

A LETTER FROM DEAN GARTH SALONER

Building Community Through Common Values and Experiences

This past June, 480 students from our MBA, MSx, and PhD programs participated in the GSB's diploma ceremony marking a significant milestone in their lives. These individuals will pursue a range of career paths in destinations far and near, yet they will forever be bound to each other by the experiences they shared at the GSB. As graduates, they also begin a new life as part of a tightly woven network of 28,000 GSB alumni who are the foundation of our school.

As I stood before the Class of 2014, preparing to introduce Phil Knight, this year's keynote speaker, I reflected that these future leaders, like those from every class before them, represent much more than the most recent group of students to join our alumni network. They represent the values, responsibilities, and commitment that bind us together as a community.

Small by design and tightly linked together by these values, our community

counts students, faculty, lecturers, staff, colleagues in the broader university, and, of course, our alumni, as integral members. We share a culture characterized by respect, open communication, collaboration, and integrity. Internalizing these values and responsibilities begins the moment students arrive at the Knight Management Center, and it is the consistent community support and influence that allow students to practice these mores as they move through their respective academic programs.

We often talk about the personal and professional transformation that takes place while students are at the GSB. These life-changing experiences are influenced by the daily interaction they have with faculty, classmates, and alumni along the way. If we add the social activities, family interactions, and personal challenges students face during their time here, they often leave having forged lifetime bonds to the people and institution. I know I did!

These bonds remain a driving force for the creative ways all of you stay connected to the GSB and to each other. In addition to events like our upcoming fall reunion in October, there are unlimited activities beyond the school that keep us connected. Whether you socialize with former classmates, network with GSBers, advance social issues you care about, or are united by common geography, you demonstrate our community is vibrant, dynamic, and growing.

When I am traveling, I often hear about annual vacations that once included five or 10 classmates and are now opportunities to bring families together. Alumni from Hong Kong to London and from Mexico to Seattle socialize, travel, and do business

together. Book clubs have morphed into coffee meet-ups, while women in New York, San Francisco, and soon on the Peninsula, gather monthly in GSB Women's Circles to share their professional and personal lives with one another.

Closer to home, when we have our own alumni teach courses like *Managing Growing Enterprises*, mentor students at the Venture Studio, volunteer at the Executive Challenge, or become coaches for the Stanford Institute for Innovation in Developing Economies (SEED) in Ghana, their desire to give back is often driven by the personal mentorship and coaching they received as students. There may be no greater sense of community (or satisfaction) and shared values than when our alumni give their time to support our students.

When I think about the influence faculty have had on preparing students to live lives of impact and meaning, I am reminded of something Irv Grousbeck said last year. He explained: "Students ask us to show our passion and reveal who we really are. It's our vulnerability, not our wisdom, that makes us authentic as teachers and leaders." In those remarks, he captured meaning far beyond the academic disciplines our students had come here to learn about. The essence of what makes good leaders is the same thing that keeps the individuals in our community connected to one another and to the school: our willingness to show our vulnerability, to be authentic, and to be ourselves.

Our alumni network is at the core of the GSB — a small, close-knit group bound together by shared responsibilities and common values. I feel fortunate to have been a member of this community for more than 35 years: first as a student, then as a faculty member, and now as dean. As I begin my second five-year term as dean this summer, I am energized by the opportunity to continue to strengthen the ties that bind our community together. Δ

Garth Saloner is the Philip H. Knight Professor and Dean of Stanford Graduate School of Business. Follow him on Twitter @Saloner



Garth Saloner

CONTENTS

Networking "is crucial for

getting things accomplished and for making

change inside organizations."

—Jeffrey Pfeffer and Ross Walker

PAGE 20

LIVES

08

TRIBES

Amir Goldberg

A networked approach to understanding our cultural identity

13

Stanford

Business

INSIGHTS AND IDEAS

VOLUME 82, NUMBER 2

FROM STANFORD
GRADUATE SCHOOL OF

BUSINESS

SUMMER 2014

WORK

Adrienne Sanders

The secret to happy collaboration

16

BEHAVIOR

Nir Eyal

How an app becomes habit forming

20 CAREERS

Deborah Petersen

How to build and nurture your relationships

22

RELATIONSHIPS

Loren Mooney

Connecting, online and off

24

INNOVATION

Erika Brown Ekiel

Entrepreneurs discuss key relationships and other kinds of connections.

28

DIVERSITY

Theresa Johnston and Kathleen O'Toole

Why it helps to work with those different from you



Amir Goldberg PAGE 08

<u>ORGANIZATIONS</u>

32

MANAGEMENT

Lindred Greer

What to do when workplace conflicts spread

35

ROAD TRIPS

Michael Mazzeo, Paul Oyer, and Scott Schaefer

Three economists take on America's small businesses.

38

TURNAROUNDS

Bill Snyder

The head of retailer HSN on setting bold goals

40

SILICON VALLEY

Bill Snyder

Venture capitalist Marc Andreessen on tech and teams

42

SOCIAL NETWORKS

Louise Lee

The value of sharing

44

RISK MANAGEMENT

David F. Larcker, Sarah M. Larcker, and Brian Tayan

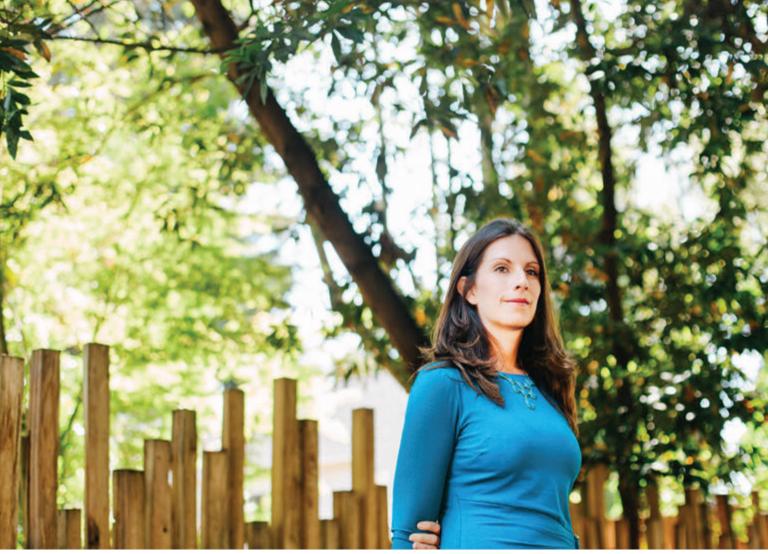
Executives should pay attention to social media.

46

CASE STUDY

Deborah Petersen

Overcoming the hurdles in start-up life



Lindred Greer PAGE 32

WORLD

50

GRIDLOCK

Theresa Johnston

A computer scientist tries to do something about the traffic.

53

CONNECTIONS

Michael Freedman

The relationship between technology and democracy

56

INCENTIVES

Loren Mooney

Can trade alliances prevent war?

58 RISK

Edmund L. Andrews

How companies inadvertently increase the risk of disruption

60

EMERGING MARKETS

Stefan Theil

A slowing China could be good for everyone.

01

A LETTER FROM THE DEAN

Garth Saloner

04

INTRODUCTION Networks

63

EXCHANGEThoughts on networks

64 INDEX

Tear-out
THE TAKEAWAY

65 CLASS NOTES: NEWS ABOUT YOUR CLASSMATES

66

WHO'S DOING WHAT, WHERE

69

FROM THE ARCHIVES
The computer revolution
hits Stanford.

126

VOICES FROM
THE TOWN SQUARE

A final word on our theme

Cover illustration by Leandro Castelao

Flipbook illustration by Nicholas Blechman



INTRODUCTION

Networks

When we first started working on this issue of the magazine, one of my first stops was to see Dean Garth Saloner. He is, after all, widely recognized for his research on network effects, the idea that the value of certain products and services increases with additional users. An example of this, which he and his coauthors describe in their *Strategic Management* textbook, is the simple telephone — not very useful if you're the only one using it, but significantly more so as others do. > His suggestions helped shape this issue of the magazine. In the pages that follow we present a series of pieces on network effects and the broader theme. In Lives, there are stories that explore the importance of professional networking and personal relationships. In Organizations, we look at social media and how companies use it for their advantage — or overlook its power at their peril. We examine how conflict can spread from one person to another and how the best managers can resolve issues before they become more dangerous to



CONNECTIONS Stanford alumna Laura Jacobson's Neuron No. 3 is inspired by human brain MRIs and is part of the collection at the university's Center for Cognitive and Neurobiological Imaging.

team cohesion. In World, we look at the role technology and the internet, trade, and supply chains have in promoting security and prosperity. ▶ Tucked away inside this and each subsequent issue of *Stanford Business*, we are also including a new feature, The Takeaway. It is a selection of key lessons from the magazine, and on the flip side, recommendations from Stanford experts for readers who want a deeper dive into some of the issues discussed here. In keeping with its name, the page is perforated, so you can tear it out to keep or post in your office — or you can share it with some of your own connections.

IN THE MAGAZINE

Deborah Petersen is a former staff writer for Northeast magazine in Connecticut, and was the features editor at the San Jose Mercury News before becoming a columnist and the social media editor for the Bay Area News Group. She is currently the editorial operations manager at Stanford Business. While at Austin's SXSW Interactive conference in March, she was in a Vine video with Kevin Bacon. Watch it here: vine.co/v/MqJYrBJrjYI

Natalie White is a member of the digital team at Stanford GSB. She manages and creates content for the school's flagship social media platforms, including Twitter @StanfordBiz. She previously worked at Sunset magazine. Earlier this year she traveled to SXSW Interactive in Austin, Texas, but did not attend the session in which Kevin Bacon was speaking.



Jill Kadlec, a founding partner of Ahmann Kadlec Associates, a Palo Alto design firm, is a graduate of Art Center College of Design in Pasadena, Calif., and holds a BFA in graphic design from the University of Arizona. Jill oversees the layout of the Class Notes section of Stanford Business. She met Kevin Bacon in Santa Monica, Calif., in the late '90s while doing graphic design work with one of Bacon's sisters.



Kevin Bacon did not contribute to this or any previous issue of *Stanford Business*. However, he visited Stanford in 2011 to discuss with Stanford GSB marketing professor Jennifer Aaker how social media can be leveraged for social good and to promote his SixDegrees.org, a "social networking with a social conscience" platform based on the popular "Six Degrees of Kevin Bacon" game.

Ayanna Quint, the photo editor at Stanford Business, is a partner at Stauss & Quint, a New York studio specializing in editorial, advertising, and book projects, photo production, and research. She is also the photo editor at Modern Farmer. She has worked with a variety of print publications, including GQ, Radar, W, Teen People, and Out, and on films, such as the documentaries About Face and The Out List for HBO. She recently spent a year working with design firm Pentagram on The Atlantic. She owns an enormous antique Chinese sideboard that was once owned

by Kevin Bacon.

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TRIBES

Cracking the Cultural Genome

Every decision we make is deeply rooted in our social identity. A scholar explains a networked approach to understanding our cultural traits.

BY AMIR GOLDBERG

For many people who have been to a modern art museum it would be a familiar feeling: Staring at an abstract painting that has been hailed as a masterpiece, you are trying as hard as you can to enjoy its brilliance. But inside you are mostly struggling to suppress thoughts about how much you long for this torture to end.

Ostentatious displays of enjoyment of fine art have been one of the bourgeoisie's most effective or humiliating rites of passage, depending on whether one is on the giving or receiving end of it. In fact, every form of artistic consumption is, in some sense, also a ceremony. Even alone, connected through an earphone to tiny electronics playing our favorite band's last album, we are still conducting an imaginary musical conversation with other people. The soundtrack we are listening to reminds us of meaningful moments. It excites and moves us, energizes us, or makes us ponderous.

This experience, while intimate and personal, does not happen in a social vacuum. Our musical preferences are, to some extent, a statement directed at others about who we are and where we come from.

Amir Goldberg is an assistant professor of organizational behavior at Stanford GSB. His research lies at the intersection of organization studies, cultural sociology, and network science.



Even when there is no audience, we are still rehearsing it.

We like believing that our decision to download a song to our smartphone is the result of conscious, perhaps even rational, individual choice. But above all, we are social animals. Every decision, even the most banal, is deeply rooted in our cultural identity. Musical taste is never merely about melody or lyrics. Studies find a consistent relationship between, on the one hand, ethnicity, education, and income, and, on the other, musical and other preferences. Our decisions tend to be similar to those who are like us socio-demographically. Struggles over the qualitative value of our preferences are therefore also struggles between different sociocultural identities over their position in the social hierarchy. Distinctions between sophisticated music and pop are also value-based distinctions between the different audiences that consume them.

Why is that the case? The simple explanation is that our preferences and beliefs are influenced by information we receive from our environments: our parents, schoolmates, and work colleagues. The more homogenous our immediate environment is, the crisper and more distinctive our worldview becomes. But reality is far more complicated. The environment does not affect our understanding of the world in such a direct and unidirectional way. What our parents or friends like to listen to does not always explain why we love a certain type of music.

CATEGORIZING CULTURAL IMPACT

So in what ways does culture affect our daily decisions? In recent years, sociologists have been trying to understand these collective processes by focusing on mechanisms that operate on the individual level. They rely on insights drawn from cognitive studies about how we receive and use information. Rather than relying on simplistic assumptions about how people who belong to a particular culture necessarily share the same values and normative positions, these scholars developed complex theories that rest on the assumption that people who operate in

We like believing that our decisions are the result of conscious, perhaps even rational, choice. But every decision is deeply rooted in cultural identity.

the same environment can interpret it in different ways.

To help understand what this means, imagine for a moment that you are walking down a sidewalk on a busy city street. Your brain is constantly busy processing copious amounts of information. But without putting too much thought into it, you manage to avoid bumping into a woman ahead of you pushing a stroller. Subconsciously, you are using complex structures to represent your knowledge about the world. You rely on categories to divide and sort this information you see. You classify the person walking in front of you as a "woman" and as a "mom." Some might also classify her as "old-fashioned," while others might say she is "stylish."

Culture affects how you and others employ this classificatory logic. It produces cognitive filters with which people attribute meaning to our experiences. Culture makes it possible for different people to interpret the same reality in systematically different ways.

That is a serious problem for social scientists because surveys and questionnaires are two of our most useful tools. If people understand terms like "rock" or "pop music" in different ways, then what is the use in asking someone if they are a rock fan or whether they like pop music? The meaning that we assign to any given thing does not stem from some sort of inherent quality it happens to have, from what it "really is," but from how our cognitive representation of this thing relates to our cognitive representations of other things.

We may think, for example, of a musician like Kanye West as related to other quintessential hip-hop stars such as Jay Z. Together they form a category. But we may

as easily imagine West as a best-selling pop singer, and associate him with other pop stars such as Justin Timberlake or Beyoncé. The logic with which a person carves up the world into different groups of meaning is based on associative networks in which there are no clear boundaries between categories. Under such circumstances, in and of themselves these categories are practically meaningless. People employing different logics might therefore use terms like "hip hop" or "pop" but mean entirely different things. In order to understand the meaning hiding beneath their responses, we need to trace the logic that structures how they divide reality into categories.

STUDYING THE CULTURAL OMNIVORE

To understand what associations people make between different categories — what they mean when they say they don't like pop music — we need a new research method. Instead of analyzing each response in a survey separately, we need to investigate how responses relate to one another: how the same person associates between different concepts and what categories they use to make sense of the world around them.

This is precisely the challenge that, together with my PhD adviser, Paul DiMaggio, I have been trying to address. Rather than using traditional statistical methods to analyze survey respondents' answers to individual questions, we decided to think of them as making up a social network. We determined the relationships between our respondents by the similarity in the patterns of their responses.

What we ended up with was a complex network comprised of thousands of respondents, many of which are each other's "friends." In this context, friendship does not necessarily mean these two people know one another; rather, it indicates that their responses are informed by the same categorical logic.

How can we find different groups of people in this network who, presumably, interpret the world through different cultural filters? Thankfully, in recent years mathematicians and physicists have become increasingly interested in analyzing social networks, and particularly developing methods for partitioning a network into distinctive cliques. We used these algorithms to analyze our social network and divide our respondents into different groups, each inspired by a different cultural logic. I decided to use this approach for exploring how Americans consume music.

I was expecting to find support for two competing theories about the social underpinnings of cultural tastes. The first was formulated by the influential French sociologist Pierre Bourdieu. In a groundbreaking study he conducted in 1960s France, he found a strong correlation between social status and artistic taste: Upper-class French tended to consume classical music and opera, whereas those from working-class backgrounds seemed to exhibit more lowbrow preferences. Bourdieu argued that these taste patterns in fact reinforce social inequalities. Liking highbrow music also functions as a stamp of quality that reasserts the privileges



The percentage of U.S. voters who find themselves pulled in opposite directions by mainstream U.S. political discourse.

enjoyed by those who were born on the right side of the tracks, and it marginalizes those who were less fortunate.

The counterculture of the 1960s and 1970s rejected the idea that music conventionally thought of as highbrow is, in fact, inherently better. Consequently, argued American sociologist Richard Peterson, the artistic hierarchy Bourdieu describes lost its legitimacy in the post-1960s Western world. He offered an alternative that he labeled the "cultural omnivore theory." In a world shaped by the politically and socially tumultuous events in France in 1968, the American civil rights movement, and the second-wave feminist revolution, high-status individuals became indiscriminate "all-eaters" who consume a wide variety of artistic genres. These people took the previous hierarchy and turned it on its head: They began distinguishing themselves from their less sophisticated counterparts through their wide range of preferences. While the ethos inspiring them appears to be more egalitarian, it, too, serves to create symbolic boundaries between people of different social backgrounds.

Has multicultural omnivorousness indeed obliterated good old-fashioned elitism? Traditional research methods are ill designed to answer this question. A Brooklyn, N.Y., hipster, appreciating classical influences and ironically enjoying Lady Gaga's commercial music, and a young fan willing to stand in line for hours just to get an autograph from Gaga would both say they "like pop music." The method we developed is precisely designed to overcome this limitation, and in my analysis of American opinions on musical genres, it yielded pretty surprising results.

COEXISTING REALITIES

It turns out that Americans have indeed become cultural omnivores, but not at the expense of elitism. In fact, the American public can be divided into coexisting groups, each understanding the social significance of music in different ways.

The first group clings to the outmoded logic Bourdieu describes: There are high and lowbrow genres, and those correspond to a class-based hierarchy — classical music and opera enthusiasts versus those who listen to pop, rap, or country. The second group confirms the omnivore theory, distinguishing between people whose scope of musical likes is particularly wide and those whose scope is particularly narrow. A third and final group distinguishes between traditional Americana such as country and folk music and more contemporary musical genres ranging from rap and reggae to rock and pop: Kanye West's bling culture versus Taylor Swift's all-American traditionalism.

Even more interesting is the finding that these different categorical distinctions between types of music also reflect different salient cleavages in American society. The old-fashioned hierarchical logic marks social status-based differences. The omnivorous logic corresponds mostly to differences in income; the rich tend to be more diverse in their musical preferences. And the logic that distinguishes between traditional and contemporary music also pits white, small-town, religious Southerners against urban seculars.

Interestingly, the same musical genre can be associated with different social identities in each of the groups. Whereas educated suburban women, who may understand music through an old-fashioned prism, see pop as a symbol of low status, religious Southern men might associate pop with multicultural urban secularism they find threatening. What seems like a very personal preference is also a statement about how we fit into and understand our location in the social jigsaw puzzle.



