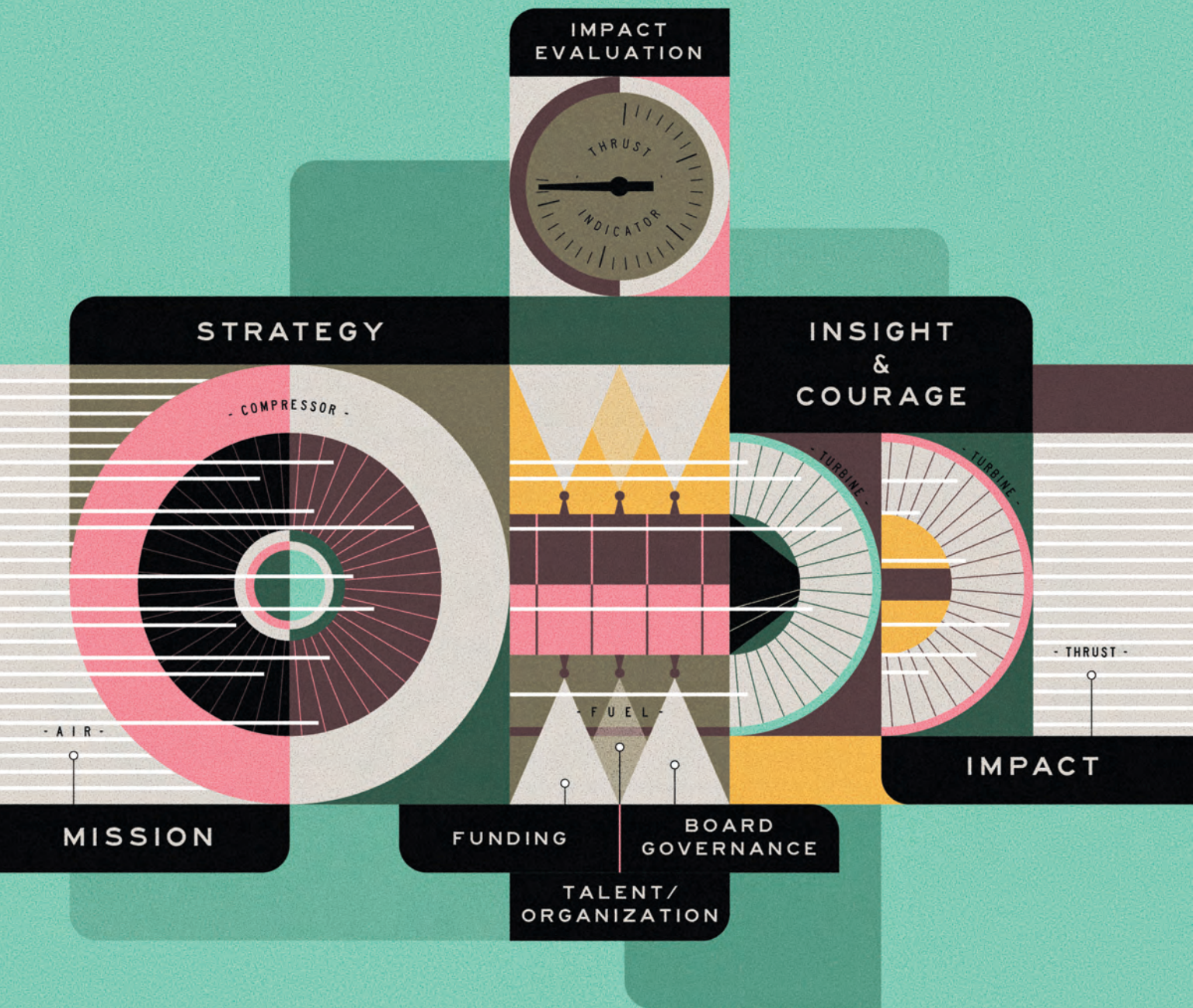
Margaret A. Neale is the Adams Distinguished Professor of Management and Lindred L. Greer is an associate professor of organizational behavior at Stanford GSB.



STANFORD
BUSINESS
ADVANCED
LEARNING



MARGARET NEALE
AND LINDRED GREER
"We don't know how
biased we are."



PHILANTHROPY

How Nonprofits Can Be True Engines of Impact

If it wants to soar, the \$1.7 trillion philanthropy sector needs better mechanisms and plenty of fuel.

BY THEODORE KINNI

Only a mere 50 years ago were philanthropic and charitable organizations in the U.S. defined as an independent sector distinct from government and business. Since then, the economic impact of the nonprofit sector in the U.S. has grown to \$1.7 trillion.

The sector's sheer heft — it's larger than the banking and retailing industries — is one reason that GSB alumni and lecturers William F. Meehan and Kim Starkey Jonker wrote *Engine of Impact: Essentials of Strategic Leadership in the Nonprofit Sector*, which comes out this November. Another is their conviction that the sector has entered a new era, which they've named the "Impact Era."

The good news of the Impact Era is that, by 2025, philanthropists will likely contribute a record \$500 billion to \$600 billion annually to nonprofits, well above the \$373 billion recorded in 2015. The bad news is the nonprofits will still come up short by \$100 billion to \$300 billion in the funding they require.

Here, Meehan and Jonker talk to *Stanford Business* about how nonprofits can make up the shortfall and meet the challenges of the Impact Era.

THE MISSING ELEMENTS OF IMPACT

The difference between success and failure in nonprofits in coming years will be the ability of their leaders and boards to transform them into engines of impact, Meehan and Jonker say. The mechanism that powers these engines, and the core of Meehan and Jonker's book, is strategic leadership.

Strategic leadership is a management system with seven aligned elements: mission; strategy; impact evaluation; insight and courage; funding; talent and

organization; and board governance. While these elements are commonplace in the business world, most nonprofits do not yet have them fully in place. Meehan and Jonker confirmed this in their 2016 Stanford Survey on Leadership and Management in the Nonprofit Sector, which collected more than 3,000 responses from a variety of sector stakeholders.

"When we first looked at the data, it looked like everything was going pretty well in the nonprofit world. For every question we asked, three-quarters of the responses were positive," says Jonker, who also serves as the president and CEO of King Philanthropies. "But statistical analysis revealed that the vast majority of organizations are struggling with at least one of the seven elements. And a nonprofit must excel in all seven to be truly high-performing — a weakness in any one element can sink the ship, so to speak."

THE PRIMACY OF MISSION

Meehan and Jonker track the troubles of many nonprofits back to their missions, which typically are either too vague or too broad. "Most nonprofits have a mission that they think is terrific," explains Jonker. "But when you look at decisions made over time, you find that their programs have expanded far beyond their mission. Somehow these programs have been fit into this mission statement that everybody loves."

The primary danger of a poorly defined mission is mission creep, which can stretch a nonprofit until it can no longer pursue its core goals. "There's an old saying that a fish rots from the head down," says Meehan. "Nonprofits usually rot from their mission down."

The solution is a focused and clear mission statement. "Businesspeople know that focused companies outperform diversified companies. The same is true for nonprofits," Meehan adds. "A nonprofit that has more than one focus deserves a skeptical eye."

FUNDRAISE LIKE WILLIE SUTTON

Money is a perennial challenge for many nonprofits, but Meehan and Jonker find that the challenge is often exacerbated by misdirected fundraising efforts. "Every week, I have somebody in my office talking about raising money from companies, which contribute just 5% of charitable contributions, or foundations, which account for 15%," explains Meehan. "I tell them what Willie Sutton said when he was asked why he robbed banks: 'Because that's where the money is.' In the U.S., 80% of giving comes from individuals. That's where the money is."

Meehan and Jonker coined the word "plutophilanthropy" to describe the charitable activities of the ultrawealthy. They argue that nonprofits need to become partners in plutophilanthropy (PIPs). "PIPs, such as colleges and universities, medical centers, high-end performing arts centers, and museums, are breathtakingly good at raising large moneys from major donors," says Meehan. "There's no reason that other types of nonprofits can't raise large amounts of money from plutophilanthropists as well."

To achieve PIP status, nonprofits "need to identify potential major donors and cultivate them. And they need to make their missions relevant to the lives and giving of major donors."

EARN THE RIGHT TO SCALE

Just like Silicon Valley startups, many nonprofits struggle to reach scale, according to Meehan and Jonker. "A lot of nonprofits are stuck in 'scale jail,'" says Jonker. "Some have charismatic founders or executive directors, and so funds are flowing in. But they need to earn the right to scale. They need to build their engine [of impact] before they fuel up," she says.

"In this regard, Stanford GSB alums are in a wonderful position to have a great deal of impact in the nonprofit sector," Jonker concludes. "They will be familiar with many of the concepts in our book, and, as donors and board members, they can make a big difference in the sector, even when they have day jobs outside the sector." ▲

William F. Meehan is a lecturer in strategic management and Kim Starkey Jonker is a lecturer in management at Stanford GSB.

