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JOHNSON AT CORNELL UNIVERSITY

WINTER 2016



The Fintech Revolution

Disruptive innovation, driven by digital technology, is transforming financial services.

Greg Galvin, MS '82,
PhD '84, MBA '93
Creating Successful High-Tech
Startups in Ithaca

Ag Tech:
Feeding the World
with Big Data

The Future
of Clean Energy:
Achieving Resilience

Bright and Bold
Women MBAs envision the
possibilities and make them shine.

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Leading in an era of disruptive innovation

Digital technology has been disrupting the way we do business and the way we communicate ever since we began to digitize information as long as 50 years ago. That transformation is progressing at an ever-advancing pace as computing technology increases and creative thinkers and entrepreneurs continually introduce innovations technology makes possible.

We live in an era of incessant disruptive innovation, when fresh ways of thinking about things and doing things is the new normal. This is the reality we prepare our students to lead and excel in. Judging by the accomplishments of our alumni and the informed and inspired business ventures they bring to fruition, our approach works.

Professor Donald P. Greenberg, an internationally recognized pioneer in computer graphics who teaches disruptive innovation and technology strategy at Johnson, remarks: “In today’s digital age, we’ve reached the stage where the convergence of different disciplines will provide even greater opportunities.” (p. 14) Many Johnson alumni are making cross-disciplinary connections and leading unprecedented change, including the fintech and ag tech innovators featured here. For example, Jason Thanh La, MBA ’14, is CEO of Merchant Service Group, which provides payment technologies to businesses in more than a dozen languages (p. 24). Ag tech entrepreneurs Amol Deshpande, MBA ’05, co-founder and CEO of Farmers Business Network, and Pablo Borquez Schwarzbeck, MBA ’15, founder and CEO of ProducePay, are partnering with farmers to help increase yield and enhance sustainability (p. 30).

Greg Galvin, MS ’82, PhD ’84, MBA ’93, an innovator in digital technology and a prolific serial entrepreneur, has developed inertial sensors with highly profitable applications, including the now-ubiquitous application that enables cell phones to switch from portrait to landscape mode (p. 21). Melissa Kim ’09, MBA ’10, is using the power of data to disrupt oppression in her work with the Global Fund to End Slavery (p. 38). Clearly, the possibilities for disruptive innovation are as broad as imagination and good leadership will allow.

Higher education is also ripe for disruptive innovation; we know we must vigorously anticipate what the next generation of business leaders needs to be successful and embrace continuous change in the way we deliver education. At Cornell, where so many great minds come together to teach, learn from one another, and share ideas, we excel at this. That is why we remain world leaders in education in so many areas.

In this vein, I am proud to introduce Johnson’s new Digital Technology Immersion, a semester-long program that brings



together MBAs, engineers, practitioners, and faculty from Johnson and Computer and Information Science at Cornell, and designed to prepare our students to embrace and excel in this fluid environment. Modeled on the Johnson Cornell Tech MBA, the Digital Technology immersion sits at the intersection of business strategy, information science, and emerging technology. Courses will include guest lectures from practitioners, as well as a joint practicum project, in which MPS students in Information Science and MBA students will work in multi-disciplinary teams on a project mentored by an industry expert and Cornell faculty. Read more about this in Cornell Enterprise Online.

When President Beth Garrett addressed Johnson faculty and staff in late November, we were all proud to hear her refer to Johnson as “one of the most exciting business schools in the country” with “the ability to evolve and respond to a changing world.” She spoke about the importance of collaborations across the academy that drive the application of knowledge and ideas to solve complex global problems, citing connections between Johnson and other schools at Cornell that have resulted in the Johnson Cornell Tech MBA and this new Digital Technology Immersion, among other programs.

In this age of disruptive innovation, we need leaders who are open to new ideas, leaders who are willing to try different approaches to solving problems and who will boldly face challenges that will inevitably arise. Preparing such leaders is the challenge we are rising to at Johnson.