Music is just one example of how our preferences and perceptions of reality are informed by who we are socially. Such social constructions structure our worldviews in other domains, even those we don't normally think of as particularly "cultural," such as politics. It turns out that, as is the case with music, people interpret political reality through different socially influenced filters and classifications.

We tend to think of the political discourse in simplistic terms of right versus left. But such labels incorporate ideological positions on a wide range of issues, from economic policy to gay marriage. Is it really reasonable to assume that whoever fervently defends traditional marriage is necessarily also a free-market enthusiast? In a study I conducted with Delia Baldassarri, a political sociologist at New York University, we used the same method to discover that Americans' political positions are defined by two competing conceptualizations of what "right" and "left" actually stand for.

One of these groups accepts the conventional division between conservative and progressive political viewpoints: People in this group who expressed conservative opinions against abortion were also economically conservative in their support for fiscal austerity. But a second group rejected the connection between moral and economic conservatism. These people tended to be progressive on issues such as evolution and gay rights but adopted conservative positions on government regulation of market activity or taxation.

Members of this group, who comprise roughly 40% of the population, find themselves pulled in opposite directions by the mainstream political discourse in the United States. They include, for example, a wealthy New York lawyer, whose education and life experience in cosmopolitan Manhattan induce him to be open on matters such as sexual orientation and women's rights, but who vehemently resists any attempt to use his tax dollars to cover health insurance for those who serve him food in the office cafeteria. It also

includes an African American housewife from Louisiana who is still recovering from the damages and debts left behind by Hurricane Katrina that no government agency helped her cover, but who goes every Sunday to church and is suspicious of anyone who challenges traditional gender norms.

Our findings shed new light on vexing puzzles about political behavior in the U.S. A variety of studies demonstrates that partisan positions have become increasingly polarized since the 1970s. But this polarization is only weakly manifest in the opinions of the general public. Two opposing trends can explain this seeming contradiction. Whereas those who understand politics through traditional categories of liberalism and conservatism became more polarized in their opinions, those who employ an alternative logic increasingly rejected this polarization. Together, the two trends offset each other.

Our findings also help answer the question whether values have trumped economics in determining U.S. presidential elections, as some observers have argued. We found that, to President Obama's chagrin, those who subscribe to an alternative logic — irrespective of their specific positions on religion, the economy, or abortion — ultimately tend to identify more strongly with the Republican Party. In other words, it's not so much whether economics trump morals, but rather that when one's positions on these two dimensions are incongruent with one another, the conservative leaning tends to win.

It turns out that, as is the case with music, people interpret political reality through different socially influenced filters and classifications.

THE CULTURE COMPETITION

Indeed, culture provides us with categorical distinctions we use to impose order on the messy reality we live in. In politics, in art, and in finance, cultural categories serve as cognitive shortcuts. Like the stock market, where the current value of a financial asset is a mere weak signal about its future value, so it is in music, where uncertainty hovers above the symbolic meaning of a genre that might be in its heyday but will soon become a symbol of passé anachronism.

The various ways in which culture supplies us with cognitive filters, with which we make sense of the world, embody social power struggles. Yesterday's avantgarde becomes today's mainstream, only to be rejected tomorrow as yesteryear's conservatism. Cultural categories provide the cognitive materials with which these struggles unfold.

In the past, sociologists tended to think of culture as a unified whole, as an invisible glue holding together a uniform social order. Today we understand that reality is far more complex, that culture is in fact a collection of orders that compete with one another. Most of us belong to all kinds of tribes: pop-fan, lawyer, grandmother, liberal. And these identities do not neatly overlap. Different cultural logics emerge from these cleavages.

Thirty years ago, the English biologist Richard Dawkins suggested thinking about culture in terms of genetic evolution. But culture lives and thrives in our brains, a structure far more complex than chromosomes. New mathematical methods and computational abilities unimaginable three decades ago move us, so far only a few preliminary footsteps, toward cracking the cultural genome. Δ



Hewlett-Packard founders William Hewlett, left, and David Packard

WORK

What Is the Secret to a Happy Collaboration?

A Stanford sociologist examines why workers team up with the same people again and again.

BY ADRIENNE SANDERS

At the core of most successful organizations are people who work well together. Happy collaborators are typically more productive and are less apt to look elsewhere for employment. But what are the circumstances that lead people to want to team up over and over again? Research by Stanford's Daniel McFarland suggests that the reasons people continue to collaborate with others in their professional networks are quite different from the motives that led them to begin those relationships in the first place.

Relationships, including professional partnerships, often begin because two (or more) individuals who work in the same place, see one another often, and have a lot in common. It's easy to relate to someone the same age who shares your background and values. Beyond that, some people choose to associate with others in hopes of boosting their status or paycheck.

But they often stay in these relationships due to "tie inertia," which is essentially a tendency to stay with what is known out of a sense of familiarity and commitment. This sense of obligation is strengthened if the

Daniel McFarland teaches organizational behavior and is an associate professor at Stanford Graduate School of Education and by courtesy at Stanford GSB. Linus Dahlander is an associate professor at Germany's European School of Management and Technology.





people have invested a great deal of time and other resources in the partnership. It stays strong when partners have multiple types of association — they co-advise students and co-publish research, for example — because they know each other more deeply, and also because they have more resources to share. "To form and sustain these ties, pairs of colleagues must interact frequently to share knowledge," he writes. In short, McFarland says that people initiate relationships due to "opportunity and preference selection" but stay in them out of a sense of "obligation and complementary experience."

Colleagues remain in these unions because of positive experiences they've

had together, regardless of who else may be available. Rather than risking the time and other commitments it takes to seek out new groups, co-workers tend to stay in useful teams they've already formed. This continuity is more likely, however, only when people have complementary — but not identical — expertise.

"At the beginning of a relationship, being the same is terrific, but that only lasts so long," says McFarland. "If you are too similar, there's too much overlap" in capability, knowledge, and contacts, which can hamper creativity and breed turf issues. It also can render collaboration unnecessary, since partners can do essentially the same things.

That explains why, in the long run, teammates who realize they are too similar often end their relationship unless they can find or develop new points of complementarity. "The surviving ties are those with a degree of similarity so we can communicate but a degree of difference so we can plumb the relationship for additional value and skills one of us may not yet possess," McFarland says.

When a team is working well, this continuity is a good thing; however, the inertia can have consequences. "People tend to stick to the ties they have formed, for better or worse," he writes. "By implication this means that some individuals are locked out of fruitful collaborations, while others

become less open to collaborations with attractive potential partners."

When McFarland started this research with coauthor and former postdoctoral fellow Linus Dahlander, he recognized that while research about how people initiate ties filled scholarly journals, there were scant findings on which ties they chose to maintain and why.

This struck his interest, in part, because McFarland found himself stretched for time, with competing research projects and many potential collaborators. He had to deliberately narrow down his partnerships. "As a midcareer faculty member, you get tired of dating, so to speak," he says. "At some point, you have to say no to people. You can't carry 20 collaborations forever. People fatigue."

McFarland and Dahlander focused on their most immediate network: Stanford University professors. The researchers tracked newly hired, untenured faculty members over a 15-year period. They recorded which of their peers they repeatedly chose to co-publish research projects, co-write grant proposals, and co-advise doctoral students.

The researchers' findings about the importance of shared positive experiences and complementarity can help businesses maximize the productivity of their workforce and minimize turnover, especially since more established teams tend to be more productive. Churn can be expensive for organizations. A 2012 study by the Center for American Progress think tank found that for most pay levels and industries businesses spend about one-fifth of an employee's annual salary to replace that worker.

To foster staff longevity, organizations can arrange for group members to switch roles with one another. Allowing colleagues to explore new sides of one another can keep partnerships fresh "like a healthy marriage," McFarland says, noting that rotating leadership roles are frequently prescribed in classrooms so as to help students develop new skills.

Google, for example, encourages employees to leave their positions and take on "bungee" assignments for three months to one year in different areas of the To foster staff longevity, organizations can arrange for group members to switch roles with one another.

company. Employees can acquire new skills and find out whether they like a new job (or are good at it) before committing to it. Most staffers return to their original jobs with new knowledge and experiences to share with their workmates, ideally fostering new energy into their collaborations, creativity within their original groups, and job satisfaction for themselves.

In McFarland's study, the researchers recommend "adopting activities that look less like mixers and more like teambuilding exercises" for companies that want to build long-lasting teams. Cocktail parties encourage people to meet one another and expand their networks, but it takes retreats and team-building exercises to encourage trust, communication, and interdependence among group members. It also requires a willingness to rotate your expertise and roles in relationships, so that you can learn new sides to one another and engage in fresh experiences.

And what role does personality play in these professional matchups? McFarland's study tracked instrumental relationships centering on specific tasks, such as coauthoring a research paper. It did not capture what he calls "the warm side of things," or personality and style. In the case of his collaboration with Dahlander, the study couldn't illustrate "that Linus is a kind and giving guy, or that I was willing to traipse across campus many times to engage in research conversations with colleagues that synchronize well and move at a fun clip." A



Google founders Sergey Brin, left, and Larry Page



BEHAVIOR

Hooked on God

How the world's most popular Bible app is engineered to be habit-forming.

BY NIR EYAL

It's not often an app has the power to help keep someone out of a strip club. But according to Bobby Gruenewald, CEO of YouVersion, that's exactly what his technology did: A user of his Bible verse app walked into a business of ill repute when suddenly, seemingly out of the heavens, he received a notification on his phone with a custom-selected verse from the Bible. "God's trying to tell me something," the user thought, according to Gruenewald.

By July 2013, that app, simply called Bible, had been downloaded to more than 100 million devices, a monumental milestone that places it in a rare stratum of apps, including Instagram, which reached it in February 2013.

Gruenewald says that today his app is on more than 138 million devices. A new install occurs every 1.3 seconds, making it by far the most popular of the 5,000-plus Bible apps now available in Apple's App Store. What's more, YouVersion's Bible boasts more than 690,000 reviews, and an average of 475,200 people open the app every hour; sometimes the open rate is much higher. Every Sunday, Gruenewald says, preachers around the world tell congregants to "take out your Bibles or YouVersion app,' and we see a huge spike."

How did YouVersion come to dominate the digital "Word of God"? It turns out there is much more behind the app's success than religious zeal. It's a case study in how designers use technology to create habit-forming products by marrying the principles of consumer psychology with the latest in big data analytics. Indeed, it is just one of many products and services we use habitually that alter our everyday behavior — just as their designers intended.

Nir Eyal writes and teaches about the intersection of psychology, technology, and business. He is the author of Hooked: How to Build Habit-Forming Products, founder of two technology companies, and a lecturer at Stanford's Hasso Plattner Institute of Design and at Stanford GSB, from which he received his MBA in 2008. He blogs at NirAndFar.com.



How does it work? After years of distilled research and real-world experience, I call it the Hook Model: a four-phase process companies use to form habits. Through consecutive hook cycles — of trigger, action, variable reward, and investment — successful products reach their ultimate goal of unprompted user engagement, bringing users back repeatedly without depending on costly advertising or aggressive messaging. To illustrate this, it's helpful to look at the early days of Gruenewald's Bible app.

IN THE BEGINNING

Gruenewald is a quick-thinking, fasttalking man who pulls up statistics in real time and stops himself midsentence whenever relevant data flashes on his screen. "Unlike other companies, when we started, we were not building a Bible reader for seminary students. YouVersion was designed to be used by everyone, every day," Gruenewald says, attributing much of the app's success to a relentless focus on creating habitual Bible readers. "We originally started as a desktop website, but that really didn't engage people in the Bible. It wasn't until we tried a mobile version that we noticed a difference in people, including ourselves, turning to the Bible more because it was on a device they always had with them."

This is not surprising. While there are many theories about what drives human behaviors, B.J. Fogg, director of the Persuasive Technology Lab at Stanford, has developed a model that serves as a relatively simple way to understand what drives our actions. The Fogg Behavior Model posits that there are three ingredients required to initiate any behavior: The user must have (1) sufficient motivation, (2) the ability to complete the desired action, and (3) a trigger to activate the behavior. If any element is missing or inadequate, the user will not cross the "Action Line" and the behavior will not occur.

The omnipresence of the Bible app makes it far more accessible than its website predecessor, giving users the ability to open the mobile app when triggered by the pastor's instructions or when feeling inspired at other moments throughout their day. Its users take it everywhere, reading the scripture in even the most unsanctified places: The company revealed that 18% of readers report using the Bible app in the bathroom.

HOW TO FORM A GOD HABIT

To take advantage of the newly established App Store, in 2008, Gruenewald quickly converted his website into a mobile app optimized for reading. The app caught the rising tide, but soon a wave of competition followed. If his app were to reign supreme, Gruenewald needed to hook users quickly.

That's when Gruenewald implemented a plan — actually, many plans. A signature of the Bible app is its selection of over 400 reading plans — a devotional iTunes of sorts, catering to an audience with diverse tastes, troubles, and tongues.

Given my personal interest and research into habit-forming technology, I decided to start a Bible reading plan of my own. A plan titled "Addictions" seemed appropriate.

For those who have yet to form a routine around Biblical study, reading plans provide structure and guidance. "Certain sections of the Bible can be difficult for people to get through," Gruenewald says. "By offering reading plans with different small sections of the Bible each day, it helps keep [readers] from giving up." By parsing readings into digestible portions, the app focuses the reader's brain on the small task at hand while avoiding the intimidation of reading the entire book.

Six years of testing and tinkering have helped Gruenewald's team discover what works best. To get users to open the app every day, the app sends effective cues — like the notification sent to the sinner in the strip club. But Gruenewald admits he stumbled upon the power of good triggers. "At first we were very worried about sending people notifications. We didn't want to bother them too much."

To test how much contact users were willing to bear, Gruenewald decided to run an experiment: At Christmas, the app sent users a simple message, "Merry Christmas" in various languages. The team braced itself to hear from disgruntled users annoyed by the message. "We were afraid people would

uninstall the app," Gruenewald says. "But just the opposite happened. People took pictures of the notification on their phones and started sharing them on Instagram, Twitter, and Facebook. They felt God was reaching out to them." Today, Gruenewald says, triggers play an important role in every reading plan.

On my own plan, I receive a daily notification — an external trigger — on my phone that simply says, "Don't forget to read your Addictions reading plan." (Ironically, the addiction I'm trying to cure is my dependency on digital gadgetry, but oh well, I'll fall off the wagon just this once.)

In case I somehow avoid the first message, a red badge over a tiny Holy Bible icon on my phone cues me again. If I forget to start the first day of a plan, I'll receive a message suggesting that perhaps I should try a different, less-challenging plan. I also have the option of receiving verse through email. And if I slip up and miss a few days, another email reminds me to get back on track.

The Bible app also comes with a virtual congregation of sorts. Members tend to send encouraging words to one another, delivering even more triggers to open the app. These relationship-based external triggers are everywhere in the Bible app and are one of the keys to keeping users engaged.

Gruenewald's team sifts through behavioral data collected from millions of readers to better understand what users want from the app and what drives user retention. High on the list of learnings is the importance of ease of use, which came up throughout our conversation.

1.4
MILLION

The average number of pieces of content shared from the Bible app every week.

In line with the work of psychologists ranging from early Gestalt psychologist Kurt Lewin to modern-day researchers, the app uses the principle that by making an intended action easier to do, people will do it more often. For example, users who prefer listening over reading can simply tap a small icon to play an audio track read with the dramatic bravado of Charlton Heston himself.

Gruenewald says data also revealed that changing the order of the Bible by placing the more interesting sections upfront and saving the boring bits for later increased completion rates. Furthermore, daily reading plans are kept to a simple inspirational thought and a few short verses for newcomers. The idea is to get neophytes to devote a few minutes each day until the ritual becomes a facet of their everyday lives.

REWARDS FROM THE LORD

Gruenewald says the connection people have with scripture taps into deep emotions that "we need to use responsibly." Readers who form a habit of using the app turn to it not only when they see a notification on their phone but also whenever they feel low and need a way to lift their spirits. "We believe that the Bible is a way God speaks to us," Gruenewald says. "When people see a verse, they see wisdom or truth they can apply to their lives or a situation they're going through." Skeptics might call this subjective validation, but to the faithful, it amounts to personal communication with God.

Upon opening the Bible app, I find a specially selected verse waiting for me on the topic of "Addictions." With just two taps I'm reading 1 Thessalonians 5:11—encouragement for the "children of the day," imploring them, "let us be sober." It's easy to see how these comforting words could serve as a sort of prize wrapped inside the app, helping readers feel better.

The Bible app also offers an element of suspense with its variability. "One woman would stay up until just past midnight to

The app uses the principle that by making an intended action easier to do, people will do it more often.

know what verse she had received for her next day," Gruenewald says. The unknown — in this case, which verse will be chosen for the reader and how it relates to his or her personal struggle — becomes a variable reward and an important driver of the reading habit.

Another reward, I discover, is a satisfying "Day Complete!" screen that appears after I finish my verse. A check mark appears near the scripture I have read and another one is placed on my reading plan calendar. Skipping a day would mean breaking the chain of checked days, employing what psychologists call the "endowed progress effect" — a tactic also used by video game designers to encourage progression.

As habit-forming as the Bible app's reading plans may be, they are not for everyone. In fact, Gruenewald reports most users download the app but never register for an account with YouVersion. Millions choose to not follow any plan, opting instead to use the app as a substitute for their paper Bibles. But to Gruenewald, using the app in this way suits him fine. Unregistered readers are still helping to grow the app via social media sharing.

To help the app spread, a new verse greets the reader on the first page. Below the verse, a large blue button reads, "Share Verse of the Day." One click and the daily scripture blasted to Facebook or Twitter. It works: Social media is abuzz with more than 200,000 pieces of content shared from the app every 24 hours.

The drivers behind sharing recently read scripture have not been widely studied. However, one reason may be the reward of portraying oneself in a positive

light, also known as the "humblebrag." A 2012 Harvard meta-analysis entitled "Disclosing information about the self is intrinsically rewarding" found that disclosure "engages neural and cognitive mechanisms associated with reward," and that, in one study, "individuals were willing to forgo money to disclose about the self."

DEVOTION RUNS DEEP

Nothing signals the reign of Gruenewald's Bible app quite like the way some preachers have come to depend upon it. YouVersion lets religious leaders input their sermons into the app so their congregants can follow along in real-time — book, verse, and passage — all without flipping a page. Once the head of the church is hooked, the congregation is sure to follow.

Using the Bible app at church not only has the benefit of driving growth, it also builds commitment. Every time users highlight a verse, add a comment, create a bookmark, or share from the app, they invest in it. Noted behavioral economist Dan Ariely calls this the "IKEA effect." His research shows that investing even a small amount of labor in something increases that item's perceived worth.

It is reasonable to think that the more readers put into the Bible app in the form of small investments, the more it becomes a repository of their history of worship. Like a dog-eared book, full of scribbled insights and wisdom, the app becomes a treasured asset that won't easily be discarded. Switching to a different digital Bible becomes less likely with each new revelation users type into (or extract from) the app, further securing YouVersion's dominion.