NONPROFITS AS JET ENGINES A nonprofit's "engine of impact" starts with its mission, which is the very air that people in the organization breathe as they do their work. A carefully honed strategy serves as the compressor: It applies pressure to the "air" of mission to create a set of goals that govern the design and implementation of programs. Impact evaluation functions as the thrust indicator — a key instrument that allows an organization to compare its performance with its strategic goals and refine its strategy over time. Helping to generate power are the twin "turbines" of insight and courage — human qualities that give an organization its dynamic force. For propellant, the organization draws on three kinds of fuel: sustained funding, well-managed talent and organization, and effective board governance. When it works well, the engine creates thrust, which equates to impact. —Adapted from *Engine of Impact*



LEADERS OF THE PACK
Sometimes the best
hunters need to
become teachers.



MANAGEMENT

Rethinking “Eat What You Kill” Compensation for Managers

**Benefits accrue when high-end
producers get paid for being good leaders.**

BY EDMUND L. ANDREWS

Most companies hunger for hard-charging go-getters, and they sometimes motivate those workers with an “eat what you kill” model of compensation.

At its purest, this carnivorous metaphor means basing the size of a person’s paycheck almost entirely on how much business that person brings in. Think here of sales reps, store managers, money managers, lawyers, and investment bankers.

At some point, however, even fast-growing companies need more than major producers. They need leaders who will invest time and effort on the big picture. They need people who can bring out the best in employees, communicate a vision, or build the firm’s public reputation.

Now comes a new study, coauthored by Kathryn Shaw of Stanford GSB, that reveals the benefit of encouraging high producers to become good leaders.

Shaw, who teamed up with Ann Bartel of Columbia Business School and Brianna Cardiff-Hicks of Cornerstone Research, looked at a firm in a field famous for hyper-competitive solo achievers: the law.

Founded in the 1990s, this particular law firm grew rapidly and, until 2007, relied almost entirely on an eat-what-you-kill system. On average, senior attorneys earned very low salaries but made about \$20,000 from billable hours each month. Even junior attorneys earned almost all of their income from billable hours.

Ten years ago, the firm’s founders decided that their senior attorneys needed to spend more time on non-billable work that would benefit the firm as a whole. That kind of work included

contributing to the firm’s image, coaching and training younger attorneys, improving efficiency, and attracting new clients.

“There was a natural transition, as the firm got bigger, to shift the emphasis of senior leaders from their billable hours to the greater non-billable hours spent building the customer base and human capital of their younger employees,” Shaw says.

Under the firm’s original system, attorneys received almost negligible fixed salaries but as much as 50% of what they had billed clients. After the firm switched its rules in 2007, attorneys received bigger fixed salaries as well as bonuses for non-billable work — but only about 15% of the revenue they generated through billable hours.

For the senior attorneys, the total pay and the total number of hours worked didn’t change much at all. But the composition of both their work and their pay changed a lot: On average, the senior attorneys reduced their billable work by about 7.6 hours a month and increased their non-billable work from 21 to 28 hours.

Meanwhile, the junior attorneys increased their billable work by 9.2 hours per month, about 7%. In other words, the team leaders were hoarding less of their billable work and spending more time on boosting the firm after the change in pay practices.

The results were a win-win for all the attorneys.

On a typical team, a senior attorney gave up about 7 hours of billable work, while two associates increased their billable work by a total of 18 hours. As a result, the firm as a whole was reaping

more billable hours. And even though the junior associates were earning more than they had before, the firm was earning more for each of their additional hours as well.

That makes sense, says Shaw. The law firm was making better use of the junior associates, who had been underutilized under the old system.

The bigger question is whether the shift from eat-what-you-kill improved the long-run strength of the firm by having the senior attorneys invest more effort on the organization’s overall well-being.

Shaw, an economics professor, and her colleagues couldn’t get enough data to make a judgment on that issue, but Shaw says most experts believe that incentives for leadership and team-building are indeed a crucial investment.

Shaw turned up compelling evidence to support that argument in a separate case study of local branches at the Royal Bank of Canada. The branches that had the highest customer satisfaction and loyalty were also the branches in which employees had the highest opinions of their own managers. The most successful branches, in other words, were the ones where managers did the best jobs at motivating and supporting people on the front lines.

In fact, a famous study by Google of its workforce found that the most important characteristic of top managers was not their technical expertise. Rather, the top-performing managers were the ones who had good people skills and invested time in the employees they supervised.

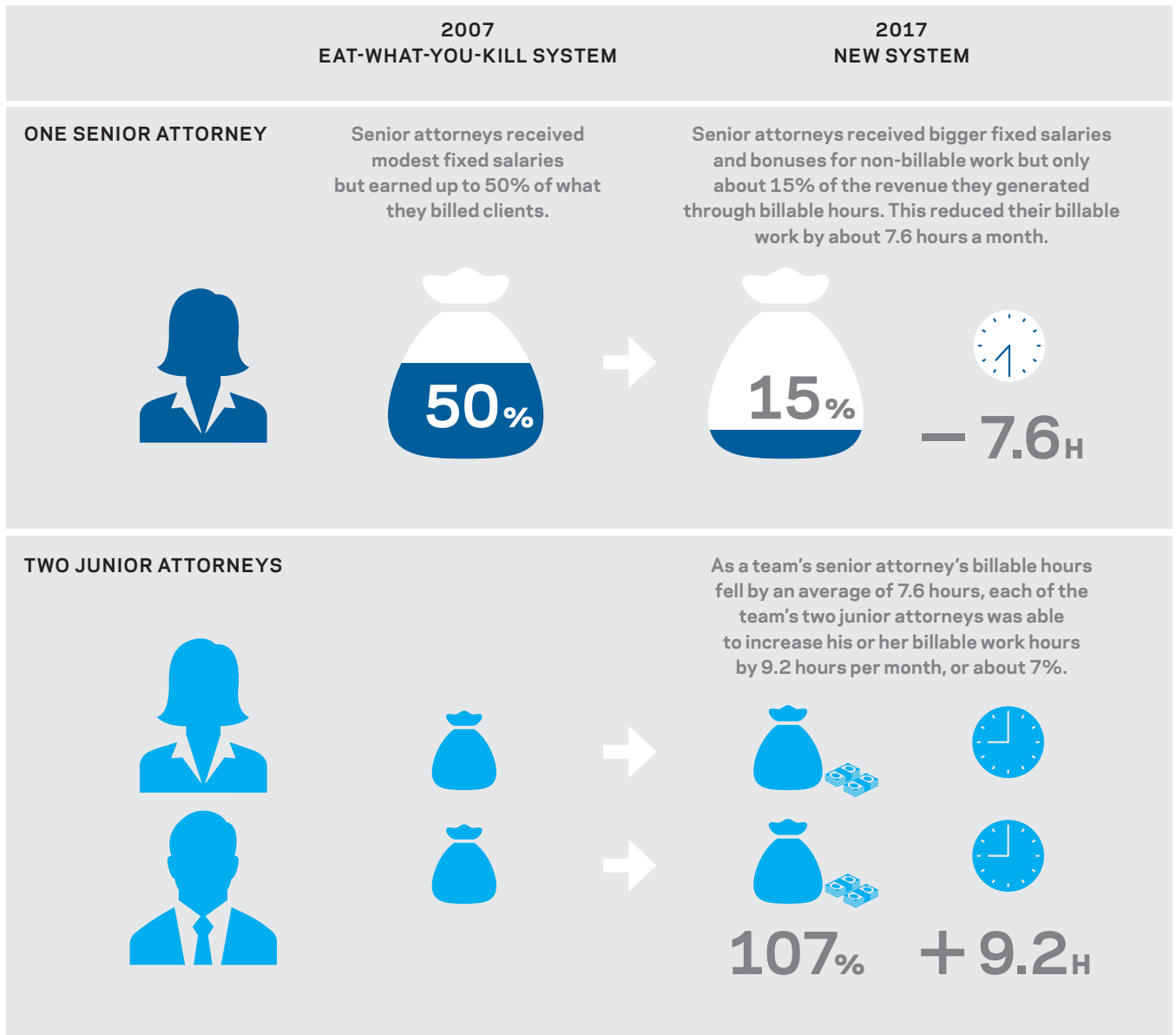
To be sure, Shaw says, companies of all types still want ambitious go-getters who dream of big paychecks. But nudging people to work for the good of the whole organization can be a winning strategy for everyone. ▲

Founders ordered senior attorneys to spend more time on non-billable work that would benefit the firm as a whole.

Kathryn Shaw is the Ernest C. Arbuckle Professor of Economics at Stanford GSB.

TURNING TOP PRODUCERS INTO LEADERS

A law firm's founders decided that their senior attorneys needed to spend more time on non-billable work that would benefit the firm as a whole. That kind of work included contributing to the firm's image, improving efficiency, attracting new clients, and coaching and training younger attorneys. A typical team included one senior attorney and two junior attorneys.



CONNECTIVITY

The Internet of Things Is Changing Things

The spread of smart gadgets and the data they emit is causing a tectonic shift in business models.