Soumitra Dutta

Anne and Elmer Lindseth Dean



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Profile in Leadership: Greg Galvin, MS '82, PhD '84, MBA '93 Creating Successful High-Tech Startups in Ithaca

High-tech pioneer Greg Galvin, chairman and CEO of Rheonix and Mezmeriz as well as co-founder and former CEO of Kionix, has created more than 300 technical and manufacturing jobs in Ithaca.

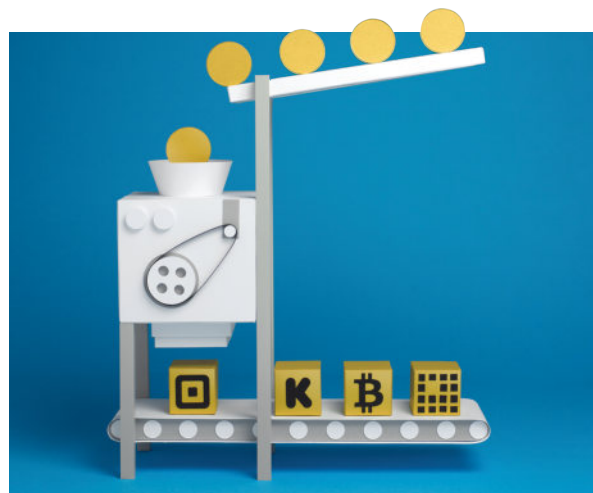
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Web Extras



Johnson Launches Digital Technology Immersion to Prepare Students for Jobs of the Present — and Future

This January, Johnson launches its groundbreaking Digital Technology Immersion, a semester-long program bringing together MBAs, engineers, practitioners, and faculty from Johnson and Computer and Information Science (CIS) at Cornell.



Veterans Find a New Mission in Solar

In this op/ed, former U.S. Army Captain Kevin Johnson, MBA '09, a veteran of the war in Iraq, writes about the “high price veterans pay in blood and resources to secure oil supplies” and of the commitment to employ 50,000 veterans in the solar industry by 2020 made by Solar Energy Industry Association (SEIA) and member

companies, including Canadian Solar, where Johnson is managing director of federal and microgrid business development.



Johnson Energy Connection 2015

Johnson's Center for Sustainable Global Enterprise and the student-run Cornell Energy Club hosted the sixth annual Johnson Energy Connection at Sage Hall on Oct. 2 and 3, 2015. Sponsored by SunEdison, Chevron, and Emerson, the event brought together alumni working in the energy sector to share their knowledge and insights.

SunEdison CEO and President Ahmad Chatila, MS '91, delivered a keynote focused on gender diversity, and renewable energy panelists forecast a bright future.



It Began with a Cornellian

Frederick Spencer Johnson Jr. '75, MBA '77, and his wife, Jennifer Schroeder Johnson, MBA '79, are owners of Johnson Estate Winery, a family business that has grown and evolved at the hands of three generations of Cornellians for more than 100 years. They traveled to Cornell to participate in the 2015 Families in Business

Conference, organized by the Smith Family Business Initiative in early October, and featured some of their wines at the Taste of Family Business Networking Reception.



Videos: Cornell Entrepreneurship Summit NYC 2015: Erase the Edge

View this collection of powerful, TED-style presentations delivered by Cornell President Elizabeth Garrett; Cornell Entrepreneur of the Year 2015 Robert Langer '70, David H. Koch Institute Professor at MIT; and CEOs from across the country at “Erase the Edge,” Cornell

Entrepreneurship Summit NYC 2015, hosted by Entrepreneurship at Cornell.

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Laura Georgianna named director, Park Leadership Program



Laura Georgianna, MBA '03, succeeded Clint Sidle as director of the Park Fellows Program on July 1. A Park Fellows alumna, Georgianna brings extensive corporate leadership experience to the program. She continues to hold a concurrent, half-time position as a director for the Entrepreneurial Leadership Initiative within the Human Capital Development group

at Cornell's School of International and Labor Relations. Before returning to Cornell, Georgianna held the position of senior director of organization capability and development for Welch Allyn.