Gruenewald claims he is not in competition with anyone, but he does plan to continue sifting through the terabytes of data in search of new ways to increase the reach of his app and make his version of the Bible even more habit-forming, to which his ever-growing base of tens of millions of regular users say, "Amen." A

Excerpted from Hooked: How to Build Habit-Forming Products by Nir Eyal with Ryan Hoover. © 2014. All rights reserved.



CAREERS

How to Connect to the People Who Matter

In the first of two articles on professional networking, a scholar and a businessman explain how to build and nurture your relationships.

BY DEBORAH PETERSEN

Most people understand that to be successful, they need to network. But actually going out and doing it is another matter. People "are daunted by the task and believe it requires inauthentic, uncomfortable behavior and is an activity that is inconsistent with focusing on job performance," says Jeffrey Pfeffer, a Stanford GSB professor of organizational behavior, who covers the subject of networking as part of his *Paths to Power* elective course. Too often, he says, people view networking "as something that is not them" or that they could not see themselves doing."

But in a new e-book coauthored with Ross Walker, a 2005 graduate of Stanford's MBA program, they argue that networking ability is not just important for career success — "it is also crucial for getting things accomplished and making change inside organizations in both the public and private sector."

The authors draw on Walker's experience, which was shaped by an "ability to build relationships and an efficient and effective social network," they write. Walker became one of the youngest members to serve on the Stanford Board of Trustees; found a career in his chosen field of real estate, where he has a successful real estate investment fund; has equity in Hollywood nightclubs; and has a small ownership stake in the Oakland Athletics Major League Baseball team.

While at Stanford, Walker had a reputation for being a big-tent person.

He planned events and themed parties that not only were entertaining but also brought people together. These events naturally led to networks that would last beyond his time at Stanford, but Walker's ability to make connections did not stop there, says Pfeffer, who was so impressed that he wrote a case study charting Walker's networking efforts.

They teamed up to write *People Are* the Name of the Game: How to Be More Successful in Your Career — and Life. Here are some tips from the book.

FACE TIME COUNTS.

Research by University of Chicago professor Ronald Burt shows that "being even one step removed from the person within the network almost completely reduces the benefits to you," the authors write. "Simply put, networking is not something that can, or should, be outsourced."

FIND A MUTUAL CONNECTION.

"People are the name of the game — you must understand how to read people quickly and find what you have in common," says Walker. "With so much public information out there, this is easier to do today." You are more likely to get a response from someone if you have already found a shared interest or acquaintance in advance of introducing yourself.

CREATE A ROBUST NETWORK.

Walker was initially interested in working in the hospitality business, and through his research learned that alumnus Chip Conley had founded the boutique hotel chain Joie de Vivre Hospitality while he was still in his mid-20s. When Walker finally reached out to Conley, the 1984 Stanford GSB graduate had already heard of him. "I got hit by three different people simultaneously saying 'you have to meet Ross Walker," Conley recalled, according to the case study. "All of a sudden, you have him on your radar in a big way."

BE SPECIFIC.

CEOs are busy people and therefore are unlikely to respond to vague requests or take on the burden of finding ways to help you. Help them to help you by making a specific request. For instance, when Walker met Conley, he submitted a brief one-page proposal to Conley in which he asked for an internship and offered to work for the summer without compensation. The reason: "Walker believed that you could not let high-profile executives think for you. ... [It is] better to give them something tangible to consider, because once you've left their presence, they are not going to spend more time thinking about you."

BE DIVERSE.

Clearly, it is important to link up to the influencers in your intended field. But do not underestimate the importance of "weak ties." It is important to create a diverse network — diverse people, diverse industries, and diverse locations — even though these connections may seem remote to your present career or contemplated future. Diversity can also help when seeking funding for a startup.

Jeffrey Pfeffer is the Thomas D. Dee II Professor of Organizational Behavior at Stanford GSB, where he has taught since 1979. He is the author or coauthor of more than a dozen books. Ross Walker earned his MBA from Stanford GSB in 2005. He founded, and is the general partner of, Hawkins Way Capital, a real estate private equity firm in Los Angeles.

DO WHAT YOU SAY YOU WILL.

"Do not overpromise and underdeliver, but instead, maintain credibility by doing the follow-up work to always meet your commitments," the authors write. "In financial parlance, it is easier to exceed expectations if those expectations are not completely over the top or in your face." By keeping your promises, your reputation spreads throughout your network. "The action of 'moving things from A to B' or following through as promised builds a surprisingly rare reputation that can be leveraged in a number of ways as it builds the confidence of others," write Pfeffer and Walker.

BE GENUINE.

The authors say that the more you pursue your passion, the more compelling your story will be when you share it with someone either by email or in person.

THINK LONG TERM.

When Walker sought investors for a real estate fund he was creating, his connections led him to a billionaire CEO in Silicon Valley, who asked Walker how much he wanted him to invest. Walker suggested he contribute whatever amount he was comfortable with. "Walker saw this first fund as building a track record and, in the process, cementing relationships with people who would be 'with him for a lifetime' once they had seen what he could accomplish and gotten comfortable investing together," Pfeffer notes.

STAY IN TOUCH AND GIVE BACK.

An easy way to keep in touch with those in your network is to send them emails now and then, introducing them to people who will be helpful additions to their networks. And, like Walker does, respond when others seek to add you to their circles. Δ



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 ${\tt HEIDI\,ROIZEN\,"}$ The most successful people and the most successful networkers are givers."

If you don't know Heidi Roizen personally, and many people do, you might know her from the popular 2000 Harvard Business School case "Heidi Roizen," about how to effectively build, maintain, and tap a professional network. In the case, Roizen highlights three key elements of successful networking: access to the right people, your performance in and after the interaction, and your consistency over time. She has used these elements in every role she's had — early tech entrepreneur, venture capitalist, Apple executive, corporate director, and now operating partner at venture firm DFJ.

Stanford Business recently asked her what has changed — and just as important, what hasn't — about how she networks in the age of social media. Here's her best advice.

RELATIONSHIPS

"Everything Is Relationship-Driven."

In the second of two pieces on professional networking, venture capitalist Heidi Roizen discusses how to connect online and off.

BY LOREN MOONEY

USE SOCIAL MEDIA TO HELP SPEED CONNECTIONS ...

I follow a lot of people on social media and read their material. It's really terrific that people have these platforms now, and you can go find them and develop an understanding of a person based on what they're willing to put out there publicly. In fact, I started a blog recently — in part because, when you're a venture capitalist, you live and die by the quality of the people attracted to you and seeking capital from you. And I think the more you put yourself out there in social media, really defining what's important to you, the more you end up attracting the kind of entrepreneurs who resonate with your thinking.

... BUT DON'T CONFUSE SOCIAL MEDIA CONNECTIONS WITH ACTUAL INTIMACY.

Just because someone connects with you on LinkedIn doesn't mean they're your friend. Social media creates a false sense of intimacy, particularly when people choose to expose a lot about themselves. Social media has allowed us to have broader relationships, but at the end of the day, human relationships haven't changed — we haven't increased a human being's capacity to have close associations with a lot more people.

And everyone has to set their own limits about how accessible they will be. For example, I get a lot of requests to make LinkedIn connections, and if I know both sides of the equation, or I feel like it's a reasonable request — somebody has a job opening, somebody else is looking for a job — I will probably send it. But if somebody is trying to use two steps: "Dear Heidi, will you please send this to someone you know who knows the person I'm trying to reach?" I just refuse all of those. Because I'm not going to ask my network to do things on my behalf when I'm not a party to the equation.

BUILD RELATIONSHIPS BASED ON GIVING.

There's a great book called *Give and Take*, and it talks about the givers — people who will do a favor with no expectation in return. At the end of the day, being a giver is a good thing, not just personally, but there's research that shows that the most successful networkers and the most successful people are givers. In essence, you're building up human capital in the capital bank, not necessarily knowing how you're going to spend it.

"Social media has allowed us to have broader relationships, but at the end of the day, <u>human relationships</u> haven't changed."

FOR BROAD EXPOSURE, SERVE YOUR INDUSTRY.

Trade associations are a lot of work and you don't get paid to do them, but participating in them can amplify your presence in your industry beyond the scope of your company. Not only will you meet other leaders, but you'll also have a shared endeavor. And one of the best ways to build relationships is through a shared endeavor.

PEOPLE CAN ONLY DRINK SO MUCH COFFEE.

I get asked for favors by people I don't know all day long. Most often, it's "I heard you speak, I'm at a juncture in my career, I'd really like to buy you a coffee and sit down with you." Well, I get probably 10 of these a day, which makes it impossible for me to do.

If that person were to think about my day instead, maybe what they'd say is: "I'd like five minutes of your time. Here's my resume, and I have two questions to ask you — here are my questions." I'm more likely to say yes to that, even for someone I don't know, just because they've packaged it in a way that allows me to be efficiently helpful. When I ask a favor, I think, "How can I make this so easy that they won't mind doing it?"

TO THINK OF YOU FOR OPPORTUNITIES, HELP THEM CONNECT THE DOTS ABOUT YOU.

Do not believe, just because you've been around a long time and everyone knows who you are, that you don't still have to do the homework to let your network know about you.

Several years ago, when I was at a point that I wanted to be considered for board of director positions, I sat down and over the course of eight hours wrote 150-something individual emails to everyone I knew well enough who was on a board, in service of a board, or a c-level executive: "Here I am, here are my board qualifications, here's a link to my website that explains more about my board service. If you think I would be an appropriate candidate for a board that you work with, please let me know." That night at a party I ran into someone on the TiVo board, and he said, "I'm so glad you reached out, because I've got an opportunity for you." Even though he already knew me, my request and refresher helped him think of me for this board, which I ended up joining.

Heidi Roizen earned her MBA from Stanford GSB in 1983 and is operating partner with leading global venture capital firm DFJ.



24

LIVES

INNOVATION

Five Entrepreneurs Discuss Key Relationships and Other Kinds of Connections

BY ERIKA BROWN EKIEL

"I have a deep desire to create something and a rebellious streak."

Vikram Sharma is founder and CEO of QuintessenceLabs, an information security company that uses quantum encryption keys to protect digital communications. Sharma was born in Chandigarh, India, near Delhi, and lived in Australia as a teen. He built a few startups, including an Indian internet services company and an IT consulting firm, before obtaining his Stanford GSB Master of Science in Management in 2002. He also holds a doctorate in quantum physics from the Australian National University.

In 10 words or fewer, what is the big idea behind your business? Creating enduring trust for information exchange by harnessing quantum properties of nature.

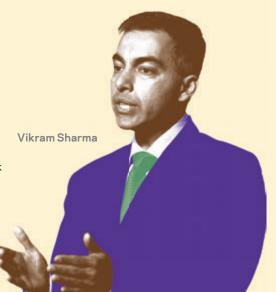
What is your greatest achievement? The realization of a set of scientific ideas into cyber security products. With the "internet of things" increasingly interwoven into our everyday experience, it is vital that we are able to trust our electronic interactions in a highly connected world.

What do you consider your biggest failure? Attempting to launch an internet services company in India. We did not think through very well what we were getting into and the challenges that would arise. It seemed like a good idea and the potential was tremendous, but we were not able to execute on it.

What impact would you like to have on the world? In the new "internet of things," there are billions of devices connected to the internet. Our lives are increasingly dominated by the exchange of electronic information. This is especially true for our children. I want to ensure that those communications and our relationships can be trusted rather than compromised by external threats. Otherwise the whole fabric of this wonderful era will be at risk. If we can create enduring trust amongst myriad devices — that would be a great impact to have on the world.

Why are you an entrepreneur? I have a deep desire to create something — and a rebellious streak. I like to question the status quo. And I like to be in a position where you have some control over your destiny. Whatever mistakes you make or successes you achieve as an entrepreneur are directly traceable to your decisions or actions.

What do you think is the greatest innovation in the past decade? The idea that with technology, the world is flat. We are all interconnected now. That theme has fundamentally reshaped our society and will continue to do so over at least the next decade.





Adrian Li

"There is no better time than now."

Adrian Li is a serial entrepreneur and triathlete based in Jakarta, Indonesia. He is currently a cofounder of Qraved, a web-based restaurant-discovery tool similar to OpenTable. Previously, he was cofounder and CEO of Idapted, an Internetbased, on-demand training service to teach English to people in China. After selling Idapted in 2011, Li worked on other startups, including an Airbnb-like company for China and an online office-supply company in Indonesia. He earned his MBA from Stanford GSB in 2006.

In 10 words or fewer, what is the big idea behind your business? Great restaurants for less: less time, less effort, and less money.

What is your greatest achievement?

At Idapted, I built a team that stuck together and helped each other change our lives, both professionally and personally. We all tried new things we had never done before. One team-building thing I did was to take everyone running. In 2008, we signed up half the company to take part in the Beijing marathon. Some of them had never run more than 2.000 meters in their lives. We trained for a year. We continue to help each other, and many of us remain good friends.

What was the most difficult lesson you have learned on the job? Being fully accountable for not only the success of the company you start but also for all the people you bring onboard. That hit me hard early on at Idapted when we almost ran out of money. I had to go to my management team and convince them that this was a great opportunity and we would make the

next round of funding. They had their own personal financial commitments, and I had to ask them to take pay cuts in order to make it work. We did raise the funding, so there was a good end to the story. It is a good reminder to always be transparent about where the company stands. You need to maintain integrity with your team and your investors because you are accountable to them.

What values are important to you in business? Teamwork and an open, flat structure. I don't believe in hierarchy. I believe teams work well when they are openly communicating and talking as peers versus as managers and subordinates. I also value hard work. Given the choice of two candidates, I would always choose someone who works hard over someone who is just smart.

What was your first paying job? Stocking shelves at Marks and Spencer at 15. I made sure the food with the earliest expiration date was at the front of the refrigerator. If I wasn't doing my job, the user experience would be diminished. That has helped me understand the importance of the front line. I make it a point to sit down and talk with the sales and call center staff. Business happens with the people, not in management meetings.

What is the best business book you have read? Switch: How to Change Things When Change Is Hard. The book talks about not just looking at things that don't work but looking at things that do work to improve your business. Where are the bright spots? Where are you getting traction? Leverage that to do it better. Another one is First, Break All the Rules. There is no one who is good at everything. When I am recruiting, I look for people who are exceptional at the specific skill set we need, versus looking for well-rounded people.

What businessperson do you most admire? I admire entrepreneurs who came through hardships and built significant, impactful businesses. Jack Ma comes to mind. He built Alibaba into the behemoth it is now. At one point, the company was on the brink of failure, and he had to ask employees and his team for money to keep the company going.

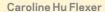
What do you think is the greatest innovation in the past decade?

Mobile communication. Everyone has a mobile phone now, farmers as well as businesspeople.

"Solve a problem you personally care about."

Caroline Hu Flexer is CEO and cofounder of Duck Duck Moose, a 16-person company based in San Mateo, Calif., that makes educational mobile games for children, including apps that let kids drive a fire truck, create an animated comic book, or interact with the well-known "wheels on the bus." Flexer founded the business with her husband and a friend in 2008. She received her MBA from Stanford GSB in 2001.

What was the most difficult lesson you have learned on the job? Each personality on a small team can make a huge difference in swaying the dynamic of the entire team. On creative teams it is really important that there is no drama. It shuts down creativity. Our company works collaboratively and is modeled on some of the things I learned at IDEO. Teams are small but interdisciplinary and often include people from marketing, product, design, illustration, etc. In my experience, the best ideas come from anywhere, not from one single person dictating direction. Everyone needs to be resilient because when we are creating a new game, we try new things every day, and the pace of change is rapid. Our process is iterative and messy, incorporating feedback from everyone on the team as well as from children in our testing room, kids' homes, and classrooms. Sometimes that involves conflict, but when it's done right and is constructive, it can bring about a magical experience.







Catalina Girald

We start with the customer and iterate as we observe how kids play. We brainstorm as a team and ask everyone to come to the table with new ideas. For this to work, everyone has to be free and open. Then we prototype, test, rethink, and redesign. The kids are brutally honest. That feedback pushes us to change.

What advice would you give other entrepreneurs on how to build a great business? Solve a problem you personally care about. We founded Duck Duck Moose based on our passion for kids' education, technology, and music. I believe the people who touch and use your product will know if the people behind it are mission-driven. My husband codes and plays the cello. Our kids have done some of the audio recordings.

How do you become an entrepreneur? I never planned to be an entrepreneur. I always loved creating things, as an architect, at Intuit and IDEO. Becoming an entrepreneur was something that came out of being inspired by my own kids. In 2008, the iPhone came out. I watched my daughter pick it up and swipe through photos like a book the first time she ever held it. I saw then that even young kids can use technology in meaningful ways. That looked like an opportunity.

"I want to change women's lives."

Catalina Girald is founder and CEO of Naja, a San Francisco-based lingerie company that launched in December 2013 and aims to create luxe-looking undergarments for women at mass-market prices. Girald launched Naja with \$100,000, and her Underwear for Hope program trains single mothers to sew and employs them. Girald was an attorney before earning her MBA from Stanford GSB in 2006.

In 10 words or fewer, what is the big idea behind your business? Delivering luxury lingerie at fair prices while empowering women.

What is the best advice you've ever received? Andy Grove was my professor in business school, and he used to take me on walks. He has been a mentor ever since. He has given me a lot of great advice. He told me to follow *The Art of War*. In particular, when dealing with people, be strategic. You do not always need to react right away. Sometimes it is better to wait for the right opportunity, then execute your strategy in a Trojan horse kind of way.

If there was one thing that has enabled you to be successful as an entrepreneur, what would it be? Having someone who believes in you when no one else does. And someone who has the wisdom to tell you when you are doing something wrong.

What was your first paying job? When I was 5, I sold cupcakes door-to-door. My mother made them, and I had to pay her for the ingredients. I also sold rocks I painted. When the business got big enough, I hired the girl who lived next door. I paid her 10%. My mom was really upset when she found out.

What do you think is the greatest innovation in the past decade? Any application that uses the wisdom of the crowd to better itself. like Waze.

Ryan Caldbeck

"I want to touch hundreds of thousands of entrepreneurs."

Ryan Caldbeck is the cofounder and CEO of CircleUp, an online marketplace that connects individual investors with entrepreneurs looking to raise capital for consumer startups. Caldbeck graduated from Stanford GSB in 2005 and founded CircleUp in 2012 with his friend Rory Eakin, a classmate at Stanford GSB.

In 10 words or fewer, what is the big idea behind your business? To help entrepreneurs raise funds and thrive by giving them resources and support.

What is the best advice you've ever received? Before starting CircleUp, I was in private equity. It was a very safe career and I earned good money, but I wasn't passionate about it. When I was thinking about starting

this business, I called my dad for advice. He is a retired lawyer in Vermont. He said, "In 10 or 15 years, would you be more proud to tell your children that you tried and failed at building your own business or that you stayed in a comfortable, well-paying job?"

What advice would you give other entrepreneurs on how to build a great business? We are still very young as a company. I consider myself very lucky to have built this company with someone I really trust, Rory Eakin. I don't know how people start a business with someone they don't know well and trust implicitly. It's absolutely essential to believe in your cofounder. Every day, my cofounder makes decisions that have huge implications for me and our business. That's not possible without a solid foundation of trust.

How do you come up with your best ideas?

My best ideas are refined through a process. I talk with folks who are experts as well as folks who know nothing about the topic. I try to get them to poke holes in my ideas. Entrepreneurs are paranoid about their ideas. They're afraid that if they share their idea for a new granola bar with an angel investor, the investor will steal it. That just doesn't happen.