BY IAN CHIPMAN

Despite the bland physicality of the term “the internet of things,” much of the transformational potential of connecting devices to the cloud comes from blurring the lines around traditional business models and abstracting what it means to make and sell a product.

“The internet of things is not really about things” but about services, says Macario Namie, head of internet of things strategy at Cisco. “The impact is really in changing to service-based business models.” Namie was one of nearly a dozen industry experts who spoke in the spring of 2017 about how enhanced interconnectivity is impacting the business world when Stanford GSB hosted the Internet of Things in Global Value Chains Executive Conference.

For example, Namie says, Japanese technology company Konica Minolta no longer sells office copy machines — it provides a connected “digital hub” and businesses pay for the scanning, copying, and digitization services it provides. Selling these “outcomes” is a revolutionary change for a company long steeped in a one-time revenue model of selling physical products. “The impact on business models is profound when you have this kind of real-time connection to the thing itself.”

What’s more, Namie says, these business-model transformations have a way of trickling down and spreading across industries. If GM sells you a Wi-Fi-enabled car, that means AT&T, looking for ways to expand beyond phones, can add a vehicle to your data plan. Meanwhile, GM is now in

the business of selling the data it collects from your car, perhaps to an insurance company that offers a pay-as-you-drive insurance model.

“You would never think of a car company as being in the business of monetizing data, but that’s absolutely where they’re trying to go,” Namie says. “And their competition is not just Ford or Nissan. They’re also thinking, Who else is monetizing data? Who else wants access to this information that I have? How do I use that as a strategic point within this entire automotive ecosystem?”

That impact on business models of all sorts might be the most transformative aspect of the internet of things, says Haim Mendelson, codirector of the Value Chain Innovation Initiative and professor of operations, information, and technology at Stanford GSB. “How can we create company value through the use of data and things?” Mendelson asks. “One is enhancing existing business models, one is creating new business models, and one is providing the platform that facilitates or sometimes enables the enhancement and creation of those business models.”

Of course, these opportunities don’t come without significant risks. If people think online data security is difficult, it’s nothing compared with the potential vulnerabilities that come from millions or even billions of connected devices, says Hau Lee, codirector of the Value Chain Innovation Initiative and a professor of operations, information, and technology at Stanford GSB. “There are many small

devices that are stupid and that could be an easy target for hackers,” Lee says. “Some of them have an IQ of 1,000, but some of them have an IQ of 10.”

“The scope and scale of security is extraordinarily broad,” agrees Cisco’s Namie.

Every refrigerator with an IP address and a default password that people are unlikely to change becomes a target for spreading viruses, adds Amip Shah, who leads research and development for the internet of things at Hewlett Packard Labs. “They’re not just low-hanging fruit,” Shah says, “they’re low-hanging watermelons.”

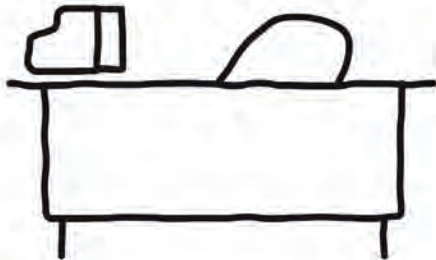
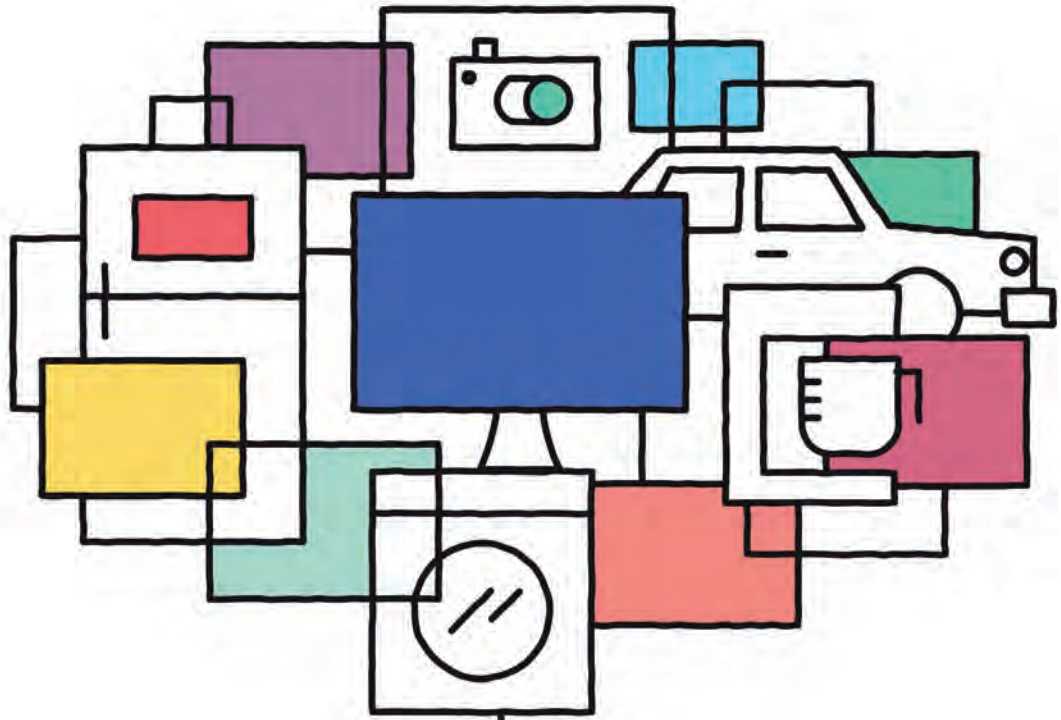
What’s more, hacking a laptop generally affects only data. The internet of things extends the vulnerabilities into the high-stakes physical world of objects and actions, from sabotaging factory robots to taking control of a car.

But if the risks are large, so are the opportunities to transform entire industries. Arable Labs, a farming data-analytics startup, has developed what head of special projects Jess Bollinger calls a “souped-up weather station” that could help the company reduce risk throughout the agricultural food chain. Placed among crops in the field, the device tracks dozens of data streams on things like rain and nutrient levels, canopy cover, and plant health. The insights help growers not only to optimize the best time to prune, irrigate, and harvest, Bollinger says, but also to predict crop yields and quality, a critical component of coordinating with retailers who want foreknowledge of what’s going to be ripe and when so they can adjust their marketing efforts accordingly.

Overall, Mendelson says, the internet of things is perched in the same position that the internet found itself in the early 1990s, when he began teaching about it. He recounts how in 1993 Steve Jobs came to Stanford GSB to speak to students.

“One of the students raised his hand and asked, ‘Steve, what is your forecast of the future size of the internet?’” Mendelson recalls. “Jobs was standing there thinking, thinking, and a smile spread across his face, and he said, ‘It’s going to be big, man!’ So that’s the way I think about the internet of things.” ▲

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



LEADERSHIP

The Importance of Embracing Uncertainty

Former engineer George Kurian stopped looking for black-and-white answers when he took the helm at NetApp.

BY MARTIN J. SMITH

The recent rebound of Sunnyvale data storage giant NetApp is one of Silicon Valley's more remarkable turnaround stories, much the same as the story of the CEO behind it, 1995 Stanford GSB alum **George Kurian**.

Born to a successful manufacturing entrepreneur and a no-nonsense, college-educated mother in Kerala, India, Kurian also holds an electrical engineering degree from Princeton. After a career in networking that included key roles at Oracle, Cisco, and Akamai, Kurian joined NetApp in 2011 as senior vice president of its storage solutions group. He was promoted to executive vice president for product operations in 2013, and to CEO in 2015 after the struggling company's board asked his predecessor to step down.

NetApp has grown under Kurian's leadership. Revenues for fiscal 2017 were \$5.52 billion, with income of \$509 million, up from \$229 million the year before. On the day he spoke with us, NetApp stock was trading above \$40 per share, up from a 52-week low of \$22.89.

Kurian's career has been paralleled by that of his twin, Thomas, who also attended Princeton and Stanford. Thomas has spent nearly 20 years at Oracle and now is the company's vice president of product development.

We asked Kurian to share with us the key lessons he's learned along the road to the CEO's chair.

Since 2015 you've sat on the top rung of the corporate ladder at a multibillion company, but are there times when you still feel like an entrepreneur? Every multibillion-dollar technology company has an amazing portfolio of capabilities, some of which are still incubating from a technological or business perspective, so you're always trying to remain entrepreneurial in creating new business. In NetApp's case, we had to create a new solid-state storage business from nothing, and to succeed at that we had to behave and act like entrepreneurs.