"I am excited to return to Johnson to lead a program that has had such an impact on me personally and has been a key differentiator for the school," says Georgianna. "Clint has built a strong foundation for this program, and I look forward to building on this success."

Johnson Welcomes New Faculty

Ryan Guggenmos | ASSISTANT PROFESSOR OF ACCOUNTING



ACADEMIC FOCUS: How biases in human behavior affect the judgments of users of accounting information

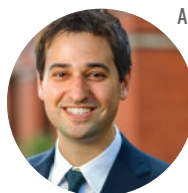
PREVIOUS POSITIONS: Graduate Research and Teaching Assistant, Isenberg School of Management at University of Massachusetts Amherst, 2011–2015

ACADEMIC BACKGROUND: BA Accounting, *summa cum laude*, Seattle University (2008); PhD in accounting, University of Massachusetts Amherst (2015)

LAST BOOK READ: *History of Fly-Fishing in Fifty Flies* by Ian Whitelaw

IN HIS OWN TIME: I enjoy traveling, fishing, and cheering on the Seattle Seahawks.

Matthew Baron | ASSISTANT PROFESSOR OF FINANCE, EIKO AND SUDI MARIAPPA SESQUICENTENNIAL FELLOW



ACADEMIC FOCUS: Banking, financial crises, asset pricing

PREVIOUS POSITIONS: Visiting researcher at Federal Reserve Bank of New York (2014); Federal Reserve Board of Governors (2013); Commodity Futures Trading Commission (2011–2012)

ACADEMIC BACKGROUND: BS in Mathematics, Yale University (2007); MA (2012) and PhD (2015) in Economics, Princeton University

LAST BOOK READ: *Lords of Finance: The Bankers Who Brokered the World* by Liaquat Ahamed

IN HIS OWN TIME: Enjoys running, tennis, and playing piano

Darien Huang | ASSISTANT PROFESSOR OF FINANCE



ACADEMIC FOCUS: Asset pricing, derivatives markets, commodities markets, and financial econometrics

PREVIOUS POSITIONS: Analyst, Goldman Sachs (2008–2010); Summer Analyst, Deutsche Bank (2007)

ACADEMIC BACKGROUND: BA in Mathematics and BS in Economics (2008), MA in Statistics (2013), and PhD in Finance (2015), Wharton School, University of Pennsylvania

LAST BOOK READ: *Flash Boys* by Michael Lewis

IN HIS OWN TIME: Working out, learning how to ride horses, exploring beautiful towns in Upstate New York

Faculty Honors

Murillo Campello, Lewis H. Durland Professor of Management and professor of finance, received the annual Best Paper Award from the *Review of Corporate Financial Studies*. His paper, "Is the Stock Market Just a Side Show? Evidence from a Structural Reform" (with co-authors Rafael P. Ribas and Albert Y. Wang) shows how democratizing legal access to the equity market in China has led to gains in the economy there for both firms and the population.

Dean **Soumitra Dutta** released the *Global Information Technology Report 2015*, the annual ranking of 143 world economies on their networked readiness. Dutta co-authors

the report, which is co-published by Johnson, the World Economic Forum, and INSEAD. The report suggests that the transformative power of information and communications technologies is happening in relatively few countries, creating widespread digital poverty and a stubborn digital divide across and within the world's nations.