What impact would you like to have on the world? I want CircleUp to touch hundreds of thousands of entrepreneurs and help them become more successful.

What do you think is the greatest innovation in the past decade? Social networks. A

For the full-length versions of these interviews, and for more insights and ideas from entrepreneurs, go to stnfd. biz/hpWK1

What was the most difficult lesson you have learned on the job? I am learning to listen to my own instincts. In Silicon Valley, startups raise a lot of capital and spend money up front to achieve rapid growth. Anyone who does anything different from that is considered unconventional. Naja grew really fast in its first two months, and it nearly killed us. We didn't have the resources or capacity to offer great customer service at that pace of growth. So I had to make the difficult decision to do what was best for the company instead of what Silicon Valley wanted me to do — that is, to take a step back so that we could take a step forward.

Our relationship with our consumer is too important to risk by rushing production. A startup is like a standard car. It tells you when it needs you to put it in the next gear. If you put it into gear when it's not ready, it does things you don't want it to do.

What advice would you give other entrepreneurs on how to build a great business? Ask for help. In my first company, I didn't ask for help. I was an only child, so I'm used to doing things on my own. I have learned that many successful people are willing to help you because other people helped them.

"In my first company I didn't ask for help. I've learned that many successful people are willing to help you because other people helped them."



DIVERSITY

What Is the Path To Success?

Research provides new evidence that it can help to work with those different from you.

BY THERESA JOHNSTON AND KATHLEEN O'TOOLE In hundreds of studies over six decades, social scientists have repeatedly found that people network with people like themselves. If your classmates, neighbors, or work colleagues are similar to you in race or ethnicity, income or educational level, leisure habits, or age, your opportunities to become close to people like yourself will be greater than your opportunities to become friendly with dissimilar others. But even when there are natural opportunities for opposites to attract, people tend to connect with those who are just like them.

What happens, then, when the opportunities are opened up and individuals don't get to select their entire network? In a new study, Sharique Hasan of Stanford GSB shows that college students can learn more from exposure to a peer they were not allowed to pick for themselves than from friends and study partners they chose.

Specifically, Hasan and Surendrakumar Bagde, an officer in India's Administrative Service, tracked the academic records of approximately 2,000 male and female students enrolled at a competitive new public engineering college in southern India. They found that individuals randomly assigned to live with high-performing roommates in large barracks-style dormitories performed significantly better on academic tests at the end of the second semester than students who were placed with lower-achieving peers.

Sharique Hasan is an assistant professor of organizational behavior at Stanford GSB. His research focuses on informal social networks within and outside organizations.



Furthermore, the impact of the roommate — a member of each student's personal network that they did not choose themselves — was stronger than the influence exerted by the friends and study partners the students chose to network with. Significantly, students benefitted from having high-performing people in their dormitory rooms even when their social castes were different.

The study suggests that success in college (and perhaps elsewhere) may take years of preparation, dedication, and hard work — but it also helps when someone in your network has smarts that aren't the same as those you may already possess.

The findings echo similar studies done in the United States. In his widely cited 1973 paper, "The Strength of Weak Ties," Stanford sociologist Mark Granovetter promoted the idea that novel bits of information (job leads, for example) tend to come from acquaintances rather than close friends moving in the same circles. More recently, economist Bruce Sacerdote found that randomly assigned roommates at Dartmouth affected one another's GPAs. Another study, by Cornell sociologist David R. Harris, showed that white students assigned a roommate of a different skin color wound up being more open-minded about race.

As someone who studies social network dynamics in business and other contexts, Hasan sees other implications of these studies, but he hopes his particular study will be of use to education policymakers in India. With half of its population below the age of 25, the rapidly developing nation is gearing up to enroll an additional 25 million students in colleges and universities over the next seven years, at an additional cost of nearly \$200 billion, according to the Deloitte Global Education Newsletter. Nearly two dozen education bills were awaiting approval in India's parliament last year, most of them dealing with higher education. "This is probably the first study on peer effects in India," he says. "In America we have been doing quantitative social science on peer effects since the

Success takes hard work, but it also helps when someone in your network has smarts that you don't already possess.

1970s, but in India there's just not a lot of quantitative information to infuse policy debates. Our goal is to give them more insight into what is going on." However, he cautions, "We will need many more studies before we can make very specific policy recommendations."

To conduct the research, Hasan and Bagde, a former doctoral colleague from Carnegie Mellon who's now serving in India's Ministry of Finance, followed students from a variety of geographical regions and castes who had been randomly assigned by the school to 92 same-sex dormitory rooms. Each large room accommodated 20 to 25 students; their beds were all in a row.

All the students had taken the same multiple-day, government-administered board exam for admission in the previous year. They all took the same first-year classes in math, chemistry, physics, and English.

The researchers surveyed the students early in the academic year about their social networks on campus. Then they compared the students' entrance scores with their subject test scores at the end of the second, third, and fourth semesters.

Predictably, the roommate effect was most pronounced after the first year, when all students were taking the same courses. "If a student is working on an assignment that he finds challenging, his peer may be a valuable resource who can clarify what the teacher is asking, help the student work through a difficult problem, or suggest additional study materials," the researchers noted. A diligent roommate also can be helpful indirectly, by setting an example for the amount of time that should be spent studying and attending class.

In contrast, "chosen" peers — friends and study partners — had significantly less influence on academic achievement. "You would think that friends would have more of an impact than [randomly assigned] roommates," Hasan says, "but people tend to select friends and study partners who are similar to themselves. Apparently, it's that diversity of exposure from the overall environment that seems to have the greatest impact."

A related finding had to do with caste: India's ancient system of social stratification based on hereditary occupation. Although caste-based economic disparities have declined on the subcontinent in recent decades, Hasan and Bagde hypothesized that highachieving students would relate better — and therefore be more influential — with students of their own caste. In fact, this didn't happen; the roommate effect was similar whether the interacting students were of the same caste or not.

In this case, the relaxed dormitory setting probably helped. "Outside the college context, individuals from different castes often live in different parts of town," the researchers noted. "Their parents are often employed in occupations with different status, and they may attend different schools." When the structural barriers are lower, as in college, they observed, "the interaction is significantly higher."

The study has implications for how organizations hire and promote people, for example, or how individuals seek career opportunities. Managers letting work teams choose their own members and individuals seeking career opportunities only through similar friends are perhaps less than optimal strategies. The extent to which randomly assigned roommates will influence each other over a longer timeframe was not studied. If a student internalizes another's better study habits, say Hasan and Bagde, it seems likely that the roommate effect will last even if the roommates fail to maintain contact with each other.

That may be important to any country or company trying to build its success with more human capital. The researchers hope to follow the same group of students to observe how their undergraduate peers will affect them as they attend graduate school, launch into careers, and build their own families. Δ



X



MANAGEMENT

How Conflict Spreads: A scholar of organizational behavior explains how managers can contain the spread of disagreement in their team.

BY LINDRED GREER

We know dysfunctional conflict when we see it, from boardroom brawls to teams whose members spend so much time in their silos sniping at each other that they get nothing done. But how do conflicts start, and, more mysteriously, how do they infect an entire group on such a grand scale?

These are critical questions for any manager. Though conflicts inevitably arise among individuals, if they spread and remained unresolved, they hurt a team's performance — and as the research shows, they do so for the entire life of the team. Time may heal personal wounds, but the damage done to the fragile, ever-changing dynamic of a team won't go away.

Yet little research has been done into how conflicts emerge and taint teams. I set out with my colleagues Karen Jehn of the Melbourne Business School, Sonja Rispens of the Eindhoven University of Technology, and Karsten Jonsen of IMD

Lindred Greer is an assistant professor of organizational behavior at Stanford GSB.
Her research focuses on teams and small groups, and in particular how power structures and dynamics impact the performance of organizational teams.



34 ORGANIZATIONS SUMMER 2014 STANFORD BUSINESS

to more precisely describe how conflicts spread to a team. We identified three stages of conflict contagion and three mechanisms of how it spreads.

Consider a typical meeting in which one team member proposes an idea and another disagrees. At this moment, the first phase in our model of conflict contagion, the disagreement is primarily what we call dyadic, interpersonal conflict. At the next meeting, these same two members continue to disagree about the issue. One member, who is a personal friend of the member who first presented the idea, jumps into the debate on the side of that member.

Another member, after weighing the arguments of both sides, eventually decides that the member presenting the counterargument has the better case, entering stage two, which we call partial contagion. Clear coalitions begin to emerge, which is one of the mechanisms for spreading conflict. Some members do not take sides, perhaps because they do not yet care enough about the issue to become involved. They may not even be aware of the conflict. At this point, the conflict is taking a moderate toll on team outcomes. Some team members who are least comfortable with conflict may begin to check out, physically or intellectually.

As the factions begin to take sides on other issues, tensions flare. This emotionally charged behavior is another way conflict spreads. As a side note, but an interesting one, we believe that teams that work together virtually may be less prone to such emotionally driven conflict contagion.

"If you are a manager, intervening before a personal conflict spreads to the rest of the team is crucial."

At the fourth team meeting, someone storms out of the room. This mood may begin to spread to those who had tried to hold their distance from the conflict. For example, the negative affect spreading through the team could lead initially uninvolved members to argue, yell, and slam doors. Additionally, as the conflict contagion progresses, issues that could affect outcomes for all team members may surface. For instance, is it fair that an issue of prime importance to some members of the team now dominates the team's agenda? Those team members motivated by the quality of the work or the overall success of the team may join the conflict at this point, in an effort to get the team back on track. This we label as "threats to outcome," a third way that disputes spread throughout a team. Now, we've arrived at the third phase, or a full-blown conflict.

Performance, efficiency, creativity, and satisfaction are all suffering. In a matter of weeks, days, hours — or even seconds, we believe — the team's potential has been tremendously diminished. Perhaps the only saving grace of a full-team conflict is that there may actually be more potential for a resolution because at this phase, everyone has a stake in the conflict, and many people will want to resolve it.

At this third phase, if the conflict goes on, it becomes impossible for anyone to stay out of the conflict. When conflicts reach this stage, the work at hand — the whole raison d'être for the team — is suffering immensely.

Is all hope lost? Not necessarily. Though conflict is damaging the team's outcomes, members may be able to resolve the conflict and emerge into a new equilibrium.

If you are a manager, intervening before a personal conflict spreads to the rest of the team is crucial. The longer a conflict goes on, and the more parties that become involved, the more complicated it becomes.

We offer the following guidelines for managers to help their teams through the inevitable conflicts:

Keep an eye on dyadic disagreements.

Although conflicts always begin between two people, they often don't stay there. If a conflict is starting to escalate and bring in others for reasons other than pure task opinions (e.g., people are siding with friends or using the conflict to push personal issues), it's probably time to intervene. A well-timed lunch could keep the team on track or even negate the need for the expensive conflict resolution consultant later.

Try to understand what the real issue is before you intervene. For each person, the fight might be about something different. Perhaps it is a personal slight, from a year ago, that still rankles. Or, most likely in a high-powered team, one or both people could be trying to leverage up by pushing the other person down. Or the two characters might just be a mismatch. In any given work conflict, the real conflict is often not what is being verbally expressed. Often underlying concerns relating to respect and rank may be the true issues behind many conflicts.

Be aware of your own biases. Research suggests that when laypeople intervene in a conflict, they end up siding with one of the parties, exacerbating the coalition effect. Know when to delegate the intervention to a more neutral party. People within your company who are skilled at conflict resolution, naturally or by training, are a huge asset.

Not all conflict is bad. A task-oriented conflict, in which the disagreements are over the substance of what should be done, can be productive as long as people's motivations are driven by a genuine desire to argue points of view with an eye toward reaching the best decisions. Pure motivations are rare, however — and what seems like a task-oriented conflict at first may be something deeper and more apt to spread into dysfunction.

Whatever you do, don't be fooled into thinking that you can ignore a dispute and hope that it will go away. An unresolved team conflict will stay with the team forever. Δ



JUNCTION Dothan, Ala.

ROAD TRIPS

Business Lessons From on the Go

In an excerpt from their new book, three economists share what they learned about small businesses in America.

BY MICHAEL MAZZEO, PAUL OYER, AND SCOTT SCHAEFER

After an economics conference in Boston several years ago, the three of us — all business professors — had a bit of time to kill before our flights home, so we decided to hit the road. That trip was just the first in a series of road trips in which we met with small-business owners, collected the stories of the strategic business problems facing small businesses, and then showed how the frameworks we teach in our MBA classes apply.

On one trip, we traveled to Pensacola, a fast-growing city on the western edge of the Florida Panhandle, to visit the leadership team of CollegeFrog, a tech startup trying to transform college recruitment and hiring in the stodgy world of accounting.

We found this visit to be particularly enjoyable because it allowed us to make accountant jokes. Accountants are the only group who make economists seem exciting, so we have to take our shots when we can. CollegeFrog's Jeff Phillips began the meeting by outlining the company's business model: "It's a web-based application. Half of it is a jobs board; think Monster com for college students and entry-level jobs. The other half is an applicant-tracking system that automates many of the steps of recruitment and eliminates waste."

"Ninety percent of the people hired each year in the accounting industry are straight from college," his colleague Frank White continued, "and our goal is to streamline

the recruiting process. Everybody knows the Big Four accounting firms; they are the absolute masters of college recruiting. But there are five or six thousand accounting firms in the country, and we want to take what the Big Four do and bring it to the next five thousand."

"We collect resumes from students and build a totally searchable database," CollegeFrog's James Hosman added. "Suppose a firm wants somebody who has Beta Alpha Psi experience, which is the accounting fraternity. They can search for that once they're a subscriber."

"Wait," Paul said. "There's an accounting fraternity?"

"Imagine the parties," Mike quipped.
"So many accounting jokes," Jeff said
through a strained smile, obviously having
heard all of them thousands of times.

If a college senior wants to get a job as an accountant, he or she (note: most new accountants are women) sends her resume to the firms she knows. Colleges help with placement as well, often publishing a book of students' resumes and sending it out to local firms. On their end, accounting firms looking for employees typically visit a few local schools and do a day of on-campus recruiting. This process leaves much to be desired, however, since both sides may miss out on good matches by searching too narrowly. Using online search, CollegeFrog is trying to make it easier for both sides to find each other, especially if they are not in the same geographic area. To do this, however, they need to do two things: They need to attract accounting firms to post jobs, and they need to induce aspiring accountants to post their resumes.

Jeff described the Facebook-like plans at CollegeFrog. "We are trying to become the network for accounting talent in college. We are becoming the expert on the recruiting

Michael Mazzeo is an associate professor of management and strategy at Northwestern University's Kellogg School of Management. He received from Stanford his PhD in 1998 and his AB in 1991. Paul Oyer is the Fred H. Merrill Professor of Economics at Stanford GSB. Scott Schaefer is a professor of finance at the University of Utah's David Eccles School of Business. He earned a PhD from Stanford GSB in 1995 and a Stanford BAS in 1990.

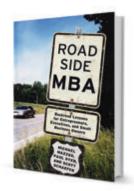
36 ORGANIZATIONS SUMMER 2014 STANFORD BUSINESS

process in this industry. The idea is once that network effect kicks in — once we have enough students and enough firms — then it will be the place everybody comes because that's where everybody else is. We think there's value in that network itself."

During our time on the road, many business owners told us they are "on Facebook" trying to develop a brand presence through social media. But CollegeFrog is one of a smaller set of companies that are using Facebook as a model for developing entry barriers. Facebook protects its market position by utilizing what economists call a "network effect." Consumers are attracted to Facebook partly by the service itself, but even more by the size of the network of other users. What good would it do any of us to post banal commentary and silly pictures on a timeline that none of our friends can see? It's a wonderfully virtuous cycle: The more people who go to Facebook, the more people want to go to Facebook.

For Facebook, network effects generate the ultimate entry barrier. Once Facebook became established as the leading social networking site, it became difficult for others to acquire users and enter the market. After all, who would choose to join a brand-new site with no friends to find? Entrants face a network-effects conundrum: In order to attract users, you must first have users, so it's practically impossible to get going.

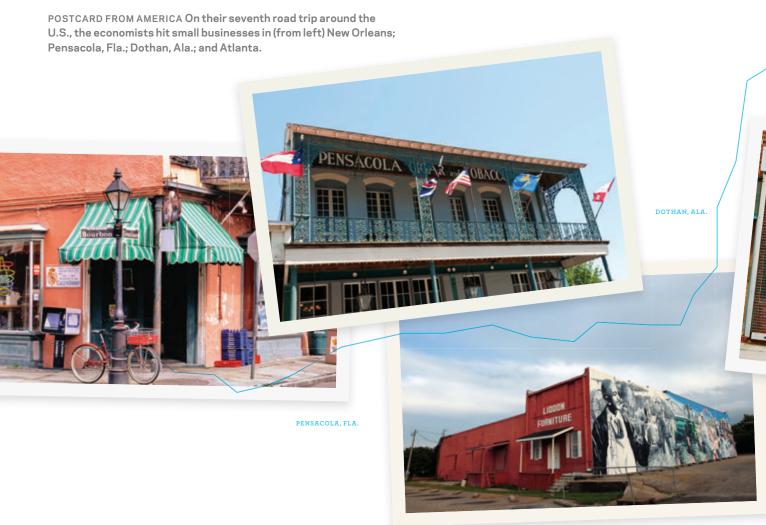
Network effects are not exclusively the province of internet businesses. Consider shopping malls. Stores want to open in malls that have a lot of shoppers, and shoppers want to go to malls that have good stores. If there is a well-established mall in an area, it is difficult for a new mall to make inroads. Why should a store open there instead of taking advantage of the critical mass of shoppers at the existing mall? The network effects at work here are somewhat more subtle than in the Facebook example. Shoppers go where the other shoppers are not because they value the presence of other shoppers directly, but because a critical mass of shoppers helps attract stores. It is precisely this indirect effect that CollegeFrog hopes to exploit: A critical mass of accounting students will attract firms and vice versa.



TALES FROM OFF THE INTERSTATE Roadside MBA

Should CollegeFrog limit itself to the accounting market and to new college graduates? If the network effects work for accounting, they should, in principle, also be relevant for teachers, engineers — the whole hiring market, really. But just as Facebook spread its network slowly from one college to another and, after some time, to the broader public, CollegeFrog is trying to create strong networks one market at a time.

Jon Hicks/CORBIS (New Orleans); Stephen Saks/Lonely Planet Images/Getty Images (Pensacola); AP Photo/Dave Martin (Dothan)



37

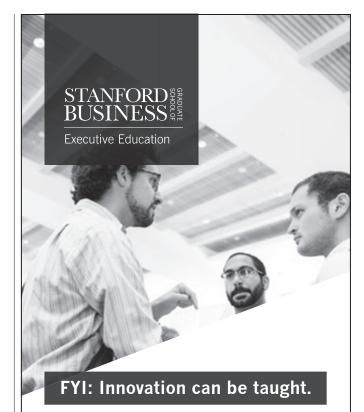
ATLANTA

Jeff explains, "We got some very good input from one of our advisers early on, who said, 'You guys really need to develop your product in one industry, focus on that industry well, own it, and then expand into other industries."