You've credited NetApp's rebound to "continued focus and disciplined

execution." Why were those key? We succeed when everybody in the company is enormously clear about our most important priorities — to focus on solid-state storage and to address this trend toward the cloud. So we aligned our communications and marketing strategy so that everybody was clear that those were the priorities. As a result, we've grown at faster rates than anyone in those markets. From an execution standpoint, we have a closed-loop performance management model and we're constantly looking at barriers to success — and taking corrective action. Now we have weekly meetings where we review our priorities and keep track of where we are. Often you see action being taken on those decisions by the following week. We want to make decisions at pace, with sufficient information but not necessarily *all* information. That speed is absolutely necessary in this industry, and our approach is starting to prove out.

You're an electrical engineer who started in 1990 as a coder at Oracle. Was it hard going from engineer to executive? My dad and brother were an important part of that transition, because they're both engineers who moved to the business side of things. They taught me that the breadth of things an executive has to deal with is wider than that of an engineer. I also had to learn to deal with uncertainty. With engineering, there's often a black-or-white answer. But as an executive, that's much rarer. If you wait for certainty, you're almost always too late.

You had to lay off nearly 1,500 NetApp employees in February 2016. What did you learn from that? We had a business that had gone sideways in terms of revenues. The operating margins were a little over 7%, but the prior leadership team had told Wall Street our margins would be between 16 and 18%. The majority of our costs are in people, so there was literally no choice but to have to make a tough set of decisions. Once you've made up your mind that's what you have to do, it becomes a matter of honoring both the people who stay and the people who lose their jobs.

You once advised, "Be humble about knowing you are not expert in all disciplines." How does that play out in your daily life? One of the mistakes you make when you're the leader of a large institution is in thinking you have better judgment than everyone else in the room. The fact is, your experts are enormously more capable than you are. As leader, you

Photograph by David Paul Morris



GEORGE KURIAN
"If you wait for
certainty, you're
almost always too late."

can bring perspectives that the experts may not have, but I always challenge our teams to take the lead.

Most of your career was spent in networking. What was the appeal of the data-storage business? From an intellectual standpoint, it was a chance to learn new things. In the first few months, I knew nothing about storage and had legitimate reasons to ask a lot of stupid questions. If you have the humility to accept your lack of knowledge, you can learn a lot.

How did you address the disruption that cloud storage brought to the storage industry? Market transitions are the reality of the tech industry, and frankly of the whole

business landscape. It's the idea of creative destruction: Out of one industry comes another that transforms the prior industry or destroys it. It's especially hard for tech companies. Technologists who love one type of technology or business model have a hard time saying, "That's over." But you have to disrupt yourself to be seen by your customers as having merit in that new world.

What qualities are you looking for when recruiting for executive positions at NetApp? We look for leaders who can inspire, motivate, and transform teams to succeed. We look for people who are collaborative, and we have a high bar on ensuring that our values and principles are fostered while the organization

renews itself in ways that embody those principles. It's a delicate balance.

Any single book that profoundly influenced you? I don't remember the title or the author, but I most remember a little volume about Abraham Lincoln, who is one of the leaders I admire and respect. My mother gave it to me when I was 8 years old. I read it over and over and kept it under my pillow at night. I still remember his self-reliance and his ability to empathize and learn from people. ▲

George Kurian earned his MBA from Stanford GSB in 1995.

DIVERSITY

How to Get More Women in Corporate Boardrooms

Use mentors, networks, and anti-bias training to nurture gender diversity in places of power.

BY LOUISE LEE

At Box Inc., diversity is intentional and permeates the entire company. “We’re not looking for diverse candidates; we are looking to build diverse teams,” says Shalie Jonker, senior director of operations at the Silicon Valley data-storage firm. Besides receiving training in recognizing unconscious bias, Box managers have targets for diversity within their organizations and regularly report on their progress as they do other business metrics, adds Jonker, who received her MBA from Stanford GSB in 2013. At Box, achieving diversity “becomes a global effort versus something that an individual hiring manager is trying to do,” she says.

Jonker spoke at “Shaping the Next Generation of Women Leaders and Board Directors: Nature vs. Nurture,” the first of a series of annual events planned at Stanford GSB on developing the next wave of women in leadership. Speakers explored the standing of women on boards and in executive positions and discussed ways for women and their colleagues to nurture their potential and promote the diversity that benefits all organizations. The event was hosted by Stanford GSB, executive search firm Egon Zehnder, and Stanford Women on Boards, an alumni group dedicated to increasing the number of Stanford women alumni on corporate boards of directors.

Following are some of the other ideas discussed at the event, which included a keynote speech and two panel discussions.

HIGHER BARRIER TO ENTRY

Women remain underrepresented in boardrooms, elected offices, and executive suites, says Marianne Cooper, sociologist at Stanford’s Clayman Institute for Gender Research and an affiliate at the Stanford Center on Poverty and Inequality. Despite earning half of all college degrees, “women are not at the table and their voices are not heard” in business and government, she says. With regard to boards, committees, and other decision-making entities, “the more powerful something is, the fewer women will be there.”

Because of bias and gender stereotypes, women have to provide more evidence of competence than do men, Cooper says.

Companies should rethink their criteria for advancement, such as nomination to a board, she says. Some firms, for instance, want candidates to have worked overseas on a “global assignment,” a job that many women can’t pursue because of their spouses’ jobs. Companies could instead identify exactly what experience and skills an overseas posting brings and find other ways for candidates to gain them. “A lot of times we have criteria that can be changed,” says Cooper. “They’re malleable in ways that make them more inclusive.”

MEANINGFUL MENTOR RELATIONSHIPS

Women need to find mentors who can provide guidance and help them build on strengths

and improve upon weaknesses. The best mentoring relationships have roots in a particular project or work product. Heidi Roizen, operating partner at venture firm DFJ, says she’s sometimes approached by individuals who ask her out of the blue to be a mentor, a request she compares to being asked to be a pen pal. It’s “hard to just spin up a mentor relationship,” says Roizen, who earned her MBA from Stanford GSB in 1983. Rather, you want to have interacted with a potential mentor on a specific project. “Doing meaningful work with someone is the easiest way to mentor and be mentored,” she says.

A sponsor can provide an even bigger boost, says panelist Jane Shaw, a former Yahoo board member. While a mentor may provide advice, women can benefit from a sponsor “who will speak up for you, who will cash in their brownie chips for you” and actively provide support when you’re looking to advance, she says.

Individuals who want to be a mentor should be aware that male and female mentees are likely to raise different questions and issues. “You have to be able to deal with specific situations in different ways,” says panelist Bill Ruh, GE Digital’s chief executive and senior vice president of parent GE. Mentors themselves also need a full understanding and appreciation of diversity; Ruh says that as a mentor, he is conscious of not picking mentees “who look or act like me.”

BUILDING THE NETWORK

Women can benefit from joining employee groups, a prime way to meet and build relationships with colleagues and leaders. For example, women at GE Digital, which doesn’t have a formal mentorship program, can nonetheless take advantage of various employee networks for women, African-Americans, Asian-Pacific Islanders, and other groups, says Ruh. Those groups are “very effective in creating networks and mentorships,” he says.

GENDER IN THE FIELD

Panelists spoke anecdotally of the impact of their gender on their studies and interactions with male colleagues. Marleyna Mohler, a Stanford junior majoring in psychology, recalls receiving advice to avoid classes in feminist and gender, or “FemGen,” studies, so that potential employers wouldn’t assume she’s “a lawsuit waiting to happen.” Maxine Schlein, a member of the MBA 2017 class and fellow at XSeed Capital, says she has cultivated an interest in areas her male colleagues enjoy. And Roizen notes how frequently she as a director has assumed the task of firing a CEO, because her colleagues figured the CEO would react better if the news came from a woman. ▲

Illustration by Silja Götz



CAREER

Forget About Being a “Brand” and Find Your Voice Instead

Facebook COO Sheryl Sandberg on how dirty hands and rocket ships lead to meaningful careers.

BY THEODORE KINNI

Today Sheryl Sandberg is known as a leading Silicon Valley executive and a champion of working women. But when she arrived in California in 2001, after a five-year stint at the U.S. Treasury, she wasn't exactly welcomed with open arms.

“All the exciting stuff was happening out here, so I wanted to work in Silicon Valley,” recalls Sandberg. “Lots of people said ‘I would never hire anyone like you’ to my face. The first tech bubble had just burst. It was actually hard to get a job.”

But Sandberg did get a job — and an impressive one. She served as Google's vice president of global online sales and operations until 2008, when Facebook founder Mark Zuckerberg convinced her to join the social networking site as its COO.

In 2013, Sandberg became a best-selling author with the publication of *Lean In: Women, Work, and the Will to Lead*. Since then, its readers have founded 33,000 Lean In peer support circles in 150 countries.

Sheryl Sandberg is the chief operating officer of Facebook and founder of LeanIn.org.

Illustration by Stephane Manel



And that short-run plan, it's not about what you accomplish, especially in the early days. It's about what you help other people accomplish and about what you learn. You invest in yourself. You invest in the success of your teams."

FIND YOUR ROCKET SHIP

Don't just look for a job, says Sandberg. Look for an organization with a mission that matters to you. "When I finally got a job at Google, it felt like the wrong job," she recalls. "I had a spreadsheet [of job criteria], and the problem with the Google job was that other than loving the company, it met none of the criteria."