Andrew Karolyi, Alumni Professor in Asset Management and professor of finance, was among an invited group of business school deans and academics from around the world who participated in a forum hosted by Charles, the Prince of Wales, in London last May. Sponsored by the Prince's Accounting for

Continued on page 6

Sunita Sah | ASSISTANT PROFESSOR OF MANAGEMENT AND ORGANIZATIONS, JOHN AND NORMA BALEN SESQUICENTENNIAL FELLOW



ACADEMIC FOCUS: Institutional corruption, ethical decision making, bias, transparency, improving decisions, influence and advice — in particular how professionals who give advice alter their behavior as a result of conflicts of interest and disclosure policies

PREVIOUS POSITIONS: Assistant Professor of Strategy, Economics, Ethics, and Public Policy, Georgetown University (2012–2015); Research Fellow, Harvard University (2011–2015); Postdoctoral Associate, Duke University (2010–2012)

ACADEMIC BACKGROUND: BSc (Hons) in Psychology (1994) and MBChB (1997, UK equivalent to the MD) in Medicine and Surgery, University of Edinburgh; MBA, London Business School (2005); MS and PhD in Organizational Behavior, Carnegie Mellon University (2010)

LAST BOOK READ: *Made to Stick: Why Some Ideas Survive and Others Die* by Chip Heath and Dan Heath

IN HER OWN TIME: Yoga, (more) reading, and enjoying good food and wine

Yao Cui | ASSISTANT PROFESSOR OF OPERATIONS, TECHNOLOGY, AND INFORMATION MANAGEMENT



ACADEMIC FOCUS: Pricing and revenue management, with an emphasis on providing firms with insights about innovating pricing strategies in the right direction and incorporating strategic consumer behavior in novel pricing strategies;

interface between operations management and other fields including microeconomics and marketing

PREVIOUS POSITIONS: PhD student at the Stephen M. Ross School of Business at the University of Michigan

ACADEMIC BACKGROUND: BEng with highest honors in Industrial Engineering, Tsinghua University (2009); PhD in Business Administration, University of Michigan (2015)

LAST BOOK READ: *The Three-Body Problem* by Liu Cixin (a Chinese science-fiction novel)

IN HIS OWN TIME: Watching TV shows, playing the piano

Li Chen | ASSOCIATE PROFESSOR OF OPERATIONS, TECHNOLOGY, AND INFORMATION MANAGEMENT



ACADEMIC FOCUS: Supply-chain management, behavioral decision making, and sustainable and responsible operations

PREVIOUS POSITIONS: Assistant and Associate Professor, Fuqua School of Business, Duke University (2008–2015); TrueDemand Software

(2004–2008)

ACADEMIC BACKGROUND: PhD in Management Science and Engineering, Stanford University (2005)

LAST BOOK READ: *Rejection Proof* by Jia Jiang (a fun book written by a former student)

IN HIS OWN TIME: Enjoys playing basketball, jogging, and swimming

Faculty Honors *Continued from page 5*

Sustainability Project and University of Cambridge Institute for Sustainability Leadership, the purpose of the event was to generate thoughtful discussions on the role of business schools in supporting the creation of resilient business models and a sustainable economy, as well as the practical actions that can be taken to embed sustainability into mainstream accounting and finance research and teaching.

The Two-year MBA class of 2015 selected **Risa Mish '85, JD '88**, senior lecturer of management, as a favorite professor at a top MBA program in response to a query from Poets & Quants, where Mish was featured and called out for her ability to inspire and energize students.

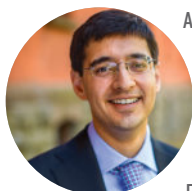
Mark Nelson, Johnson's Eleanora and George Landew Professor of Management and professor of accounting, was named the winner of the American Accounting Association's

(AAA) J. Michael and Mary Anne Cook Prize for excellence in teaching accounting at the graduate level.

Vithala Rao, Deane Malott Professor of Management and professor of marketing, was named president of the North America Society for Marketing Education in India (NASMEI), a nonprofit that aims to provide a platform for exchange and growth in relations among marketing professionals in North America and India.