When we met with CollegeFrog, they were at a crucial point in their growth. They had just sent out bills to their initial subscribers and were waiting to see whether anybody would pay them. Had they hit the critical mass of students where the firms felt they had to be part of it? If so, they could start reaping the benefits of the network they had developed and watch it grow. Better yet, they could start thinking about other markets besides accounting. But we had bad news for the guys at CollegeFrog — there's already a well-established system for hiring PhD economists. Δ

Excerpted from the book Roadside MBA by
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MINDY GROSSMAN
"If you don't
disrupt yourself,
you will be
disrupted by
someone else."

TURNAROUNDS

"You have to set bold goals, but you have to give people the path to get to them."

The head of retailer HSN discusses customer service, disruption, and the bottom line.
BY BILL SNYDER



Making sudden, surprising shifts in direction has been something of a hallmark for Mindy Grossman, CEO of HSN Inc. (once known as the Home Shopping Network). While in college, Grossman recalls, "I woke up one morning and realized I was living someone else's life." She then promptly dropped out of school, broke off her engagement, and moved to New York City "to try and figure it out."

Making such dramatic changes may not be everyone's path, but it worked well for Grossman, who has held high-level jobs at fashion icons Ralph Lauren, Nike, and Tommy Hilfiger, and who was ranked No. 89 on the Forbes list of the World's 100 Most Powerful Women. When she was offered the top job at HSN in 2008, she hadn't even heard of HSN's parent corporation, IAC/InterActiveCorp, and didn't know that it had gone through seven CEOs in 10 years. Nevertheless, she left a high-level position at Nike and quickly set out to reinvent the faltering shopping network. She's made HSN a major e-commerce presence on the web as well as on cable television, redefined its brand, improved its demographics, and increased the value of its stock from \$10 to \$55 a share.

When it comes time to make a major decision, Grossman asks herself a set of questions: "Are you passionate about it? Is it purposeful, and will it take you, the business, your family, somewhere? And will it have impact?"

Here are five lessons she learned about managing a corporate turnaround:

ENGAGE WITH YOUR EMPLOYEES.

Just before starting at HSN, Grossman asked the head of the company's human resources department what employees typically do on their first day of work: They attend an employee orientation, she was told. Grossman did just that, and news of her unexpected presence quickly became the talk of the company. On her second day, she held a town hall. "I was letting people

know that things were going to be different. It humanized me, and people saw that I was accessible and that they could have a future at HSN," she says. Now Grossman has frequent breakfasts and lunches with employees: "I learn more from those than from reading any report."

AVOID CASTING BLAME.

Too many CEOs go into a company that isn't performing and incorrectly assume that there aren't many talented people there, says Grossman. But more often than not, the problem is uninspired leadership. So it's critical to assess employees early on. She learned that there were three categories of employees at HSN: the evangelists, people who are enthusiastic and let other people know it; those who said "this sounds interesting, but let's see"; and the "blockers," who are "toxic."

"I believe you have to get rid of toxicity in any company. Don't care how smart, how talented, how long they have been there. If someone is going to create a toxic environment, you have to make a change," she says. Grossman pushed the blockers out quickly and held on to the top executives who impressed her. Five years later, they're still on her management team.

DISRUPTION IS YOUR FRIEND.

Grossman discovered early on that customers were unhappy with the quality of products HSN was selling and disappointed in the company's customer service. She dropped products that were shoddy or a bad fit for HSN. She also eliminated its offshore call centers, which had saved the company money but irritated its customers. Those moves cost HSN money — at first. "I'm willing to lose profits in the short term," she says. "We spent more when we weren't performing as a business."

HSN was all about shopping, of course, when she arrived, but it was old-style shopping. Customers watched its programs on TV and called in their order. Changing that meant restructuring the company, redeploying assets, creating digital content, and seeking out new partners. "I believe that if you don't disrupt yourself, you will be disrupted by someone else," Grossman says.

"You have to get rid of toxicity. If someone is going to create a toxic environment, you have to make a change."

BE NIMBLE.

HSN went public in August 2008 and promptly headed into the financial crash. The company's stock, which debuted at about \$10 a share, fell to \$1.42. "It had nothing to do with the fundamentals of our business; it had to do with (the fact) that the world was falling apart. It was one of the toughest leadership times I ever had, because I knew I had the fate of 6,000 people and their families at stake."

Knowing that her customers shared the feeling of a world crumbling, Grossman changed her selling strategy: "Instead of selling [the customer] high-end jewelry, we're going to tell her how to save money and cook at home for her family. We're going to tell her how this heater will save money on the fuel bill. We're going to respect her and make her feel great even if she can't buy anything. How we managed that period was a big part of our success," she says.

PROVIDE CLARITY.

Everyone knows a good manager must set goals for employees, but many executives, she says, miss a crucial follow-up step: "You have to set bold goals, but you have to give people the path to get to them." A

Mindy Grossman is chief executive officer of HSN Inc. and a member of the company's board of directors. She spoke this spring at Stanford GSB's View From the Top series.

"THE ART OF **BUILDING A BUSINESS"** Marc Andreessen at the Peninsula Creamery in Palo Alto SILICON VALLEY "We are biased toward people who never give up." The venture capitalist and Netscape cofounder discusses tech industry valuations, management teams, and why success is so much better than failure. BY BILL SNYDER

When Facebook bought a fledgling company called WhatsApp for \$19 billion earlier this year, many analysts warned that Silicon Valley was in the midst of a bubble, not unlike the one that burst in the spring of 2000. Companies are wildly overvalued, they fretted, and the boom is going to end soon. Marc Andreessen, co-inventor of the world's first commercial browser and cofounder of a leading venture capital firm, disagrees. Addressing Stanford GSB students at a View From the Top talk in March, he said that far from being at risk of a bubble, the tech industry is, by some measures, "still in a bust."

Besides detailing what makes a company more bubble-proof, Andreessen, who also cofounded Netscape, discussed what Silicon Valley's new management style means for today's MBAs, the entrepreneurial DNA, and why he thinks the "failure fetish" is nonsense.

SEEK COMPANIES THAT HAVE REAL PRODUCTS, REAL MARKETS, AND REAL CUSTOMERS.

At the height of the bubble in the 1990s, Silicon Valley tech companies "were building products that weren't very good, and they were on a bomb run to go public as quickly as possible. The engineers who worked for them hated it because the companies were so sales driven. You'd hear catch phrases like 'Build big or go home,' or my favorite: 'Forget details, do deals,'" he says. As a result, those companies vaporized.

Now some of the companies people point to as being overvalued have billions of dollars of revenue. Facebook, for example, went from zero to \$10 billion in revenue in fewer than 10 years. The market for tech products, notably apps, has expanded exponentially. WhatsApp alone has 450 million active users. "You could take a position that a large-scale internet service with a billion users isn't going to be worth anything, but I wouldn't recommend it," Andreessen says.

At the same time, many large tech companies sport low multiples and high cash balances, hardly characteristics of bubble-era operations, he adds.

MANAGEMENT STYLES HAVE CHANGED; THE RIGHT FIT MATTERS.

In the 1990s, venture capitalists quickly pushed aside founders of tech startups and replaced them with professional managers. But those management pros tended to put too much emphasis on sales and marketing and not enough on engineering and product development. That single-minded focus on growth at all costs was another factor that led to the dot-com bust, says Andreessen. The pendulum has swung the other way, maybe even too far. "Now we take for granted the tech-genius founder as CEO; Mark Zuckerberg is the apotheosis. But we've lost the art of building a business, and in particular we've lost the art of sales and marketing."

Two management models in Silicon Valley are working well, Andreessen says. An example of the first one is at Facebook where Mark Zuckerberg is the CEO and Sheryl Sandberg is the chief operating officer. "Everyone wants a Sheryl, the high-powered business person with deep capabilities in sales, marketing, and operations. They want that person as a No. 2 — COO or president," he says.

The second is the Bill Campbell/Scott Cook partnership — a model that works well when companies don't have a founder capable or interested in being the CEO. (Cook is the founder and former CEO of Intuit; Campbell is chairman but also has filled the role of CEO.) Campbell is not a technologist but is highly skilled at operating a business, has great respect for engineers, and most important, is not threatened by them, says Andreessen.

The latter model is one that MBA students should consider as they build

"If you're going to be in the tech industry, the key question is, 'What is the partnership you're going to have with the technical visionary?"

their careers, says Andreessen. "If you're going to be in the tech industry, the key question is, 'What is the partnership you are going to have with the technical visionary?' If you can crack that code, there is an enormous opportunity to make one plus one equal three."

THE ODDS OF WINNING THE TECH STARTUP GAME ARE STILL LONG.

There are about 4,000 tech startups each year that attempt to raise venture money, but his firm, Andreessen Horowitz, funds only about 20. The venture capital industry as a whole funds about 200 tech startups a year, but as few as 15 will generate approximately 95% of the returns.

Do you have the qualities of an entrepreneur? "We are biased toward people who never give up, who never quit; and that's something you can't find on a resume. We look for courage, and we look for genius. There's all this talk about how important failure is. I call it the failure fetish. 'Failure is wonderful, it teaches you so much, it is great to fail a lot,' they say. But we think failure sucks. Success is wonderful."

BREAKTHROUGH IDEAS SEEM CRAZY — AT FIRST.

You don't have to look hard to find wildly successful products and companies that initially seemed crazy. Thirty years ago, the idea that people would have a computer in their home seemed bizarre. Just a few years ago the concept that people would share their homes and their cars with strangers (think Airbnb and Uber) to make money seemed crazy. "The real breakthrough ideas seem really nuts the first time you see them," Andreessen says, "and the fact that they seem nuts can be a positive signal because that can explain why that thing isn't being done by any existing company." A

Marc Andreessen is a cofounder of Menlo Park, Calif., venture capital firm Andreessen Horowitz and sits on the boards of key tech players, including Facebook, eBay, and HP. He spoke in March at Stanford GSB's View From the Top series.



42 ORGANIZATIONS SUMMER 2014 STANFORD BUSINESS

SOCIAL NETWORKS

The Value of Sharing

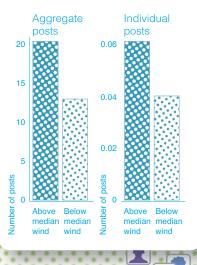
Research shows that the more you post, the more online friends you attract — and the more likely you are to post content again.

#busvbirds

BY LOUISE LEE

To find the relationship between online posting and social ties, the researchers needed a starting point: They needed to isolate some external factor that might cause an increase in one but not the other. Therefore, they examined wind reports for 19 lakes popular with 703 Soulrider.com users in Switzerland. Looking at Soulrider data from March 2009 to November 2010, the researchers found that windsurfers posted more frequently when their favorite lake locations had high wind speeds. When wind speed is high. people are more likely to hit the surf and post about it.

Posting Increases with Wind Speed



#tagyoureit

#lushgarden

Posts Members who posted frequently also attracted many friends on Soulrider. What made the researchers think that posting, and not something else, led to all that friending? It wasn't face-to-face socialization on the beach, since the volume of friend requests that occurred on weekends, when people tend to surf, was almost the same as the volume of weekday friend requests. Nor did the geographic location of individuals influence the likelihood of their linking up on Soulrider: Users in the data were not more likely to be friends with those who lived close to their favorite lake locations, suggesting again that face-to-face socialization at the beach did not drive online friending. The researchers concluded that a member's frequent posting, whether to share experiences or to promote himself, led to more friends who value the content

Illustration by Omnivore

Frequent Posters Have More Social Ties

On a social network, is a member who posts frequently likely to have many online friends? And is someone with lots of friends likely to post frequently?

Yes and yes, says Stanford's Harikesh S. Nair. In his research of a popular windsurfing social network, Nair found that posts and social ties, or online friends, create a so-called network effect, or a self-reinforcing virtuous circle: The more often a member posts blog entries, photos, or status updates, the more friends he or she attracts, and the more friends the member has, the more likely he or she is to post yet more content and gain more friends, and so on.

Drawn to studying technology markets during his doctoral study at the University of Chicago, Nair wrote his dissertation on the dynamic pricing of video games. "Network effects are part and parcel of technology markets," he says. For example, in the video game market, the demand for consoles and the availability

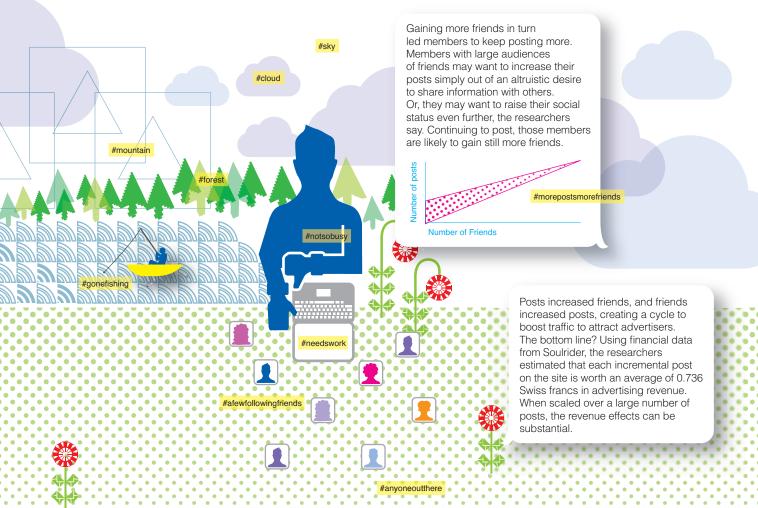
of compatible games depend on each other. "This got me thinking more about indirect network effects," which occur when the rising use of one product boosts the value of another, in turn increasing demand for the first. That led to a study of the relationship between sales of handheld devices and the availability of third-party software compatible with those products. The lack of compatible software depresses sales of handhelds, Nair found, suggesting that handheld firms should encourage the development of more software.

Nair has also analyzed the network effect in pharmaceutical marketing by studying how the advice of medical opinion leaders influences general practitioners. He found that the more opinion leaders suggest a drug, the more general practitioners prescribe it. Those strong word-of-mouth effects have implications for the strategies

pharmaceutical companies use to promote drugs to physicians, he says.

The findings in Nair's most recent paper could be important to any kind of social network seeking to increase its ad revenue, since the more posts and friending on a site, the more it attracts the eyeballs that advertisers want. To conduct the study, "Social Ties and User-Generated Content," Nair and coauthors Scott K. Shriver of Columbia Business School and Reto Hofstetter of the University of Lugano examined data from Soulrider.com, a social network for windsurfers and other extreme sports enthusiasts in Switzerland. Δ

Harikesh Nair is an associate professor of marketing at Stanford GSB. The paper discussed here recently won a Rigor & Relevance Research Award from the Swiss Academy of Marketing Science.





THE CASE OF THE #SAVEJOSH ARMY AND CHIMERIX INC.

HOW CORPORATE RISK ESCALATES AND ACCELERATES THROUGH SOCIAL MEDIA

FEBRUARY 2014

Josh Hardy, a 7-year-old boy from Fredericksburg, Va., and a four-time cancer survivor, is hospitalized with adenovirus, a potentially fatal viral infection, following a bone marrow transplant. When his medicine causes kidney failure, doctors inform Josh's parents of an experimental oral antiviral medication called brincidofovir being developed by Chimerix, a small biotechnology company in Durham, N.C., that went public in April 2013 to finance phase 3 testing and bring the drug to market.



🔀 MARCH 4

Josh's parents send an email to friends and family asking for help.

"If anyone with influence can help us convince Chimerix Inc. to release the drug for compassionate care for our son, we would be forever grateful."



MARCH 8

"We continue to receive many requests every week from around the world for this experimental drug..." — Chimerix CEO Kenneth Moch, via email

A Facebook user posts an email from CEO Kenneth Moch to the #SaveJosh page, in which Moch reaffirms the company's decision not to release the drug, saving that its "limited resources are dedicated to successfully completing the [clinical] trial" and bringing the drug to market.



LATE FEBRUARY

Chimerix declines to release brincidofovir to Josh, citing discontinuation of its formal "compassionate use" program two years prior in order to concentrate its limited resources on clinical testing for the drug to gain FDA approval and bring it to market.



MARCH 7

A recipient of the parents' message launches a Facebook page and a Twitter feed, and the story is picked up by local media: #SaveJosh

MARCH 9

"Chimerix makes me sick!"

"Chimerix's latest response ... is unfortunate but not unexpected."

Social media users respond with negative comments about the company. Josh's story is featured on CNN and Fox News. By the end of the day, #SaveJosh is trending at number five nationally on Twitter. The Facebook page has more than 10,000 likes.

RISK MANAGEMENT

The Wildfire Effect of Social Media

Connecting directly with the public can enhance a company's image. But are managers prepared to respond to a reputation crisis?

BY DAVID F. LARCKER, SARAH M. LARCKER, AND BRIAN TAYAN

MARCH 10

"Drug Company Refuses to Help 7-Year-Old Boy" -Fox News

"Thousands Beg Company to Give Medication to Sick Boy" -USA Today

National headlines become increasingly negative. Max **Cure Foundation offers to** cover the full cost of the treatment but is refused. Moch receives death threats, and the company installs police security at its office to protect employees. Chimerix begins forwarding incoming phone calls to voicemail.

Social media has fundamentally changed the

relationship between corporations and their

flow of information from the company to the

various stakeholders. Instead of a one-way

public, today consumers expect to be able

to engage directly with companies through

social media, an arena where, research has

can be contagious. For example, a 2014

paper by researchers at the University of

California at San Diego found that negative

Facebook posts are likely to trigger negative

responses and positive posts likely to trigger

positive responses. "Our study suggests that

people are not just choosing other people like

causing their friends' emotional expressions

The vast majority of consumers believe

to change," says lead author James Fowler.

that direct engagement improves a brand's

themselves to associate with, but actually

shown, emotions both positive and negative



MARCH 11

"This study is expected to begin with Josh Hardy as the first patient enrolled on Wednesday, March 12." - Chimerix press release

The company changes its position. After the close of business, Chimerix announces it will provide brincidofovir to Josh as part of a new 20-patient open-label study, coordinated with the FDA, saying in a press release that the public attention "helped accelerate a discussion between the FDA and Chimerix regarding the need for additional clinical development ..."



MARCH 25

Josh shows considerable improvement and is moved out of the ICU, and eventually is discharged from the hospital.



MARCH 12

Josh Hardy begins treatment. Chimerix's stock price increases 18%, in part because news of the study is interpreted as a vote of confidence in the drug by the FDA.



public sentiment turns negative.

Our research shows that many companies tend to be fairly unsophisticated when it comes to formally gathering data from social media and incorporating them into corporate strategy. Only 32.4% of companies monitor social media to detect risks to their business activities, 23.6% of companies give senior management a social media report with summary information and metrics, and just 7.7% of company boards receive such reports, according to a



APRIL 9

Chimerix announces that M. Michelle Berrey, previously chief medical officer of the company, will replace Kenneth Moch as CEO. No reason for the transition is given.

2012 social media survey by the Rock Center for Corporate Governance at Stanford and The Conference Board.

Questions remain about how social media information should be used to supplement a company's risk management program effectively. But the general lack of awareness of corporate leadership leaves them potentially unprepared to respond to social media stories, which can unfold with rapid velocity, like that of Josh Hardy and Chimerix. A

David F. Larcker is the James Irvin Miller Professor of Accounting at Stanford GSB, where Brian Tayan, a 2003 MBA graduate, is a researcher. Sarah M. Larcker is a vice president at Digitas Health.