Then Sandberg showed her spreadsheet to Google CEO Eric Schmidt. "Eric put his hand on my little spreadsheet," she recalls, "and said, 'You love the mission. This is a rocket ship. When you get offered a seat on the rocket ship, you don't ask what seat.' And the job I took at Google and the job I took at Facebook were more junior than every other job offer I had. But they turned out to be much bigger opportunities."

GET YOUR HANDS DIRTY

Once you have a job, counsels Sandberg, work hard. "All the stuff out there on grit and determination and working on things that are challenging is all true," she says. "There's no substitute for hard work. I have a poster in my office that I got from [Starbucks founder] Howard Schultz of two dirty hands. It says the future belongs to those of us still willing to get our hands dirty. Do something you care about and get your hands dirty doing it. You'll be able to do anything, I promise."

The proper goal of hard work is not personal gain, but organizational contribution, adds Sandberg. "I don't see that many people coming into the workplace asking what they can do for the company," she says. "Ask what you can do. I promise you will get mentors. You will get sponsors. You will get results. You will get promotions. You will get opportunities by contributing."

Sandberg's life seemed charmed until May 2015, when her husband and the father of her two children, Dave Goldberg, died suddenly. "When Dave died, I didn't think I was capable of anything," she says. "I could barely go to work and not cry. I was parenting two grieving children."

Sandberg channeled her own grief into a second book, *Option B: Facing Adversity, Building Resilience, and Finding Joy*. Coauthored with Wharton School professor Adam Grant, it, too, has found a global readership and, with the support of the Sheryl Sandberg & Dave Goldberg Family Foundation, has already attracted a community of 350,000 people.

In May, Sandberg described her journey and the lessons she has learned along the way to Stanford GSB students at the final View From The Top event of the 2016-17 academic year.

DREAM LONG, PLAN SHORT

Don't try to map out your entire career from the get-go, advises Sandberg. If she had done so, she would have missed the opportunities at Google and Facebook altogether. After all, when she graduated from Harvard, the internet didn't exist.

"If you try to plan out your career, it's going to be boring. You're going to miss all the good stuff, because all the good stuff hasn't been invented yet," says Sandberg. "You want to have a really long-run dream and you want to have a short-run plan."

"The future belongs to those of us still willing to get our hands dirty. Do something you care about and get your hands dirty."

BE A VOICE, NOT A BRAND

The idea of developing your personal brand is a bad one, according to Sandberg. "People aren't brands," she says. "That's what products need. They need to be packaged cleanly, neatly, concretely. People aren't like that."

"Who am I?" asks Sandberg. "I am the COO of Facebook, a company I deeply believe in. I'm an author. I'm a mom. I'm a widow. At some level, I'm still deeply heartbroken. I am a friend and I am a sister. I am a lot of very messy, complicated things. I don't have a brand, but I have a voice."

Focus on developing your voice, she says. Figuring out what's important to you and being willing to use your voice for that purpose is incredibly valuable. "If you're doing it to develop your personal brand, it's empty and self-serving and not about what you're talking about," she says. "If you're doing it because there is something you want to see changed in the world, that's where it will have value and depth and integrity." ▲



“I bring it back to

**the
critical
function:
passion.**

If that’s not there,
nothing else matters.”

— James Patell PAGE 50

IMPACT

Transforming Homes and Saving Lives

How a focus on one simple thing — floors — could help billions in Africa and beyond.

BY STEVE HAWK





DIRT FREE Three-year-old Moise Barihuta in his family's newly paved living room.

On a cool May morning in eastern Rwanda, in the early days of harvest season, an American businesswoman named Gayatri Datar is driving out to meet some of her customers, almost all of whom are farmers of the poorest sort.

Datar and a few passengers bounce along a rutted road in a truck tattooed with the logo *Tube Heza*, which in the region's Kinyarwanda language means “live beautifully.” The pickup rumbles through quiet villages into even quieter farmland beyond. Children rush from tiny adobe houses to wave as it passes. Beside the road, teenage boys use long poles to thwack piles of bean vines and loosen the pods. Beans are both a staple and a cash crop in this sector. Women sit on the ground shucking beans, while others spread them out to dry: red with red, yellow with yellow.

Now and then the truck slows for pedestrians hauling crops: women with vines bundled high atop their heads, men pushing bikes saddled with bananas.

Datar, 31, finds this foot traffic both exciting and worrisome. As the rainy season gives way to harvest, many of these farmers soon will have money to spend. Last year, *Tube Heza's* parent company, EarthEnable, was inadequately prepared for this seasonal spike and thus missed potential sales. Datar is determined not to let that happen again.

“Everything you see is our market,” she says.

Gayatri Datar earned her MBA from Stanford GSB in 2014.

The truck stops before a cluster of homes. On some, the stucco façade has flaked away like sunburned skin, exposing straw in the walls beneath. At first glance, the decaying structures make for a depressing tableau, but the backdrop is lush with greenery, and the air smells like freshly mowed grass.

Datar wants to have a look at the floor that masons from her company recently installed in one of these homes. That's what EarthEnable does: It sells floors to poor people. Specifically, the social enterprise, which she cofounded and runs, makes paved flooring from compressed earthen materials that are sealed with a proprietary oil. Both the product and the business were incubated four years earlier when Datar was a student at Stanford Graduate School of Business and took a course called *Design for Extreme Affordability*.

EarthEnable's floors, marketed in Rwanda under the *Tube Heza* brand, cost about 75% less per square foot than concrete, dirt's most common flooring alternative. The price averages about \$80 per home (\$60 for materials, \$20 for installation) — exceedingly cheap by Western standards but a significant expense in a country where most people live on less than \$2 per day.

Damascene Barihuta, 36, and his 3-year-old son, Moise, emerge from one of the huts. The farmer, a father of five, ushers in the guests to show off the new floor in his 275-square-foot home. Unlike the jailhouse brutalism of concrete, the earthen floor looks as organic and elegant as it is

Unlike concrete, the earthen floor looks as organic and elegant as it is substantial — more West Hollywood than East Africa.



CUSTOMER SERVICE Datar on the job.

substantial — more West Hollywood than East Africa.

The timid farmer describes through a translator how the paved floor has transformed his family's life. Mice and insects no longer burrow in corners or breed underfoot. Dust no longer clouds the air, making his children cough. And the floor no longer turns to mud when it gets wet — in fact, you can actually clean it with water.

Datar listens to Barihuta for a bit, then turns her attention to the toddler, who has climbed onto her lap so they can shoot selfies. The boy's eyes go wide when the tall, thin American woman speaks to him in Kinyarwanda. For Datar, encounters like this — venturing out to farm country in jeans and rubber boots to spend time with the people whose lives she hopes to improve — are the best part of her job.

She asks Barihuta what *Tube Heza* could do differently to turn more of his neighbors into customers. It would have been better, he says softly, if he'd been allowed to pay for the floor in five installments instead of three. He also says he never received a stipend that he'd been promised for referring a customer, a fee that amounts to a little more than

one American dollar. Datar tells him she'll look into the fee.

This farmer and his son are the anecdotal edge of a broader narrative that Datar has told many times. How dirt floors breed mosquitos, parasites, and disease. How a paved floor can reduce childhood diarrhea by nearly 50% and parasitic infections by more than 75%. But the problems with dirt floors go beyond hygiene. They are a fundamental indicator





TROUBLED GROUND Dirt floors not only breed parasites, but also tilt chairs, obstruct doors, and turn to mud when wet.

of enduring poverty — a daily, depressing reminder of an unfortunate person’s unchanging lot.

About 80% of Rwandans live with dirt floors, according to a 2014 report funded by the U.S. Agency for International Development. Datar’s “back of the envelope” estimate is that as many as 300 million homes worldwide still have them.

She aims to pave them all.

“LOOK FOR THE DUCT TAPE”

One of Datar’s fondest memories during her two years at Stanford GSB was the week she spent getting sunburned and muddy while making prototype earthen bricks in the mud of a campus pond called Lake Lagunita. This was in 2013, when she was part of the *Design for Extreme Affordability* student team that hatched EarthEnable (see “The Critical Function,” page 50).

Her teammates were medical students Ray Deng and Vivian Lei and a mechanical engineering postgrad named Alice Eamsherangkoon.

Months earlier, as part of the course’s partnership program, the four students had been matched with a nonprofit called MASS Design Group. MASS’s mission is to promote affordable architectural design that improves people’s lives and health, and it had (Continued on page 50)



SUPER HABLA (ECUADOR)
CLASS OF 2016

MIRACLEFEET (BRAZIL)
CLASS OF 2012

Course of Impact

Students from Stanford's *Design for Extreme Affordability* class have executed more than 130 projects in 14 years. Here are 10 of them.