Gideon Saar, professor of finance, was named a distinguished visiting scholar to the U.S. Securities and Exchange Commission (SEC). The visiting scholars program invites leading academic figures to share their expertise with members of the SEC. Saar was selected by the Division of Economic and Risk Analysis for his work on market microstructure. While at the SEC in August 2015, Saar

Shawn Mankad | ASSISTANT PROFESSOR OF OPERATIONS, TECHNOLOGY, AND INFORMATION MANAGEMENT



ACADEMIC FOCUS: Using data analytics to facilitate better decision making, aiming to create and apply data mining, machine learning, and visualization for economic modeling with unstructured and complex structured data

PREVIOUS POSITIONS: Assistant Professor of Business Analytics, University of Maryland (2013–2015)

ACADEMIC BACKGROUND: BS in Mathematics, Carnegie Mellon University (2008); MA (2012) and PhD (2013) in Statistics, University of Michigan

LAST BOOK READ: *Andrew Jackson: His Life and Times* by H.W. Brands

IN HIS OWN TIME: I like to alternate between reading science fiction and biographies. I just bought a Kindle Voyage and I love it!

Christopher Marquis | SAMUEL C. JOHNSON PROFESSOR IN SUSTAINABLE GLOBAL ENTERPRISE AND PROFESSOR OF MANAGEMENT AND ORGANIZATIONS



ACADEMIC FOCUS: How business can have a positive impact on society and the natural environment; how firms' and entrepreneurs' social and environmental strategies and activities can be designed to maximize both business and social value; how environmental sustainability and shared value initiatives have developed in China; institutional change processes in emerging markets

PREVIOUS POSITIONS: Visiting Professor of Management and Organizations (2014–2015); Assistant and Associate Professor of Business Administration, Harvard Business School (2005–2015); J.P. Morgan Chase (1996–2000); PNC Bank Corporation (1994–1996)

presented on two key areas from his research: tick size (the minimum price increment in which stocks can be quoted) and transparency in financial markets. The SEC intends to run a pilot program in which the tick size will be increased for a specific group of stocks. Saar also received the Johnson 2015 Faculty Research Award.

Sunita Sah, John and Norma Balen Sesquicentennial Fellow and assistant professor of management and organizations, was selected as one of six national experts to join the National Commission on Forensic Science last summer. The commission develops policy recommendations for the Attorney General to enhance the practice, quality, and reliability of forensic science.

William Schmidt, assistant professor of operations, technology, and information management, was awarded the

ACADEMIC BACKGROUND: BA in History with honors, University of Notre Dame (1992); MA in History (1993) and MBA in Finance (1994), University of Pittsburgh; MA in Sociology (2002) and PhD in Sociology and Business Administration (2005), University of Michigan

LAST BOOK READ: *Flash Boys* by Michael Lewis

IN HIS OWN TIME: Activities with my two children, learning Chinese, yoga

Catherine Barrera | ASSISTANT PROFESSOR OF ECONOMICS



ACADEMIC FOCUS: Using economic theory to explore how developments in production and information technology change the demand for skills, the composition of jobs, wage inequality, and the relationships between workers and organizations

PREVIOUS POSITIONS: Postdoctoral Associate in Economics, Cornell (2014–2015)

ACADEMIC BACKGROUND: BA in Communication Studies, Northwestern University (2007); MSc in applicable mathematics, London School of Economics (2008); AM (2011) and PhD (2014) in business economics, Harvard University

LAST BOOK READ: *Better Than Before* by Gretchen Rubin; now reading *The Second Machine Age* by Erik Brynjolfsson and Andrew McAfee

IN HER OWN TIME: Painting, spending time with friends, visiting New York City (big fan of the Met and the new Whitney Museum)

Daniel H. Wagner Prize for Excellence in Operations Research Practice from INFORMS for his research on addressing supply chain disruptions for Ford Motor Co. Schmidt and his co-authors also received Ford's 2015 Engineering Excellence award, which recognizes R&A teams that have delivered significant engineering, operational, or strategic impact through complex projects, cross-functional teams, or global reach.

Wes Sine, professor of management and organizations, was elected to the Macro-Organizational Behavior Society, a group of about 115 scholars whose interests lie in organizational theory and the behavioral aspects of strategy. Membership is by invitation only, and the group extends only two invitations every two years.