46 ORGANIZATIONS SUMMER 2014 STANFORD BUSINESS

CASE STUDY

Overcoming the Hurdles in Start-Up Life

In the second of a series, a case explores the challenges in launching a business — and asks you what to do next.

EDITED BY DEBORAH PETERSEN

In the first part of this series, we described Gregg Renfrew's effort to begin a personal care and cosmetics company and asked readers what they would do if they were in the entrepreneur's shoes. Some readers questioned how the startup would distinguish itself from other more established and better-known beauty products. Their advice is recounted at the end of this story.

In this second part, the start-up road gets rocky when Renfrew calls on her network of friends and former colleagues to help her.

Some of the names and details have been fictionalized in this 2012 case study published by Stanford GSB's Center for Entrepreneurial Studies. An edited version of the case — written by H. Irving Grousbeck and Sara Rosenthal — follows:

Among Gregg Renfrew's first key hires as she was preparing to launch her cosmetics startup in the fall of 2011 were friends who had held senior positions in various disciplines to consult, advise, and serve on her board of directors. One of her most important recruits was Pamela Mitchell, a long-time mentor and brilliant brand strategist.

Renfrew had first met Mitchell 10 years prior through a mutual friend in the retail industry. She was well known as a sharp-minded brand strategist who, through her own Seattle-based firm, had contributed her creative energies to some of the most highly visible brands in the country. Renfrew first worked closely with

"One of the hardest things is that you never have anyone to turn to. You can never admit weakness or be scared."

Mitchell in 2003 while managing her own retail-consulting practice, and it was there that Renfrew got her first taste of Mitchell's ability to dig in her heels when she believed strongly in something. But not only was Mitchell just the right person to help create the decidedly American and accessible brand image Renfrew wanted for her company, she was also a trusted friend and mentor.

Renfrew described their relationship:

"One of the hardest things about running your own company is that everyone turns to you, but you never have anyone to turn to, you can never admit weakness or be scared. I crave talking to people who are also entrepreneurial, who have run their own companies, and who understand the day-to-day challenges I face. Pamela has always been such a person for me. She's very bright, and I've used her for years to give me guidance in my career."

Renfrew and Mitchell began contract discussions in early fall 2011 to solidify Mitchell's designation as a board member who would also provide consulting services at a discount to her typical fees. While she would continue to manage her firm's other client relationships, she would devote significant time to the new company and staff a team to work on the project as well. Renfrew and Mitchell had soon drafted an agreement to work together, and though it was never officially signed, Renfrew felt comfortable that they had settled enough details to proceed. She immediately authorized Mitchell to begin creating the company's name. As in years past, Mitchell delivered brilliantly. She created the logo and began to hone the company's positioning as a brand that empowered women, both through

H. Irving Grousbeck is the MBA Class of 1980 Consulting Professor of Management at Stanford GSB and was a cofounder of its Center for Entrepreneurial Studies, where Sara Rosenthal is a case writer. Read the case "Beautycounter" at stnfd.biz/xTCQz

the direct-sales model and its highly transparent, safe, and sophisticated product line.

In mid-January, Renfrew called her team together for a meeting to discuss the product road map and milestones for the months ahead. Mitchell had flown in to present a status update on the marketing plan, which included a proposal to tour college campuses that spring to find the face of Beautycounter. One colleague glibly responded that Mitchell's proposal seemed

premature, given that the company had yet to establish its brand. Mitchell took offense: "We have spent months building this brand and the positioning. To say we have yet to establish a brand is just insulting and disrespectful!"

In an attempt to subdue Mitchell's anger, Renfrew steered the conversation to a new topic by asking her to display the various logo ideas she and her team had conceived. After reviewing the logos, another colleague commented that they looked just like that of another well-known cosmetics company, and did not go far enough to distinguish Beautycounter from the rest of the pack.

At this, Mitchell rose from her seat and stormed out of the room without a word. The team was shaken and surprised at Mitchell's response, but also knew from seeing her work over the past several

months that she was deeply passionate and "all-in" — she had clearly taken the comments very personally.

Renfrew excused herself from the meeting to follow Mitchell and talk her down from her anger. She found her pacing in the lobby and asked her to explain her response. Mitchell replied, "They've completely belittled all the hard work that we have put into building this brand. I will not put up with being treated this way."

Renfrew responded, "Pamela, I see how hard you've been working and know that the Beautycounter brand is what it is because of you. But you're above this type of behavior. This hurts your credibility within the team and just makes you look bad."

Saying she'd go back and talk to their colleagues, Renfrew added that she needed Mitchell "to cool down, walk back into that room, and get back to work." Mitchell took a deep breath and apologized to her for losing her temper. She promised to return to the meeting after taking a short walk around the building, at which point Renfrew sat down with their colleagues.

Renfrew told her colleagues that they were out of line with their comments. "While it may not be readily apparent to you, Pamela and her team have spent months working on building this brand, and I really value their contributions. Your comments have created an uncomfortable situation, and I just can't stand for any member of our team to feel disrespected. I value your opinions but need you to find a more constructive way to communicate them."

Several minutes later, Mitchell returned to the meeting room, and though the tension had not yet dissipated, everyone had visibly calmed down. To bring some closure to the event, Renfrew made a final comment to her team: "Let me be crystal clear how important it is that we are all respectful of one another. Each person here is working hard to get this company launched, and we all need to be cognizant of each member's contributions. We are a team and cannot get to our final destination unless we act as one."

Later that day, Mitchell called Renfrew: "I'm sorry for the stress. I really, really care about this. My defensiveness can be personal, but it's ultimately protective of the pure idea. I promise."



The Challenge: What are the next steps Renfrew should take to assure that her team will be collaborative and productive going forward? How would you have handled the conflict? Tell us your thoughts at www.facebook.com/StanfordGSB using #StanfordGSBCaseStudy or email us at StanfordBusiness@stanford.edu **Next Issue:** Will Renfrew's new line of clean cosmetics find its niche in the marketplace, or will the risks prove too great to overcome? Δ

What readers said about Part I:

She needs to determine whether her research supports the idea that a more sophisticated, high-end buyer would want to buy (and sell) through this channel. What is the size of this market compared to the wider Whole Foods, Trader Joe's, or (using the direct-selling channel) farmers market/home-party pool?

What price point would she need to set for this lowervolume market, and how will she effectively communicate her differentiation swag bags at celebrity events? Or will she reach out to dermatologists and spas? — MARIAH LICHTENSTERN-WALEBOWA

Renfrew will face a hurdle as she tries to scale her business by adding new customers if she markets Beautycounter as beauty consulting. Successful cosmetic companies market their products with a straightforward message about how the product will make you feel.

The direct-sales model is a great way for Renfrew

to find and organize a team of consultants who share her philosophy that beauty products should be "chic like Chanel, safe for your body, and perform like a traditional brand." Finding consultants to reach customers may be a difficult business model for a startup to maintain. however. Renfrew should consider testing her products with different market groups and then selling the products within a major retail environment where customers can find her line (like Carol's Daughter at

Target, Benefit Cosmetics at Macy's, or one of the many small lines carried at Sephora).

Marketing the products as clean, consistent in quality, and either soothing or invigorating due to their natural ingredients will draw women to the brand. The companies that Renfrew worked for before starting her own company, like Martha Stewart and J.Crew, emphasize products that are tried and true. This will be an issue in marketing.

- DABNEY LYLES



Think Like an Entrepreneur

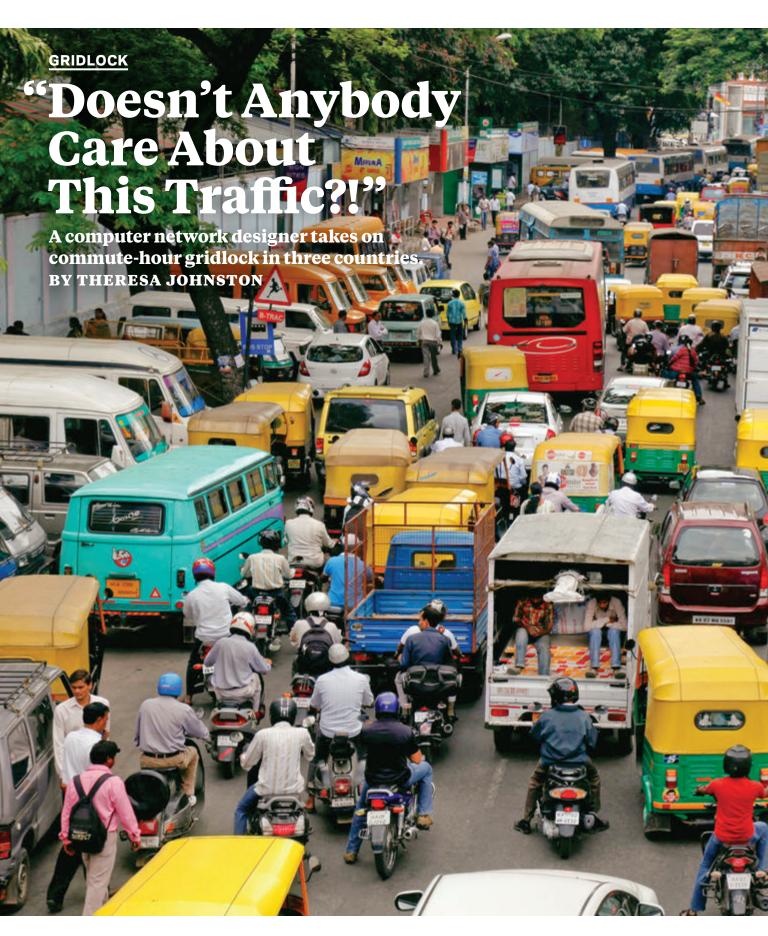
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50 WORLD SUMMER 2014 STANFORD BUSINESS





Stanford computer scientist Balaji
Prabhakar was on his way to a routine
business meeting in Bangalore, India,
when his career took an interesting
detour. "It was the winter of 2007," he
recalls. "I was being driven to Infosys,
which has an IT services campus on the
outskirts of the city, when suddenly I
found myself in the mother of all traffic
jams." Hemmed in by honking cars, trucks,
bicycles, and scooters, Prabhakar typed
out an apologetic text to the person he was
supposed to meet. Then he posed what
he thought was a rhetorical question:
"Doesn't anybody care about this traffic?!"

In fact, Infosys executives had been thinking about traffic gridlock a lot. Like many booming Indian IT companies, its Bangalore campus is located in a special Indian economic zone called Electronics City, about 15 kilometers south of the city center. Every morning, more than half of its 20,000 employees have a nightmare commute indeed. So when Prabhakar finally arrived at his destination, the execs asked the computer science/electrical engineering professor what *he* would do to make things better.

Prabhakar, who grew up in Bangalore, came up with a novel solution: a high-tech "nudge engine" aimed at encouraging Infosys employees to come in early and beat the morning rush. The idea worked so well, it is now being used to tackle similar problems in cities around the world.

How does it work? Nudge engines are programs that use mobile, cloud, and social networking technologies to sense individual behaviors — the number of times employees swipe their identification badges at work, for example — and then "nudge" them to change those behaviors through the use of friendly competitions and incentives, such as lottery prizes.

The idea comes from a basic tenet of computer science: that shifting just 10% of the peak load in a congested network can lead to a dramatic reduction in congestion measures, such as waiting times.

It also builds on the work of economist

Balaji Prabhakar, a Stanford professor of electrical engineering and of computer science, described the Bangalore and related experiments during a 2014 winter quarter course called Designing Large-Scale Nudge Engines at Stanford GSB.

52 WORLD SUMMER 2014 STANFORD BUSINESS

John Morgan of the University of California at Berkeley, who has suggested that lotteries can be an equitable and effective means of advancing the public good without the downsides of fines or differential pricing schemes.

In Bangalore, for example, employees who signed up for the Infosys Stanford Traffic Project (INSTANT, for short) were monitored to see when they arrived at work each day. Rather than earning token amounts for swiping in early (which would have been a ho-hum scheme), early birds were given credits toward a highly anticipated Saturday morning online lottery, with cash prizes ranging from the Indian equivalent of \$10 to more than \$200. The more early bird trips individual commuters made, the higher the chances they would win, and the higher the potential rewards.

The approach worked. By the end of the 6-month experiment, the number of Infosys commuters arriving before 8:30 in the morning had doubled, and the average bus rider's commute fell from 71 minutes to under an hour, allowing Infosys to shift 60 of its shuttle buses to earlier end-of-workday departure times.

The program also turned out to be great for morale. "INSTANT brought people together," says Rama N.S., former head of Infosys's Bangalore Development Centre and now CEO of the Electronics City Industry Association. "It was fun, it reduced congestion, and there was money to win. The algorithm was robust, and people said it was very fair."

Prabhakar and his Stanford graduate students had thought that the Bangalore experiment would be a fun, temporary diversion from their regular work in Stanford's departments of electrical engineering and computer science. A Stanford faculty member since 1999, Prabhakar has focused his teaching and research on the design, analysis, and implementation of data networks, both wired and wireless. But he saw the intriguing similarities between computer and phone networks, which have limited

bandwidth, and real world networks, such as transportation systems and electrical grids. "When a network is successful like the internet, and it grows to billions of users, it's very difficult to change it from the top down," he notes. Likewise, "you can't build new road systems overnight. But you can try small changes. That's the beauty of incentive programs. You don't have to start changing everything on day one. You can start small and scale out."

As the project gained more attention, including front page coverage in the *Times of India*, it attracted the interest of curious transportation managers in other parts of the world. One of the callers, from Singapore's Land Transport Authority, wanted to encourage train riders to shift their commute schedules away from overcrowded peak times through the use of incentives. So after meeting with the authorities there, Prabhakar and his students devised a new nudge engine called Insinc, giving participants points for every kilometer traveled on the system, and triple points for off-peak morning trips.

The interface looks like a combination of the popular Chutes and Ladders board game and a program for frequent flyers. (Committed off-peak train riders can work all the way up from bronze to platinum status.) When a Singapore commuter spins the virtual wheel, a token car moves onscreen. Players who land on lucky squares can win prizes of up to \$200.

Prabhakar and his students launched a similar nudge engine aimed at reducing daytime automobile congestion and parking problems on the Stanford campus in 2012. Funded by a grant from the U.S. Department of Transportation, the Capri program lets regular Stanford parking permit holders earn incentive points whenever they bike or walk across campus borders, or drive in and out at designated off-peak hours. Solar-powered sensors, similar to electronic toll booths, were installed at various campus entry points to keep track of the comings and goings.

Currently, about half of the 8,000 employees at Stanford's main campus and eligible students are participating in the program for rewards ranging from small cash prizes to highly coveted sports tickets. "I hear that it's common for cars to be lined up outside of the sensors at five minutes to six in the evening, just waiting for the time to change," Prabhakar says, grinning. So far, he says, about 15% of the trips taken by participants have shifted away from rush hour.

"When a network is successful and it grows to billions of users, it's very difficult to change it from the top down."

Another of Prabhakar's nudge engines didn't have anything to do with traffic. Instead, it aimed to boost the physical fitness levels of employees at Accenture, the management consulting, technology services, and outsourcing company. To participate, employees uploaded pedometer readings into the "Steptacular" database, which awarded credits based on steps taken. Employees then redeemed the credits for random rewards through an online user interface.

A particularly effective feature of the Steptacular program was its use of social networks to nudge employee behavior. Looking at the website, participants could see how many steps their colleagues had taken, and how many steps their entire office had taken compared to others in their company. "The graphic showed a rocket going from the earth to the moon," Prabhakar explains, "and the distance it covered was equal to the total miles walked by all the employees in the program, with contrails showing the distance covered by regional offices." Coding the playful program was an enjoyable change of pace for the professor and his graduate students. "We were here in the office all the time!" he recalls, laughing.

In the future, Prabhakar says, nudge engines could be used for a variety of purposes: to encourage people to install computer security patches, to recycle waste, to save electricity, or to conserve water by taking shorter showers. "You'd have to sensor it, maybe by wearing a small tag when you enter the shower, or by sensing the footprint on a bath mat," he muses. In any case, he adds, "The idea is to encourage desirable behavior shifts — and make it fun." Δ

CONNECTIONS

What Is the Relationship Between Technology and Democracy?

Condoleezza Rice and Google's Eric Schmidt and Jared Cohen discuss the role of communication technologies in foreign policy and geopolitics.

EDITED BY MICHAEL FREEDMAN

What is the relationship between technology and democracy? In March, former U.S. Secretary of State and Stanford GSB Professor Condoleezza Rice sat down at the school with Google's Eric Schmidt and Jared Cohen to discuss the duo's book, The New Digital Age: Reshaping the Future of People, Nations and Business, which explores communication technologies, foreign policy, and geopolitics. Schmidt is executive chairman at Google, where Cohen is the director of Google Ideas. Here are edited excerpts from their discussion:

Condoleezza Rice: You've said that this is a book about technology. But more importantly, it's a book about human beings. What prompted you to write this book, and what prompted the two of you to write this book together?

Jared Cohen: Eric and I met in Baghdad in 2009. He wanted to see what it was like traveling in to a war zone and whether technology was relevant at all. After the trip to Iraq, we traveled to more than 40 countries, looking at the ways in which technology is disrupting autocracies, ways that it's changing the nature of violence on the ground, and what we realized is there's an inherent connection between the Silicon Valley world and the geopolitical world that's really missing.

Eric Schmidt: I'd like you to think about a secretary of state. Imagine if you'd had a technology arm that could implement technology that would actually fix a problem that was bedeviling you: censorship, communications, empowering citizens, empowering women. Something that was on your mind, and yet all you had were the tools of foreign policy.

It just seems like, in our industry, we should define ourselves with a somewhat higher purpose. Why doesn't our industry, the tech industry, figure out a way to solve these problems? I was struck by the horrific situation of most people in the world in terms of governance, the horrific way in which women are treated, the corruption at every level of government.

So the real genesis of the book was, "Why don't we not only identify what's going to happen to them but also what the bridges are?" After two years of going through this, we ultimately come out in the book, I would claim, with a pretty optimistic message.

Rice: You went to one of the — maybe the hardest case that I can think of, North Korea. What in the world were you doing in North Korea?

Schmidt: They have a million cell phones, 22 million people. It's a very poor country with horrific, horrific governance, obviously, and maybe if we could just

get them to turn on a little bit about that internet, we could begin to open up the country. It's a country where there's only one decision-maker, and the only way that country will open up without a revolution, which is difficult, is if the leader decides that the country needs the information more than it needs the conflict that new ideas will bring.

I think what we concluded was that all you have to do is to insert doubt.

North Korea is a true autocratic state — essentially it's the last one. They really do believe from birth that their leader is god, king, religion, and so forth. All we have to do is get a little doubt in, and that country will fall over.

Cohen: If you think back to the days of the Cold War, their totalitarian societies, cults of personality, etc., in the future you're still going to have autocracies, you're still going to have horrible societies. But the one silver lining in all of this is, the totalitarian societies — the true cults of personality — have literally been eliminated by the internet in the same way that scientists were able to get rid of smallpox. Once North Korea changes, you'll never see a cult of personality again, because the ability to create a society without doubt will no longer be possible.

Rice: You also have regimes that are more integrated into the international system but are doing terrible things to their people. For instance, let's take the suffering in Syria at this point. Is there anything that technology can do for the Syrian refugee, for instance?