D.LIGHT (MYANMAR) Class of 2006. Invented a fast-charging LED lantern aimed at the 1 billion people worldwide who live without electricity and who often resort to kerosene lanterns, which are fire and respiratory hazards. Has sold more than 10 million lanterns, phone chargers, and lighting systems in 62 countries. www.dlight.com

EMBRACE (NEPAL) Class of 2007. Supplies portable, easy-to-use, \$100 infant incubators for the 20 million premature and low-birthweight babies born worldwide each year. Traditional incubators cost as much as \$20,000. Embrace warmers have treated more than 200,000 babies in 22 countries. Now headquartered in India. www.embraceinnovations.com (See page 20.)

SANKU (NEPAL) Class of 2009. Provides a simple, one-size-fits-all automated device that enables rural grain millers to easily add nutrients to the flour people eat every day in Africa. Hopes to end the malnutrition that affects 2 billion people worldwide. Has reached 500,000 people in Tanzania (where it is now based), Kenya, Rwanda, Malawi, and Mozambique and is on pace to reach 100 million by 2025. www.projectthehealthychildren.com

MIRACLEFEET (BRAZIL) Class of 2012. Invented an easy-to-use foot-abduction brace to treat the 175,000 children worldwide who are born with clubfoot each year but don't receive treatment. Traditional braces were either too expensive (up to \$1,000) or not effective. Won

a \$1 million Google Impact Challenge grant in 2016. Has distributed 6,000 braces in 12 countries as of the summer of 2017. www.miraclefeet.org

NOORA HEALTH (INDIA) Class of 2012. Conceived and implemented a hospital-training program that brings family members into the patient-recovery process by teaching them how to perform tasks traditionally performed by health care professionals. This reduces costs and improves care both in the hospital and, later, at home. Has trained 100,000 family members in dozens of hospitals throughout India. www.noorahealth.org

EARTHENABLE (RWANDA) Class of 2013. Makes washable, paved flooring that's 80% cheaper than concrete, aimed at the 2 billion people worldwide who



live with dirt floors. Hygienic flooring reduces diarrhea by nearly 50% and parasitic infection by more than 75%. On track to install floors in 3,000 homes in Rwanda in 2017. Won a \$590,000 Green Challenge grant in September 2017 to help scale the business. Aims to install 2 million floors by 2025. www.earthenable.org

PELLE BONGO (CÔTE D'IVOIRE) Class of 2013. Invented a safe and efficient tool to harvest cacao beans, work that traditionally has been done with a machete, leading to poor fermentation and unsafe working conditions. The new hand tool improves farmer efficiency and productivity by not only opening the pod but also enabling the farmer to remove the beans without the unwanted connective material inside.

Has distributed more than 10,000 tools to 8 countries. www.pellebongo.com

HEALYX (BANGLADESH) Class of 2015. Created a negative-pressure wound therapy device for large, slow-healing wounds such as pressure ulcers. In India alone, more than 20 million patients suffer from non-healing, chronic wounds, and treatment can result in months in the hospital and overwhelming debt. The student team just launched its startup, Healyx Labs, which is working toward a clinical trial in 2018. www.healyxlabs.com

SUPER HABLA (ECUADOR) Class of 2016. Developed game-based speech therapy for children who've had cleft palate surgery and who

lack regular access to trained speech therapists. Daily speech practice is critical for children to get to understandable speech. Is currently developing a hub-and-spoke network of trained therapists to extend access to remote populations throughout Latin America.

D.LALA (SOUTH AFRICA) Class of 2016. Created a side-lying, posture-support device for children with cerebral palsy, the most common developmental disorder for children. The positioner continues crucial posture therapy while children sleep at night and play during the day. The device will enter a clinical trial in 2018. shonaquip.co.za

★ **OTHER COUNTRIES WHERE PROJECTS HAVE TAKEN PLACE.**

(Continued from page 47) teamed with the *Extreme* course. The first and most obvious idea was to improve the leaky tin roofs that are ubiquitous in Rwanda.

As part of their research, Datar, Lei, and Eamsherangkoon traveled to Africa to spend time among their future customers. The professors who run the two-quarter course had told them to “look for the duct tape” — the clever, low-cost ways that poor people work around everyday annoyances and hazards — and to keep asking questions to get to the physical and emotional roots of their concerns.

“Poor people are not stupid. Poor people are not lazy. Poor people are poor,” says James M. Patell, the emeritus Herbert Hoover Professor of Public and

Private Management at Stanford GSB and founder of the *Extreme* course. “If you go in thinking that these people are smart, that means they’re smart economically as well. Not in the sense that they can draw supply-and-demand curves, but in the tradeoffs they have to make every day. They understand when something has value and what they’re willing to trade for it. So you treat them as customers — as smart customers.”

It was rainy season when the students arrived in Rwanda early in the 2013 school year. Datar noticed that many of the homes had mats strewn about to cover muddy patches on the dirt floors. She helped one woman wash laundry in a bucket outside and hang the clothes in her house to dry.

If a garment fell on the living room floor, it had to be washed again.

Datar asked the mother, “What do you want to improve?”

The woman said, “The roof is leaking.”

“Why is that a problem?”

“The floor gets muddy.”

“Why is that a problem?”

“Bugs come in.”

“Why is that a problem?”

“They bite my children.”

“Why is that a problem?”

“My children get sick.”

CUT OUT THE FRILLS

By the time they got back to campus, the students had decided to focus on

The Critical Function

In screening potential students, the *Design for Extreme Affordability* course overseers look for one key attribute: passion.

The 40 Stanford students who take Stanford University’s interdisciplinary *Design for Extreme Affordability* course sequence each year receive many of the same lessons taught to entrepreneurial MBAs. They learn how to do the groundwork that will enable them to build empathy with customers. They learn how to swiftly discard and move beyond bad ideas.

But their primary takeaway is the same one that the faculty apply to their execution of the course: To design a high-quality but very affordable product or service, figure out its critical function, then focus exclusively on that.

In a word, simplify.

“We have the students complete this sentence: ‘Come hell or high water, our product or service will ...

blank,’” says James Patell, the emeritus Herbert Hoover Professor of Public and Private Management at Stanford GSB, who founded the class in 2003 and retired this September. “That’s the critical function. If you don’t get that right, the rest doesn’t matter.”

Putting his theory to work, Patell has a blunt message for any Stanford students who are interested in taking the class. He tells them: *This course is a lot of work — probably more work than any single course you’ll ever take. If you’re not passionate about it, don’t apply.*

“We assume the med school does a good job at bringing in intelligent potential doctors,” Patell explains. “And we assume the business school does that on the managerial side and the engineering school

does that on the engineering side. So I bring it back to the critical function, which for us is passion. If that’s not there, nothing else matters.”

Housed in the Hasso Plattner Institute of Design (aka the d.school), the two-quarter course is jointly offered through Stanford GSB and the School of Engineering. In a typical class, roughly 12 of the students are MBAs, 16 are engineers, 5 or 6 are medical students, and the rest come from other university disciplines such as international policy or the sciences.

Four weeks into the first quarter, the faculty sort the students into 10 teams of four, based on an alchemist’s blending of skills, interests, and personality types. Each team is matched to a corporate or nonprofit partner’s project, and then

everybody dives right in. By the end of the second quarter, the students are expected to have conceived, designed, built, and field-tested a product or service with the potential to improve the lives of thousands — perhaps millions — of poor people. Simultaneously with the physical design, they craft a viable, real-world business plan to take their product or service to market.

Since the course began in 2003, teams have completed 130 projects in 30 countries, reaching an estimated 67 million people. About 30% of the products or services created by its students have either been implemented by partners or gone to market through the students’ own efforts. That’s about triple the success rate of the business world.

—STEVE HAWK

TRUE GRIT
EarthEnable workers
use sieves to produce
the fine-grain sand
that serves as each
floor's surface.





FINAL LAYER EarthEnable mason Theophile Ngirukwayo applies the company's proprietary varnish.

floors rather than roofs. The most obvious paving solution, concrete, was too expensive and environmentally damaging. They tinkered with rubber: also too expensive. They tested bamboo: too likely to degrade. They spent a frustrating month trying to fabricate injection-molded tiles out of recycled plastic: too ugly, too uncomfortable, and too expensive.

"They were struggling and it wasn't really going anywhere. We had a lot of concerns," says Stuart Coulson, an adjunct professor who's been with the course since 2007 and who worked closely with the EarthEnable team. (Coulson took over the 2017-18 course from Patell, who retired in September.)

Late in the process, Lei connected with a San Francisco Bay Area builder and artist named Massey Burk, who

specializes in earthen construction. The team interviewed more experts, then ventured out to Lake Lagunita, where they spent several days in the sun building tiles out of varying ratios of sand, clay, dirt, and water.

As they worked, they kept Patell's mantra in mind: *Identify the one critical function that your product must perform to be of value — that will enable it to be inexpensive but still high quality. Cut out the frills and focus unendingly on that. Get the most critical thing right.*

That advice also influenced the crafting of EarthEnable's concise but ambitious mission statement, which calls for them to "improve health for the billions of people globally who live on dirt floors."