Business Roundtable

“The Modi-fication of the Indian Economy”

BY SARAH MAGNUS-SHARPE

The Emerging Markets Institute’s fifth annual conference, “The Modi-fication of the Indian Economy,” was held at Cornell University’s Industrial and Labor Relations offices in New York City in mid-October and attended by Cornell and Johnson alumni, business professionals, and students. The conference was highly interactive, with several question and answer sessions.

Lourdes Casanova, academic director, Emerging Markets Institute, pointed out the timely nature of the conference, noting new efforts by the United States and India to build stronger ties, and citing Indian Prime Minister Narendra Modi’s recent visit to the U.S. and President Barack Obama’s two visits to India.

Opening remarks were provided by Dean Soumitra Dutta, who said the title of the conference was apt in view of the large-scale efforts to transform the Indian economy through a number of ongoing reforms and campaigns.

“With India’s rapid economic growth and

its campaigns, ‘Make in India’ and ‘Digital India,’ the country is not just a new destination for global manufacturing; it is also a center for innovation, research, and development,” said Dutta.

Throughout the day, conference presenters focused on the themes of Make in India, GDP growth rate, human resources and education challenges, bank and finance reforms, and support for the startup ecosystem.

Jayant Sinha, Minister of State for Finance, Government of India, addressed the audience via videoconference and touched on several of the conference themes. In the area of India’s economic philosophy, he outlined five principles that the government is planning to enact in order to maintain the current rate of 7 percent economic growth. Those included a focus on “pro-poor” policies; a “pro-market” stance, which includes the Make in India program designed to keep manufacturing in the country and increase GDP growth and tax revenue; and empowerment and opportunities, not

“The India market is real and vibrant, not for [the] faint of heart.”

— Rustom Desai, MBA ’95, managing director of Corning India

entitlements, for Indian citizens. The fourth area is minimum government, but maximum governance; and fifth, cooperative federalism, which will allow for autonomy of natural resources for individual states in India and create better collaboration between national, state, and local governments.

Sinha says the Indian government recognizes that for many of the policies to succeed there needs to be an emphasis on the correct execution of goals. “For the last ten years, working with the government machinery became dysfunctional,” said Sinha. “We’re trying to clean it up from the top to the bottom, but it takes time.”

A panel addressed India’s capital markets,



Left: Lourdes Casanova, academic director of the Emerging Markets Institute and conference host; center: Dean Soumitra Dutta with Arun Kumar Singh, ambassador of India to the United States; right: Rustom Desai, MBA '95, managing director of Corning India, who spoke about Digital India and the need to pull rural and poor India into the economy by empowering the states.

PHOTOS BY SHELLEY KUSNETZ

foreign portfolio investment challenges from the past, opportunities for the future, and whether the Make in India program had been successful since its launch on Sept. 25, 2014.

Ray Prasad, lead portfolio manager at TCW Emerging Markets Equities, said it would take years for India to realize progress with Make in India and for any success to be reflected in the GDP. “Modi set up a lot of expectations. They think it’s going to happen tomorrow. I haven’t heard anything on the topic of human resources. There is a focus on low-end jobs,

which is the wrong emphasis. Education gives you the highest return. We need an educated workforce because the returns from education are evident and we’re not doing enough.”

Keynote speaker Rustom Desai, MBA ’95, managing director, Corning India, detailed the hurdles encountered in building a Corning plant that houses 250 employees in India over the last five years, including land acquisition, approvals, permitting, and access to resources and infrastructure. “The India market is real and vibrant, not for [the] faint of heart, said Desai. “U.S. companies have been successful,

but well-planned execution is required.”

In a second keynote address, Arun Kumar Singh, ambassador of India to the United States, spoke about the importance of building smart cities with adequate waste management, affordable power, and improved infrastructure and services. “We see American firms such as GM, GE, Ford, Uber, Cisco, and Qualcomm making serious investments in India,” said Singh. “India is the fastest growing economy in the world, and India’s efforts are being watched by the world.”