Cohen: The Syria context basically creates a bug in our technological optimism because you have literally thousands of videos that are coming out of Syria, each one more horrific than the next. And it's doing nothing to increase political will on the part of states to intervene. At the end of

Condoleezza Rice is the Denning Professor in Global Business and the Economy at Stanford GSB. From January 2005 to 2009, she served as the 66th U.S. Secretary of State. Eric Schmidt is executive chairman of Google, where he served as chief executive officer from 2001 to 2011. Jared Cohen is director of Google Ideas and an adjunct senior fellow at the Council on Foreign Relations. Watch the video at stnfd.biz/yFsK1

54 WORLD SUMMER 2014 STANFORD BUSINESS

the day, without a state-led intervention of some kind, the horror is not going to stop.

I heard some horrible stories from Syrian friends of mine that I hadn't seen since I was living there in 2004 and 2005 about government checkpoints where they stop you, and they ask for your phone. They hold a gun to your head and ask for your login information. They then look at what's been posted on your wall by you or somebody else. My friend told me that when their brother did this, they saw someone had posted a page sympathetic to the revolution on one of his social networking platforms, and a signal came from the checkpoint to the top of the building, where they then shot him in the head.

Technology can't fix that problem. This is a brutal regime doing terrible things, and I think it's important that we understand we're far away from it out here, that there are limits. It's a part of the solution, but at the end of the day states are still the dominant unit in the international system, and they're the ones that have to take charge of the situation.

Schmidt: We all start from the premise that you empower individuals, and the thing that's new here is the empowerment of citizens around the world. We've never had a situation where people were so empowered. So where does it break down? Well, in the first place, in these countries they shut down the internet because they're

in a war, and so that's always a bad deal. But ultimately knowledge and awareness is not the same thing as shooting guns. So if you're going to know everything, which is a reasonable presumption of the future, we're going to know every massacre. We're going to know the horrors. You're going to still have to have some way of stopping it.

Now you can do it with an international [outcry]. In the book, we write that you could in fact begin the criminal trial of the war criminals during the time they're doing the war. And there's evidence that this kind of awareness is reducing the number of people being killed, ... and it probably constrains the misbehavior of these despots within reason, but it doesn't

CONNECTIVITY Eric Schmidt, left, Condoleezza Rice, and Jared Cohen



stop the killing. That's the question I have for our foreign policy. Is there any solution to that problem aside from the traditional foreign policy?

Rice: You're still confronted with the question of "What will those consequences be?" so technology has in some sense put more pressure on governments to actually act in circumstances in which they actually have very few levers to pull. When Czechoslovakia was invaded in 1968 by the Soviet Union we didn't know what was going on, on the ground. The television cameras couldn't get in. Now you know exactly what's going on, but you still have to act. There's more pressure because you know, and still the tools are not there.

Schmidt: The question I keep asking is, what's new? We've always had despots, we've always had bad people, we've always had good people, we've always had governments. We believe as a group, I think naively, that if you just empower the people with these tools democracy flourishes. And in the book we take you through what happens when you empower people.

When we were in Myanmar, we were in this place called Inle Lake, and it's beyond beautiful. And some number of kilometers north of us there was a terrible fight between the Buddhists and the Muslims. A whole bunch of houses are burned, people are killed. I naively assumed that the internet had been used as a calming mechanism. They had just gotten the internet, people could talk to each other, they could see that there's bad, they could help stop it. In fact, it was the inverse, that the internet was used to inflame tensions on both sides.

So it looks like technology can be used for both good and bad. And Jared made the point that if you're an early-stage society, you may not be able to really critically think about this new information, so I call this a danger zone. In the book, we talk about this, that in these emerging countries what happens is all of a sudden, all of this connectivity happens, everybody is empowered, and God knows what's going to happen because they've not grown up with doubt, with choices, with different voices, and with an ability to choose among those with some critical thinking.

Rice: And they've not grown up with institutions that can mediate between differing opinions, which leads me to probably the biggest question out there in terms of the international system, and the role of technology, and democratization, and the like: China.

Technology has put pressure on governments to act in circumstances in which they actually have very few levers to pull.

Schmidt: Jared and I were, in November, in a weekend meeting with the president and the prime minister of China with all the mayors, talking about their accomplishments, and we were among the Americans that were visiting. It was remarkable to see the way they present themselves. It's a country of leaders who are engineers, analytic, numerical. They spoke with enormous pride of the lifting of people out of abject poverty to what we think of as lower middle class. They understand the middle-income trap. They're growing at 7.5%, and so forth. It's a perfect image they portray — and good for them. They really have accomplished some amazing things.

These are the same people who criminalized speech above 5,000 people by a blogger, that if you activate more than 5,000 people in some way, you can literally be arrested and shot. And of course in China everyone has 5,000 followers, so it's just because of the scale. So it really is a chilling effect.

How do you rationalize those two? Well, one is that American firms are not welcome unless they're useful to China, so many of the social networks are blocked. But there are two things that are interesting that have emerged recently: WaveO, which is essentially a Twitter-ish replacement, and WeChat, which today you'd know as essentially a WhatsApp replacement.

What's interesting about these is that they're much more than what I described. They are the ways in which people communicate online, and they are heavily censored under these very, very arbitrary censorship laws. People are in them all the time. I came away with a sense that the Chinese government has finally met its match. That if you start talking through WeChat, which is a way of talking to your friends, but they're

linked together, and then eventually it spreads, ... and eventually a new idea gets to 10 million people. There's not enough prisons and jails to arrest all those people. We concluded, and it was very clear in talking to the Chinese government, that they are at least aware of this possibility on the internet, and they're worried about the internet being used to disturb the social order.

Rice: And the Chinese are an example of legitimacy based on prosperity, and the question with prosperity is, you keep chasing it, it gets harder and harder because people's expectations keep going up, but I wonder about the role of the technology, the internet information, just information.

So, for example, pollution in China, environmental degradation is a hot political topic in China, and people can walk outside of their apartments, or wherever, and they know they can't breathe in Shanghai or Chengdu, or whatever. And for a long time the government was giving a pollution index number that clearly didn't bear any resemblance to reality. The U.S. Embassy started publishing a number or putting a number up, but there's also now apparently an app that you can buy that will measure the pollutants. So just the provision of information challenges the monopoly on information that an authoritarian government depends on for control and acquiescence. Do you agree with that?

Cohen: In China this is going to be a particular challenge. Lots of people like to make the argument that China has a very sophisticated censorship apparatus, but in reality China is about to go through an experiment that no other country in history will ever go through, and it will happen just one time, which is a billion people are going to come online in one country in the span of a decade. You have to ask yourself the question, "Who are they?" They are largely rural. They have no visibility into what's going on in the various urban environments in China.

The reason this is game-changing is the grievance of one city has the potential to scale to a grievance across all cities. It's that visibility into other Chinese communities' problems and challenges and grievances. So the challenge of these complaints, and these frustrations scaling, even the Chinese themselves have no idea what that looks like. It's a huge wild card for them. Δ

INCENTIVES

Can Trade Prevent War?

A study shows why international trade alliances are more effective than military ones at keeping the peace.

BY LOREN MOONEY

How can humans stop war? Obviously there's no simple answer, but a new network model analysis of international alliances suggests that trade may be at least part of the answer. The model, developed by Stanford economist Matthew O. Jackson and economics PhD candidate Stephen Nei, suggests that military alliances alone aren't enough to stop nations from attacking one other, and also that the addition of multilateral economic trade creates a more stable, peaceful world.

While there is considerable existing research on the effects of trade and war, much of it has looked at bilateral relationships. This model focuses on multilateral interactions and considers various incentives for countries to attack, form alliances with, and trade with one another. In an attempt to understand what's necessary to achieve a stable network with no incentive for war, Jackson and Nei first explored an alliance scenario based solely on military defense considerations, excluding trade.

"The fundamental difficulty we find is that alliances are costly to maintain if there's no economic incentive," says Jackson. So networks remain relatively sparse, a condition in which even a few shifting allegiances leave some countries vulnerable to attack. "Stability is not just a little bit elusive; it's very elusive."

Economic trade, however, makes a significant difference. "Once you bring in trade, you see network structures densify," he says. Nations form a web of trading alliances, which creates financial incentive not only to keep peace with trading partners but also to protect them from being attacked so as not to disrupt trade. "In the context of the alliances we have analyzed, trade motives are essential to avoiding wars and sustaining stable networks," the authors wrote in their paper, "Networks of Military Alliances, Wars, and International Trade."

Their findings coincide with two major global trends since World War II: From 1950 to 2000, the incidence of interstate war has decreased nearly tenfold compared with the period from 1850 to 1949. At the same time, since 1950 international trade networks have increased nearly fourfold, becoming significantly more dense. "In the period before World War II, it was hard to find a stable set of alliances," says Jackson. The probability of a lasting alliance was about 60%. "You have almost a coin-flip chance that the alliance won't still be there in five years," he says. In Europe in the 1870s, for example, German Chancellor

Otto von Bismarck sought peace with "balance of power" diplomacy, which crumbled leading up to World War I. "Then in the past 50 years or so, there's been a surprising global stability." The impact of economic interdependence is especially apparent in Europe, Jackson says, where the Eurozone has promoted not only peace and increased trade among nations but also labor mobility.

Very costly wars still occur, of course,

Very costly wars still occur, of course, but Jackson notes that the most war-torn places in recent history have tended to be those with fewer global trade alliances.





 ${\tt ECONOMIC\,INTEREST\,Shipping\,Morris\,Minors\,and\,Oxfords\,overseas\,from\,an\,English\,wharf, 1949}$

For example, the Second Congo War from 1998 to 2003 and beyond, which killed more than 4 million people and is the deadliest war since World War II, involved eight African nations with relatively few trade ties. "Then look at the Kuwait situation," says Jackson, referring to U.S. intervention in the first Gulf War to protect oil supplies. "Economic interest drives a lot of what goes on in terms of where nations are willing to exercise military strength."

There are other real-world factors that have no doubt influenced war and trade trends since World War II, among them the proliferation of nuclear weapons — "Changing military technology can help maintain stable arrangements," says Jackson — the Cold War, an increase in worldwide wealth levels, and the introduction of container shipping in the 1960s, which has helped facilitate low-cost, long-range trade.

Still, Jackson and Nei's theoretical model suggests that trade alliances play a critical role. And in fact economic allies may be the factor most worth striving for in developing areas. "Maybe wars like the Second Congo War won't be

occurring in the future if there's more trade with African nations," says Jackson. "Economic interests can really help us have a more peaceful world than we already have." Δ

Matthew O. Jackson, the William D. Eberle Professor of Economics at Stanford, earned his PhD in economics from Stanford GSB in 1988. Stephen Nei is a Stanford PhD candidate in economics.



RISK

Are Global Supply Networks Too Interconnected?

How a company's effort to decentralize its supply chain can increase risk of disruption.

BY EDMUND L. ANDREWS

Can there be such a thing as too much supply diversification? A new paper on global supply chains suggests that manufacturers that try to reduce their risk by diversifying their suppliers may in fact be increasing their entire industry's risk of disruption.

That somewhat counterintuitive insight is developed in a new paper coauthored by Kostas Bimpikis at Stanford GSB, and it may have implications for more than just manufacturing.

In a nutshell: Multisourcing is a great way to mitigate a firm's disruption risk — unless everybody else is doing the same thing. If that happens, and it does, the risks of industry-wide disruptions are actually higher than they would be otherwise.

It's standard practice for automobile manufacturers, for example, to have more than one supplier for critical components. That sounds like it makes sense. If something bad happens at the one company that supplies headlights for Lexus, the disruption could shut down production for the entire line of cars.

But Bimpikis, in a paper with Douglas Fearing at the University of Texas and Alireza Tahbaz-Salehi at Columbia University, argues that the problem is that most firms have a limited understanding of and control over the decisions of their suppliers. Using multisourcing as a risk-mitigating strategy results in overlapping supply chain networks for rival firms. Consequently, the likelihood of industry-wide disruptive events becomes increasingly higher.

That became apparent after Japan's tsunami and earthquake in 2011. As *Automobile News* reported, the disaster badly damaged the company that supplies 40% of the electronic chips used in cars. In yet another case, a year later, car makers were disrupted because an explosion at a German factory knocked out production of a specialty chemical that's used in fabrics, brake parts, and even fuel tanks.

To Bimpikis, Fearing, and Tahbaz-Salehi, bottlenecks like those suggest a

Problems at a single obscure electronics company can cause havoc for a big swath of the industry.

blinkered understanding of what happens in a networked economy. What begins as an effort to diversify and reduce risk ends up creating overlap in the procurement channels available to an industry and consequently higher systemic risk. In a highly networked world, problems at a single obscure electronics company can cause havoc for a big swath of the industry.

"Firms are becoming increasingly aware that they operate in a networked, global economy," Bimpikis says. "This realization unveils a host of important issues related to the interplay of the firms' profit-maximizing incentives and their positions in the supply chain structure." They are beginning to realize that it is not only important to know with whom they are doing business but also who else is doing business with them.

The broader lesson is that multisourcing in a networked environment is a double-edged sword: It provides great power to cut costs and diversify risk, but it can also have significant adverse effects.

"Advances in information technology have made it easier for firms to delegate many of their core functions to third parties," Bimpikis says. "Obviously, this has tremendous benefits, as companies can focus on what distinguishes them from their competition. But the flip side is that more delegation leads to longer and more decentralized supply chain networks, and there are all sorts of risks associated with that trend."

The recent security breach at Target Corp. provides an excellent illustration of this point: Computer hackers managed to steal data on more than 40 million customers, a revelation that hurt sales at the height of last year's holiday buying season. It turned out that the hackers cracked into Target's system in part by going through its supplier for heating and ventilation services. In a world where almost every company is tied electronically to scores of other organizations, increased connectivity brings increased exposure to risks. Δ

Kostas Bimpikis is an assistant professor of operations, information and technology at Stanford GSB. Much of his current research is focused on the economics of complex social networks and the implications for individuals and businesses.





China's Rising* Middle

Nobel laureate A. Michael Spence explains how a slowing Chinese economy could be good for China — and the world.

INTERVIEW BY STEFAN THEIL

In late April, Beijing reported first-quarter GDP growth of barely above 7%, far lower than the 10 to 11% rates typical for the last decade. The news prompted business headlines full of stark warnings about a continuing slowdown of the Chinese economy at the precise time when most of the developed world is still struggling to regain pre-crisis growth. But instead of worrying about a slower China's effects on the precarious global ecosystem, maybe we should rejoice. Lower growth in China, it turns out, is part of the world's biggest developing country's shift to a more stable and sustainable pace of development that will have profound and positive effects on the Western economies as well. That's the view of former Stanford GSB dean, current Hoover Fellow and 2001 Nobel laureate A. Michael Spence. And he has reason to know: Not only has Spence researched and written extensively on developing-country economics, but in recent years he has held informal advisory positions in China, working closely with some of Beijing's top planners and economists. Spence spoke to Stanford Business from Milan, Italy, where he lives. Excerpts:

Why do you say China's slowdown is actually good news for the world economy? China's turbocharged growth at 10 or 11% of GDP year after year was an abnormal situation. It was a function of a lot of unhealthy imbalances in the world. Before 2009, the advanced economies were growing faster than they should have been, with leverage, asset bubbles, and that sort of thing. One result was abnormally high demand for Chinese products. Then, during the financial crisis, when exports fell off, the Chinese government reacted by opening the spigots of credit and investment, which kept growth going at a very high rate, but the Chinese policymakers knew that this was not a sustainable growth strategy. You just cannot keep growing at that rate once your economy gets to be as large as China's is now. Advanced economies are doing well when they grow around 3 to 3.5%. China is on a trajectory to become an advancedincome country. During that transition, over multiple years and decades, China will inevitably slow down. It was never realistic to think this country could sustain 10 or 11% growth.

So the slowdown is healthy, but why

now? At least three things are happening at once. First, you're seeing a dramatic and complex transition as China's economy shifts from that of a very highgrowth early-developing country and enters what economists call the "middleincome trap," which I can explain in a little more detail later. Second, you have a crisis in the advanced economies that really slows them down, cutting into the demand for Chinese export products. Third, the Chinese government is shifting the emphasis of their policies to deal with social tensions, equity issues, and environmental sustainability. So they have prudently lowered the growth target for the current five-year plan to 7 to 7.5% and seem to be on target.

What are the specific changes in China behind lower growth? Again, several things are going on simultaneously. Wages are rising fast, especially in the coastal areas, and that is causing major structural changes in the way the economy is put together. Companies oriented toward the most labor-intensive activities in the global supply chain will move to other countries, change their business model, or go out of business. Wage increases are starting to boost household income as a share of the economy, which will shift the composition of demand toward the consumer and the domestic service sectors, where growth also tends to be slower.

We've also seen more reports recently on business bankruptcies and debt defaults, and some economists are warning that China has a dangerous debt bubble that could collapse at any time. Newspaper reports on debt in China have been partly misleading. Public sector leverage is well below most other countries. China also happens to be one of the countries where the assets on the state balance sheet are enormous, including \$3.5 trillion in reserves, 90% of the shares in state-owned enterprises, a lot of the country's land, plus tax capacity. Leverage in the corporate and household sectors has been rising at an unsustainable rate. There are some legitimate concerns with corporate debt and with China's version of the shadow banking system, which is a set of complicated and unregulated end runs around the state-owned banking sector. But they are busy getting their arms around that. The question of what's going

to happen with the debt is not whether the government has the firepower, but whether mistakes get made managing it. If they pull the plug too fast, the risk might be a collapse in the real-estate sector or other contagion. Then the temptation will be to open the spigots of credit and public investment again, but they know that this is not a sustainable growth strategy.

Are there concrete examples of less leverage and shift to healthier growth fewer airports in the middle of nowhere or ghost towns built all over China, for example? Everyone gets worked up about the ghost towns. I think they're mistakes and scary if they go awry and if there are too many of them, but I haven't seen any actual inventory on how big they are relative to overall investment. More critically, local governments have had the instinct to keep building more infrastructure for lack of any better ideas, and that's what Beijing is reining in. What they're now trying to create is a system that screens out the bad investments but keeps the good ones, such as the high-speed train network and the interstate highways they've built.

Explain the "middle-income trap" and why so few countries have managed to escape

it. Early-stage developing countries grow because they have access to foreign markets and foreign technology. So they focus on developing exports, and everybody gets it in their head that this is where the underlying growth is. This is a successful formula when income is \$800 per capita, but when income rises to \$5,000 and above, countries start to get competitors in precisely those areas that generated the growth. So they typically do things that protect those sectors and companies, such as subsidize them, control

A. Michael Spence is a senior fellow at the Hoover Institution and Philip H. Knight Professor and Dean, Emeritus, at Stanford GSB. He is a recipient of the 2001 Nobel Memorial Prize in Economic Sciences.



62 WORLD SUMMER 2014 STANFORD BUSINESS

the exchange rate appreciation too much
— all those things that never work and slow
the economy down. The middle-income
transition is difficult precisely because
the growth pattern has to change and the
policies that support it have to change.
Unfortunately, there is a very strong
tendency for organizations, including
governments, once they find a successful
formula, to stick with it beyond its useful life.