It took several hot, mucky days to fabricate a viable prototype, but they were

still far from ready to take it to market when the school year ended. All four team members decided to work on the project through the summer (supported by Stanford's Social Entrepreneurship Lab, the summer extension of the *Extreme* course), and Datar returned to Rwanda with Deng for several weeks. They learned that linseed oil, the most common sealant for earthen floors in the U.S., would be too expensive for Rwandans. So they recruited Rick Zuzow, a biochemistry PhD candidate at Stanford who'd been on a different *Extreme* team, to see if he could develop a cheaper varnish.

Datar by this point had emerged as the team's leader. (See "The Road from Boston to Rwanda," page 55.)

"She definitely drove the project forward, in terms of keeping everyone on schedule," Eamsherangkoon says.



TOOLS OF THE TRADE Masons use tampers and levels to ensure that the floors are well-compacted and sloped for drainage.

They spent countless hours using a crude viscometer made out of a wooden plank, a baby food jar, a coffee can, and duct tape.

“You know how they name hurricanes after people?” Zuzow asks. “Gaya is why.”

“I remember not wanting to let her down,” says Deng.

During her second and final year at Stanford GSB, Datar was awarded a Stanford Social Innovation Fellowship, which carried with it an \$80,000 grant. Ten days after graduation, she got on a plane. Her ticket to Rwanda’s capital, Kigali, was one-way. She was 28.

A KICK IN THE GUTS

In those early days in Kigali, the struggle to find a workable varnish almost torpedoed the business. Back in California, before he joined Datar in Africa as EarthEnable’s cofounder, Zuzow had successfully crafted an impermeable sealant by using a copper additive to catalyze and harden cooking oil

into a plastic surface. But the experiments he’d performed back at Stanford’s well-ventilated labs kept failing when he ran them in Rwanda.

Working in Datar’s Kigali guest room, they tested thousands of blends, trying a wide range of catalyzing agents in varying ratios with the oil. Datar spent countless hours measuring the hardening times of different mixtures with the use of a crude hand-built viscometer that Zuzow had constructed out of a wooden plank, a baby food jar, a coffee can, and duct tape.

Although Datar kept reminding him of one of the course’s central lessons — *fail early, fail often, keep going* — Zuzow says he almost gave up: “I thought we were sunk.”

Their morale hit bottom when Datar took the product to market before it was perfected. Their first customer had a wedding coming up and was eager to have

a new floor for the celebration. But shortly after the masons installed it, and before the varnish was even applied, the floor developed large cracks — something they'd never seen in prototypes. The groom-to-be was livid. He demanded a refund and told neighbors that the company was a fraud.

It was, Datar says, “a kick in the guts.”

Eventually, they developed better compression protocols, devised a reliable sand-to-clay ratio, and — most important — figured out why the oil chemistry kept failing. It turned out that the soy oil Zuzow had been using contained vitamin E, which prevented the floors from curing and left them sticky. He changed to flaxseed oil and resumed testing. The eureka moment came when he tried a metallic catalyst (which they keep secret) that's cheap and widely available.

With the varnish issue solved, Datar allowed herself only a brief sigh of relief. She'd learned at Stanford GSB that the make-or-break work begins *after* you create a “minimum viable product.” As Patell puts it, “Every product has associated services and customer questions that must be answered: How do I learn about it? How do I purchase it? How do I pay for it? How is it delivered to me?”

Zuzow returned to California after two months, while Datar stayed in Kigali and dug in. She opened an office and hired a team of Rwandans who helped her buy vehicles, source materials, and craft a marketing strategy. Its first full year in business, the company sold about 200 floors.

2 MILLION FLOORS BY 2025

Today, EarthEnable's eight-room headquarters in the town of Nyamata reflects Patell's no-frills philosophy. Most of the walls are covered in overlapping strips of yellowing tape — a writing-surface hack that, Datar explains, is “orders of magnitude cheaper” than whiteboard. The furniture is mismatched and wobbly.

Outside, sand from a nearby quarry is piled beside a row of sieves that hang from overhead pulleys. One worker fills a sieve with dirt while another rocks it back and forth, releasing a mist of fine sand that rains into a wheelbarrow. It provides the flooring's smooth surface. Nearby, a few

dozen barrels of flaxseed oil stand beneath an overlaid avocado tree.

Although Datar still makes many day-to-day decisions, she now spends more time plotting the long game, thanks, she says, to the strength and passion of her executive team. In 2016, EarthEnable installed floors in 850 homes. They expect to surpass 2,000 in 2017. Their target is 2 million floors by 2025.

EarthEnable's steady growth and global ambitions have begun to draw the attention of large donors. In September, the enterprise won an award of nearly \$600,000 from the Netherlands' Postcode Lottery Green Challenge and a grant of \$200,000 from Habitat for Humanity.

With her eyes set on scaling, Datar recently hired a country director to open an office in Uganda, which has three times as many residents as Rwanda but about one-tenth of its population density. Having customers scattered so widely will magnify the company's existing marketing challenges. Very few people in rural East Africa have computers, but most have cellphones, so *Tube Heza's* sales teams deploy tactics both archaic and modern. They knock on doors. They drive their trucks to village squares, set up sound systems, blast music to draw crowds, and collect as many phone numbers as they can for future text-message blasts.

Datar's long-term plan is to create a network of franchisees in Africa, India, and beyond. For quality assurance, the company is building a crowd-sourced, Angie's List-style rating systems for its freelance masons for customers to access by mobile phone.

They also count on the product selling itself through word of mouth. This is why, at an EarthEnable executive-team meeting a few days after her visit with the soft-spoken bean farmer and his toddler son, Datar says they need to get better at tracking customer referrals. She wants to ensure that the referrers receive the tiny rewards they've been promised.

MILESTONES, MISSIONS, AND BEDROCK LESSONS

It's Friday night, the end of a long workweek, and Datar is at the wheel of

They drive their trucks to village squares, set up sound systems, blast music to draw crowds, and start collecting phone numbers.

one of *Tube Heza's* two pickups, driving a handful of employees back to their homes in Kigali. Many of EarthEnable's workers commute this way: Datar or another driver picks them up in the morning on the way to the Nyamata office, then reverses the route each night. First stop to last, it works out to about 90 minutes each way, depending on traffic. There's always traffic.

In the back seat, a young American named Jess Littman, who has the title of executive associate, pulls out her laptop at Datar's behest. Littman's stop is about 15 minutes away, and Datar wants to use that time to polish a grant agreement that's due in a few days.

Littman shares with Datar what she's written under the agreement's “milestones” section. Datar suggests a few minor changes. A discussion ensues about the distinction between a parameter and a metric.

When Littman gets to the part where the donor asks for EarthEnable's mission statement, Datar says, “Let's hear it.” It's an odd request, because the mission statement might be the only sentence in this entire document that's beyond revision. It's been compressed and varnished over the years, and it contains in its succinctness the bedrock lesson that Datar once learned, from teachers on the other side of the world, about focusing hard on one good thing.

Outside, traffic thickens as the truck approaches a bottleneck. There is much honking and flashing of lights. Littman reads the mission statement aloud, then closes her laptop. Datar smiles and says, “Bam.” ▲

The Road from Boston to Rwanda

Gayatri Datar's long journey to Africa began with a natural disaster.

The pivotal turn in Gayatri Datar's migration from her hometown of Boston to rural Rwanda came in December 2004, when an earthquake triggered a tsunami that killed more than 200,000 people in coastal Asia. She was with her older sister in India at the time, visiting family during the winter break of her sophomore year at Harvard University.

She'd been to India often as a child. Her parents were born there and moved to California in the 1970s. Her father, Srikant M. Datar, received his PhD from Stanford GSB in 1985 and would go on to become one of the school's professors. (He's now on the faculty at Harvard Business School.) What she remembers about those trips to her parents' homeland were all the poor people everywhere

and her mother's constant reminders that she was privileged, and that with privilege comes responsibility.

In the aftermath of the tsunami, she headed for India's decimated east coast. "It devastated those communities, which were already so poor to begin with," she recalls. "Boats gone, nets gone, houses completely gone. I realized that the home is a cherished place for every family."

She took a semester-long break to volunteer with a nonprofit organization to help rebuild the region's homes. Her return to Harvard triggered a brief fit of self-righteous culture shock: "I was horrible to my friends. I just totally judged their choices and their careers," Datar says. "I was angry at everything. It all seemed so elitist."

Before graduating, she took another year off to work with nonprofit groups on three different continents: micro-financers in Nicaragua, anti-corruption activists in Albania, and HIV health workers in Namibia.

After Datar graduated from Harvard in 2009, she worked for seven months as a consultant with the World Bank and then spent the next two years at Dalberg Global Development Advisors, a management consulting firm focused on international development. There, she came to believe that private-sector approaches could have lasting positive impact in the developing world — especially when profiteering is stripped from the equation.

Datar was also influenced by a 2007 TED talk by

Swedish statistician Hans Rosling, in which he provides a half-century of data showing that most of the world's poorest countries are on a steady path toward smaller families and longer, healthier lives. The idea of permanently lifting billions of people out of poverty is not quixotic, she realized. It's just going to take a lot of work.

While at Dalberg, she started applying to MBA programs with a single goal in mind: to learn the business skills that would enable her not only to help the poorest of the poor but to do so on a mass scale. She was accepted into several programs, but it was the *Design for Extreme Affordability* course that swayed her: "I went to Stanford to take that class."

—STEVE HAWK



FOLLOW-UP CALL For Datar, the best part of her job is visiting customers.

EXPANSION

“Why Is She Telling Us to Eat Grass?”

The challenge of running a health food company in a country where being overweight is a sign of success.

BY MARTIN J. SMITH

When **Tara Gitau's** mother, Winnie, lost more than 40 pounds by eating right and started producing healthy food products in her Nairobi garage in 2003, the prevailing sentiment in Kenyan culture was that overweight people were wealthy and healthy, and slim people were poor and sickly.

You can imagine the marketing challenge.

“The assumption was that a well-off family eats a lot of meats and carbs, and vegetables were just to decorate the plates,” says Gitau, now managing director of Winnie’s Pure Health Products. “The jerk-knee reaction was, ‘Has Winnie gone broke? Why is she telling us to eat grass?’ It was counterintuitive.”

Winnie’s now sells 35 products, including flours, herbal teas, seasonings, and even chicken feed, and encourages a holistic approach to healthy living. Promoting itself as Kenya’s leading provider of healthy food, Winnie’s now has 120 employees. A picture of Tara’s own 2-year-old daughter, Sierra, adorns Nairobi’s buses as the centerpiece of the company’s baby food marketing campaign.

In 2008, Winnie handed control of the company to Tara, who has a business degree from Baylor University but knew she’d need help. In 2016, she was

accepted to join the Stanford Institute for Innovation in Developing Economies (aka Stanford Seed) program’s first cohort in East Africa and spent 12 months learning from CEOs and other mentors how to innovate and grow her business. We spoke with her about her company and the role her Stanford education is playing as she and her younger sister Elsie carry forward their mother’s enterprise.

You signed on as Winnie’s executive director after graduating from Baylor in 2008. Was that your mother’s transition plan all along? She started the business to create health awareness in Kenya. She’d gone through wellness training and lost all that weight, so she began talking to people about whole grains and healthy eating. But people didn’t know how to get the things she was talking about, so she started to produce them. Fast-forward six years. She felt like she’d taken the business as far as she could, and she was tired. She said we have two options: I could take over, or she could shut down the business and put 50 people out of work. Maybe it was just a ploy to get me to take it over.

So, at 23, you stepped into the lead role? My mother came in a few hours

a week and mentored, but she exited quickly. Fast-forward another four years, to 2012, and my sister Elsie joined. She’s now operations director.

And how’s it going? At the point I took over, our products were available in about 300 to 400 supermarkets. Today we’re in more than 1,000.

What were the early challenges you faced when you took over? The first was my assimilation into the business. When I took over, it had a set culture built around its founder, my mom. She was focused on creating awareness, but our systems were not strong enough to produce consistent products. So I focused then on policies and processes. But I also wanted it to grow. We had fantastic products, and the demand was more than we could meet. My sister and I wanted more infrastructure to support the growth and felt we could impact the nation at large. But we needed more skills than I had, so I invested in my personal development at Stanford.

Were you seeking specific skills when you enrolled in Stanford Seed? We’re a family business, and what was clear to me is that we needed a structured strategic plan. Seed looked like the perfect thing for me at that stage of life: a program to help someone with an already established business create an explosion of growth. When I started at Seed in May 2016, we had 96 employees. As of May 2017, we’re at 120.

The current challenges? In the beginning, my mother outsourced the milling process for our flours. But we want to have a bigger social impact, so we’re investing in machinery to increase capacity. We’ve also always had lean management, where my sister and myself made 95 percent of all major decisions. But if we want to grow, we need to bring in people who are smarter and more talented than us to buff up our weaknesses. Plus, right now we’re mostly in urban and semi-urban areas. We want to add rural areas to our distribution model.

So how do you sell healthy food in a culture where people think it’s good to be overweight? We’ve always done a lot of free biometric testing where we look at someone’s fats, bone density, caloric intake, water content, and body mass index. We do a lot of talks on local



TARA GITAU
“We focus on three things: family, purity of the product, and trust.”

radio stations, usually with people who are familiar in those towns, in the local languages. They hear about the importance of eating healthy in their tribal language, from someone they know and trust.

Sounds like your mom understood marketing. She was exceptionally strong at it. She used to do a lot of free health conventions, where she'd get 200 to 300 people together, mostly women, and educate them about healthy eating. She'd give them a free lunch and have a cooking demonstration. She also did a lot of church and school talks and was very relatable in terms of getting the products accepted.

Are there specific competitive strategies the company employs to set itself apart from multinational competitors? Definitely. First, our products are locally grown. For example, we grow 100% of our teas and can trace everything back to the grower. And we're a family business, so people feel they can connect to the brand and to Winnie, even if she's no longer involved. In the Kenyan home, it's the mother who makes most of the food decisions. So we focus on three things: family, purity of the product, and trust.

Any specific book or books that influenced you on this entrepreneurial journey? At Stanford we read *The Goal:*

A Process of Ongoing Improvement by Eliyahu M. Goldratt and Jeff Cox, about identifying bottlenecks, increasing throughputs, and reducing operation expenses in a factory. I also liked *Who Moved My Cheese?: An Amazing Way to Deal with Change in Your Work and in Your Life* by Spencer Johnson and Kenneth Blanchard. It's a powerful book that discusses dealing with change in this evolving business world — a tool that every successful entrepreneur should master. ▲

Tara Gitau completed the Stanford Seed (Stanford Institute for Innovation in Developing Economies) program in 2016.

EXCHANGE

SOME FINAL THOUGHTS ON TRANSFORMATION EDITED BY JENNY LUNA

“Understanding the
forces

that make us feel more or less conflicted helps
illuminate the paths to feeling better.”

— **Zakary Tormala**, professor of
marketing, for *Insights*
<http://stanford.io/2vGWEpB>

“In the future,
it won't be so odd for people who are
raising children to have

part-time jobs,

both of them. I'm very optimistic
that change will come.”

— **Myra Strober**, professor of economics,
emerita, for the Stanford GSB
YouTube channel
<http://stanford.io/balance>

“If you take good care of
your customers, pay your people well,
and invest in your own business,
the shareholder does

better.

We need to get back to that.”

— **Peter Georgescu**, MBA '63,
chairman emeritus
of Young & Rubicam,
for View From the Top speaker series
<http://stanford.io/2wBV8Wd>

“Being

authentic, honest, and vulnerable

is a much richer way to lead.”

— **Jazmín Gustale Gill**, MSx 2017 fellow, on Facebook
#GSBinthemoment

Read more reflections from the Class of 2017:
<http://stanford.io/2xTDwHq>

“Disruption

is not just about technology changing;
it is about changing the logic of a business.”

— **William P. Barnett**, the Thomas M. Siebel
Professor of Business Leadership,
Strategy, and Organizations, for *Insights*
<http://stanford.io/2n4e9wQ>

“One of the most efficient
ways to really
disrupt

is through scale effect.”
— **Isabelle Kocher**, CEO of French
gas and power group Engie,
speaking at a Stanford GSB Sustainable
Energy Initiative event
<http://stanford.io/2eJ7dpf>

“What

motivates

people changes, so the structure of the
goal should change accordingly.”

— **Szu-chi Huang**, assistant professor
of marketing, for *Insights*
<http://stanford.io/2qsEwXk>



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The Takeaway

THE ESSENTIALS

FIVE LESSONS FROM OUR STORIES ON TRANSFORMATION

EDITED BY JENNY LUNA

You're Not Good at Spotting Diversity

We generalize individual dimensions of diversity in ways we might not even know we're doing. Managers need to be more intentional: Is my team diverse? On what dimension?

— Margaret A. Neale



Working from Home Works

Giving employees the option to telecommute can lead to tangible improvements in performance.

— Nicholas Bloom



Use Marketing Tactics to Help Patients

Combining “customer” preferences with data on treatment effectiveness results in more effective doctor-patient consultations.

— V. “Seenu” Srinivasan

Forget “Eat to Kill” — Train Top Producers to Lead

At some point, even fast-growing companies need more than major moneymakers.

— Kathryn Shaw



The Internet of Things Has a Thing: Risk

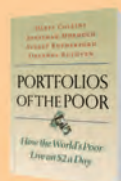
If people think online data security is difficult, it's nothing compared with the potential vulnerabilities that come from millions, or even billions, of connected devices.

— Hau Lee



Gayatri Datar

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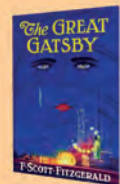
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