Can you give an example of how a country escaped this trap? The best example, perhaps, is Korea. Before the mid-1980s, Korea was a high-quality, labor-intensive manufacturing powerhouse based on lowcost labor. Around that time, people in Korea thought it was terrible that wages were rising. It was perfectly normal for wages to go up as the country grew and became richer, but now, in the mid-1980s, the Koreans had to do something else to drive the growth. Yet in Korea, many critics said no, we have to keep doing what we're doing, wage increases have to stop, this is where the jobs are. If the government had listened to these people, it would have been a disaster. Instead, the government stopped targeting industries, stopped focusing on export zones and started investing in education and technology and all those things you associate with an advanced economy. It turned over more decisionmaking to the private market, including letting the old companies die off. But a lot of those companies survived by moving their low-cost activities to even cheaper countries. It wasn't a perfect transition, but it worked. When companies like Samsung who were making decent washing machines got up one morning and said, "We're going to make semiconductors now," people thought they couldn't do that. But that's exactly what they did. What the Korean policymakers understood was that in order for this transition to work, the government needed to back off from deciding which sectors would be favored and instead let the market and innovation drive the actual structural configuration of the economy.

How does this apply to China? Most of the things you expect to see, you're starting to see. They've begun to let export businesses struggle, where they either find new business models or die off. Exports, which used to be a primary driver of growth, are growing very slowly now, in part because of slow growth in advanced economies.

"The middle-income transition is difficult because the growth pattern has to change."

A good share of demand is now generated inside the country — including a fair amount of horsepower starting to come from private consumption, even if China is in no conceivable way yet a consumption-driven economy. Chinese policymakers are intensely curious about other countries, and they've studied Korea and many other cases. They have a well-articulated game plan that I think is comprehensive, credible, and pretty complete.

The previous Chinese government also announced some bold economic reforms but did not deliver on them. What will be the signs to prove that they are serious about reforms this time? More businesses failing or changing their business models in the tradable side of the economy. A higher share of GDP going to household income. Clearer evidence of financial sector reform and regulation, including deeper and broader capital markets for corporate and municipal bonds, venture capital and private equity, more foreign competition. A liberalization of cross-border capital flows, though this would have to be gradual in a world of unusual monetary policies in the West. But again, the most important sign that the reformers are serious is that growth is down to where it is now.

But what about the 300 million additional workers moving from the countryside into the cities? Doesn't China need high GDP growth to provide employment for them? Ten years ago, the big employment engine was the low-cost export sector and construction. As that manufacturing becomes more capital-intensive and higher value added, it will need less labor. So what's going to replace the old employment engine? If the urban population grows from 50 to 80% of the total population, and cities grow and expand, there are a ton of service jobs that go along with urban life, from subway drivers and dry cleaners to shops and restaurants. And, of course, construction will continue.

That's going to be an important employment engine. In other words, it's not GDP growth we should be looking at, but changes in the composition of the economy to where these new jobs are going to be created.

What does your study of middle-income countries tell you about political change in China? In most countries, as people get richer and more comfortable materially, they want to have a voice — that is, a political voice — in the way the place is run, in collective social choices. In cases like Japan, Korea, and Taiwan, you had dominant single parties kept in power by structures that made it very unlikely that another party would ever get elected. All of these have evolved into genuine multiparty democracies. No one knows what version of this change will occur in China. There is no question that most people think — and I would agree — that economic development is accompanied by the evolution of and change in political and social institutions. Even if that happens in an idiosyncratic Chinese way.

How will China's reforms change the world economy? China has been a growth engine, and now it's also a huge market. According to a recent McKinsey Global Institute study, China's middle class is 230 million people now, going to 630 million people in 10 years. This is an economy with an enormous amount of growth in purchasing power. What happens in a middle-income transition is that people get rich enough to buy certain things, like cars, larger homes, appliances. The whole developing world is going to have a big market in China to sell to. The same is true for advanced countries. It positively affects everybody.

Even if the reforms transition China's economy to slower growth? What we should probably worry about is not whether it maintains the old rate of growth, but rather whether Chinese growth drops below the country's sustainable rate of 7 to 7.5%. Or whether an accident happens, or they don't complete the reforms, or a group that doesn't want a market-based economy gets the reins of power. A lot of these and other things could happen. These are all downside risks. Knowledgeable people assess them differently. But we should not worry excessively about China successfully making a transition to a high middle-income country, which is going to come inherently with a less explosive rate of growth than we saw in the past decade. Δ

"Smart leaders realize

stories

are very powerful coordination devices in an organization."

- Stanford GSB Professor

Hayagreeva Rao

at the 2014 Spring Reunion kickoff *Watch: stnfd.biz/yx1vP*

EXCHANGE

SOME FINAL THOUGHTS ON NETWORKS

EDITED BY NATALIE WHITE

"Knowing

what you don't want to do is
the best place to be. It leaves you to figure out
what you really want to do."

— Media leader and philanthropist

Oprah Winfrey

in her View From the Top talk Watch: stnfd.biz/yx1yA

"Technology

is an accelerant of underlying trends,
but it's not a cure or solution."

— Stanford GSB Professor and former Secretary of State

Condoleezza Rice in a Global Speaker Series talk
with Eric Schmidt and Jared Cohen

Watch: stnfd.biz/xTZfS

"Spend a small
percentage of your time to make sure
your networks are

fresh

and that you always have options."
— Stanford GSB Professor

Jeffrey Pfeffer at the school's
2014 Women's Initiative
Network Conference

"The capacity to

connect

with people is absolutely essential for leaders."

 Carlos Ghosn, Renault-Nissan CEO, in his View From the Top talk Watch: stnfd.biz/xTZhc

"We need to deploy technology not only for social networks but also for

social justice."

 Leila Janah, Samasource founder, at the Stanford GSB
 Alumni Entrepreneur Reunion

"Your ability to scale is directly related to the capability of your

direct reports."

— Stanford GSB Lecturer **Rob Siegel** in a "Nuts & Bolts" talk sponsored by the Center for Entrepreneurial Studies

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SUMMER 2014 STANFORD BUSINESS

INDEX

NAMES AND ORGANIZATIONS

A
Aaker, Jennifer ... 6
Accenture ... 52
Ahmann Kadlec Associates ... 6
Airbnb ... 25, 41
Alibaba ... 25
Andreessen Horowitz ... 41
Andreessen, Marc ... 40-41
Andrews, Edmund L ... 59
Apple ... 17, 22
Ariely, Dan ... 19
Art Center College of Design ... 6
Australian National University ... 24

В

Bacon, Kevin ... 6
Bagde, Surendrakumar ... 29–30
Baldassarri, Delia ... 12
Bay Area News Group ... 6
Beautycounter ... 46–47
Benefit Cosmetics ... 48
Berrey, M. Michelle ... 45
Beta Alpha Psi ... 35
Beyoncé ... 10
Bimpikis, Kostas ... 59
Bismarck, Otto von ... 56
Bourdieu, Pierre ... 11
Brin, Sergey ... 15
Burt, Ronald ... 20

С

Caldbeck, Ryan ... 27 Campbell, Bill ... 41 Carnegie Mellon ... 30 Carol's Daughter ... 48 Center for American Progress ... 15 Center for Entrepreneurial Studies at Stanford GSB ... 46, 63 Chanel ... 48 Chimerix, Inc. ... 44-45 CircleUp ... 27 CNN ... 44 Cohen, Jared ... 53-55, 63 CollegeFrog ... 35-37 Columbia Business School ... 43 Columbia University ... 59 The Conference Board ... 45 Conley, Chip ... 20 Cook, Scott ... 41 Cornell ... 30 Council on Foreign Relations ... 53

D

Dahlander, Linus ... 15 Dartmouth ... 30 Dawkins, Richard ... 12 Deloitte ... 30 DFJ ... 22 Digitas Health ... 45 DiMaggio, Paul ... 10 Duck Duck Moose ... 26

Е

Eakin, Rory ... 27 Edelman Trust ... 45 Eindhoven University of Technology ... 33

Ekiel, Erika Brown ... 24 European School of Management and Technology ... 13 Eyal, Nir ... 17

F

Facebook ... 14, 18, 19, 35, 36, 40–41, 44, 45
Fearing, Douglas ... 59
Flexer, Caroline Hu ... 26
Fogg, B.J. ... 18
Fowler, James ... 45
Fox News ... 44
Freedman, Michael ... 5, 53

G

Ghosn, Carlos ... 63
Girald, Catalina ... 26–27
Goldberg, Amir ... 9
Google ... 15, 53
Granovetter, Mark ... 30
Greer, Lindred ... 33
Grossman, Mindy ... 39
Grousbeck, H. Irving ... 1, 46
Grove, Andy ... 26
Gruenewald, Bobby ... 17–19
GSB Executive Challenge ... 1
GSB Women's Circles ... 1

Н

H
Hardy, Josh ... 44–45
Harris, David R. ... 30
Harvard Business School ... 22
Hasan, Sharique ... 29–30
Hasso Plattner Institute of Design at Stanford ... 17
Hawkins Way Capital ... 20
HBO ... 6
Hewlett-Packard ... 13
Hewlett, William ... 13
Hofstetter, Reto ... 43
Hoover Institution ... 61
Hoover, Ryan ... 19
Hosman, James ... 35
HSN Inc. ... 39

I IAC/InterActiveCorp. ... 39

Idapted ... 25 IDEO ... 26 IKEA ... 19 IMD ... 33 Indian Administrative Service ... 29 Infosys ... 51–52 Instagram ... 17, 18

Intuit ... 26, 41

J

J. Crew ... 48
Jackson, Matthew O. ... 56–57
Jacobson, Laura ... 5
Janah, Leila ... 63
Jay Z. ... 10
Jehn, Karen ... 33
Johnston, Theresa ... 29, 51

Joie de Vivre Hospitality ... 20 Jonsen, Karsten ... 33

Κ

Kadlec, Jill ... 6 Knight Management Center ... 1 Knight, Phil ... 1

L

Lady Gaga ... 11
Land Transport Authority of
Singapore ... 52
Larcker, David F. ... 44
Larcker, Sarah M. ... 44
Lee, Louise ... 42
Lewin, Kurt ... 19
Lexus ... 59
Li, Adrian ... 25
Lichtenstern-Walebowa, Mariah ... 48
LinkedIn ... 23
Lyles, Dabney ... 48

М

Ma, Jack ... 25
McFarland, Daniel ... 13–15
McKinsey Global Institute ... 62
Macy's ... 48
Marks and Spencer ... 25
Martha Stewart ... 48
Max Cure Foundation ... 45
Mazzeo, Michael ... 35
Melbourne Business School ... 33
Mitchell, Pamela ... 46
Moch, Kenneth ... 44–45
Monster.com ... 35
Mooney, Loren ... 22, 56
Morgan, John ... 52

N

Nair, Harikesh S. ... 43 Naja ... 26–27 Nei, Stephen ... 56–57 Netscape ... 40 New York University ... 12 Nike ... 39 nirandfar.com ... 17 Northwest University's Kellogg School of Management ... 35 N.S., Rama ... 52

0

Oakland Athletics ... 20 Obama, President Barack ... 12 OpenTable ... 25 O'Toole, Kathleen ... 29 Oyer, Paul ... 35

Р

Packard, David ... 13 Page, Larry ... 15 Pentagram ... 6 Petersen, Deborah ... 6, 20, 46 Peterson, Richard ... 11 Pfeffer, Jeffrey ... 20, 21, 63 Phillips, Jeff ... 35–36 Prabhakar, Balaji ... 51–52

Q

Qraved ... 25 Quint, Ayanna ... 6 QuintessenceLabs ... 24

R

Ralph Lauren ... 39 Rao, Hayagreeva ... 63 Renault-Nissan ... 63 Renfrew, Gregg ... 46–48 Republican Party ... 12 Rice, Condoleezza ... 53, 55, 63 Rispens, Sonja ... 33 The Rock Center for Corporate Governance at Stanford ... 45 Roizen, Heidi ... 22–23 Rosenthal, Sara ... 46

S

Sacerdote, Bruce ... 30 Saloner, Garth ... 1, 4 Sandberg, Sheryl ... 14, 41 Sanders, Adrienne ... 13 Schaefer, Scott ... 35 Schmidt, Eric ... 53-55, 63 Sephora ... 48 Sharma, Vikram ... 24 Shriver, Scott K. ... 43 Siegal, Rob... 63 SixDegrees.org ... 6 Snyder, Bill ... 39, 40 Soulrider.com ... 42-43 Spence, A. Michael ... 61-62 Stanford Board of Trustees ... 20 Stanford Center for Cognitive and Neurobiological Imaging ... 5 Stanford Institute for Innovation in Developing Economies (SEED) ... 1 Stanford Persuasive Technology Lab ... 18 Stanford Venture Studio ... 1 Stauss & Quint ... 6 Swift, Taylor ... 11 Swiss Academy of Marketing Science ... 43

т

Tahbaz-Salehi, Alireza ... 59 Target Corp. ... 48, 59 Tayan, Brian ... 44 Timberlake, Justin ... 10 TiVo ... 23 Tommy Hilfiger ... 39 Trader Joe's ... 48 Twitter ... 6, 18, 19, 55

SXSW Interactive ... 6

U

Uber ... 41
University of California
at Berkeley ... 52
University of California
at San Diego ... 45
University of Chicago ... 43
University of Chicago ... 43
University of Texas ... 59
University of Utah's Eccles
School of Business ... 35
U.S. Department of Transportation
... 52
U.S. Embassy ... 55

W

Walker, Ross ... 20, 21 WaveO ... 55 Waze ... 27 WeChat ... 55 West, Kanye ... 10, 11 WhatsApp ... 40-41, 55 White, Frank ... 35 White, Natalie ... 6, 63 Whole Foods ... 48 Winfrey, Oprah ... 63

Υ

YouVersion ... 17–19

Z

Zuckerberg, Mark ... 14, 41

The Takeaway

THE ESSENTIALS

FIVE LESSONS FROM OUR STORIES ON NETWORKS

EDITED BY
DEBORAH PETERSEN

Create a Happy Collaboration

- 1. Collaborations work better if the individuals have complementary, instead of identical, expertise.
- **2.** Too much overlap can hamper creativity and breed turf issues.
- 3. Team-building exercises can help freshen up a partnership. So can a willingness to rotate expertise and roles in relationships, so collaborators can learn new sides to one another and engage in fresh experiences.
 - Daniel McFarland





Conflicts Can Go Viral

Conflicts often begin between two individuals, but they don't always stay that way. If a conflict starts to escalate or bring in new people, it's probably time to intervene. A well-timed lunch, for example, at the early stages of conflict, could keep the team on track or even negate the need for an expensive conflict-resolution consultant later.

- Lindred Greer



Keep an Eye on Your Supply Chain

Multisourcing provides great power to cut costs, but it can also increase your risks.

— Kostas Bimpikis

A How-To on Networking

Face time counts. Consider your approach. Be genuine. Do what you say you will. Stay in touch. Find a mutual connection.

— Jeffrey Pfeffer and Ross Walker





Look Beyond Your Network

To be successful in college, and maybe elsewhere, it helps when someone in your network has smarts that aren't the same as those you may already possess. Letting work teams choose their own members may not be the right approach. Individuals might want to look beyond their circle of closest friends to find career opportunities.

— Sharique Hasan

The Takeaway

THE RECOMMENDED LIST

WHERE TO GO FOR MORE ON NETWORKS

EDITED BY
DEBORAH PETERSEN

Kostas Bimpikis

"From Superstorms to Factory Fires: Managing Unpredictable Supply-Chain Disruptions," by David Simchi-Levi, William Schmidt, and Yehua Wei, published in *Harvard Business Review*, January-February 2014

"Reducing the Risk of Supply Chain Disruptions," by Sunil Chopra and ManMohan S. Sodhi, published in the *MIT* Sloan Management Review, Spring 2014

Amir Goldberg

Linked: The New Science of Networks by Albert-László Barabási



Lindred Greer

"How Management Teams Can Have a Good Fight," by Kathleen M. Eisenhardt, Jean L. Kahwajy, and L.J. Bourgeois, *Harvard Business Review*, July 1997

Making the Team: A Guide for Managers (5th Ed.) by Leigh L. Thompson

Matthew O. Jackson

A MOOC he is teaching this fall on social and economic network analysis stnfd.biz/xODNz

"The Reasons for Wars — An Updated Survey," a chapter by Matthew O. Jackson and Massimo Morelli from the reference book *Handbook on the Political Economy of War stnfd.biz/xODRc*

David Larcker

INKED

From Stanford GSB's Center for Leadership Development and Research: "Monitoring Risks Before They Go Viral: Is It Time for the Board to Embrace Social Media?" stnfd.biz/xODGk

From the Conference Board: "What Do Corporate Directors and Senior Managers Know About Social Media?" by David F. Larcker, Sarah M. Larcker, and Brian Tayan stnfd.biz/xODHR

Harikesh Nair

"Network Externalities, Competition, and Compatibility," a classic 1985 paper on network effects by Michael L. Katz and Carl Shapiro published in *The American Economic Review*

Information Rules: A Strategic Guide to the Network Economy by Carl Shapiro and Hal Varian

Sharique Hasan

"Assessing the Political Landscape: Structure, Cognition, and Power in Organizations," by David Krackhardt, Administrative Science Quarterly, June 1990

Jeffrey Pfeffer

Never Eat Alone and Other Secrets to Success, One Relationship at a Time, by Keith Ferrazzi



Sharique Hasan's outline for his Stanford GSB course: Managing Social Networks in Organizations stnfd.biz/xODDZ

The New Digital

Condoleezza Rice

The New Digital Age, by Eric Schmidt and Jared Cohen

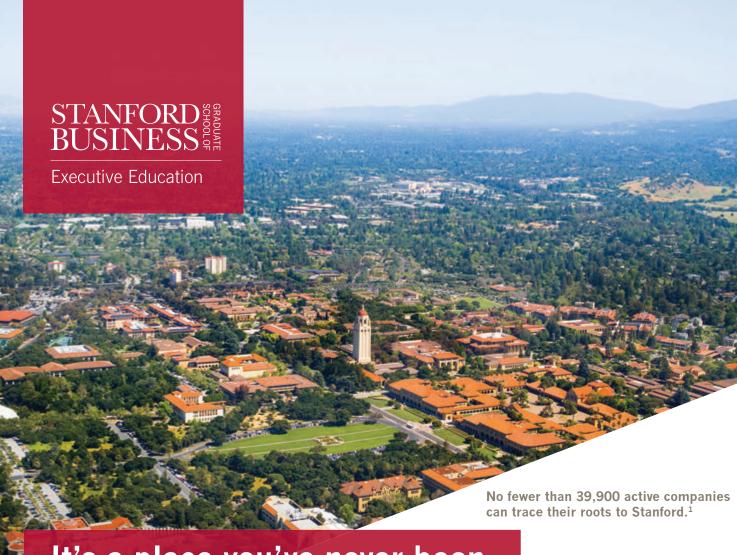
Jesper Sørensen

"Why Your Friends Are More Important and Special Than You Think," by Thomas U. Grund, April 14, 2014, in *Sociological Science*, where Sørensen is editor in chief *stnfd.biz/xODUa*

Michael Spence

China 2030: Building a Modern, Harmonious, and Creative Society, published by the World Bank stnfd.biz/xODKZ

"Five Charts to Explain China's Shadow Banking System," by *Quartz* reporter Gwynn Guilford stnfd.biz/xODMh



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