On the rise and sale of a family-owned business

BY AARON COVEN ’16

Eric Allyn, former chairman of the board of century-old Skaneateles, N.Y., medical technology maker Welch Allyn, spoke Oct. 8 about the recent sale of the company and the internal workings of the business prior to the sale. The lecture was part of the first Families in Business conference at Cornell, hosted by Johnson’s Smith Family Business Initiative.

Welch Allyn was started in 1915 by Eric Allyn’s great-grandfather. The company came from “humble beginnings,” initially making medical diagnostic equipment. Welch Allyn also produced light bulbs in the 1950s, fiber optics in the 1960s, and developed a bar-code business that was spun off in 1999. While the company primarily focused on medical technologies, Welch Allyn also had success with nonmedical technologies, Allyn said.

Allyn provided an overview of his family’s leadership of the company, primarily focusing on the third, fourth and fifth generations. He noted the importance of comprehending the family dynamics that affected the operations of the business to understand “how you deal with family in a family business.” It was in the third generation that family dynamics had the greatest impact on the business.

Allyn’s father, Bill, his uncle Lew, and his uncle-in-law Peter shared a good amount of



Eric Allyn, former chairman of medical technology maker Welch Allyn, speaks at the Families in Business conference Oct. 8.

dissent. “The conflict here was horrible, it was terrible,” Allyn said. For this reason, he stressed the necessity of reconsidering governance as the generations advance and the need for educating this next generation. Eric Allyn’s generation, the fourth, forced a major change in the business: The third generation essentially was removed from the business in favor of retaining a majority-independent board. Allyn explained the necessity of this move. “We were making [business] decisions that were based on rivalries,” he said, and the baggage created by the third generation resulted in a conflict that played out over the course of ten years, both in the family and in the business.

Welch Allyn was sold to Hill-Rom in June. The company had been facing challenges in growing revenue as the increasing consolidation in the medical industry shifted the way medical supplies were being sold. Allyn said it was specifically because of the independent board that the company explored a sale at all. While still a sad outcome for some in his family, Allyn said, this was the best possible outcome for the business and one that would have been harder to achieve had the third generation not been removed from active management in the company.

This story originally appeared in the Cornell Chronicle. Reprinted with permission.

Newsmakers

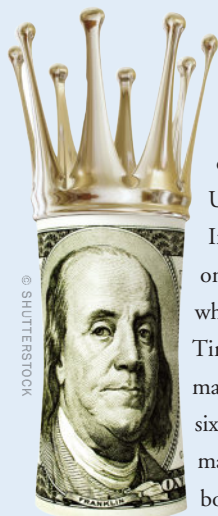
White House summit on women in business

Dean Soumitra Dutta discussed strategies to expand opportunities for women in business and how to address changing workforce needs at U.S. business schools when he participated in “Convening with Business School Deans and Business Leaders,” a summit hosted Aug. 5 by the White House Council on Women and Girls and the Council of Economic Advisers. Dutta, who spoke as a panelist on “Preparing Leaders for the 21st Century Workplace,” was quoted in several outlets about his advice for women MBA applicants, including U.S. News & World Report (“Ask These 3 Questions as a Female MBA Applicant,” Aug. 13). He encouraged women to speak with school alumni to learn about how women are treated in student groups, saying: “The role of women in club leadership positions is a very good indicator of the role of women overall in the school as a whole. Most of these leadership roles are based on peer decisions.”



Currency crises and emerging markets

The financial press called on **Andrew Karolyi**, Alumni Professor of Asset Management, to get his take on the emerging markets currency crisis and the decline in publically listed companies in the U.S. He was quoted in CNN Money about the impact of a strong dollar on emerging market currencies (“Watch out: Strong U.S. dollar could trigger a currency crisis,” July 28). In a separate CNN Money article, Karolyi commented on how a weak currency can boost exports (“Who wins when global currencies tumble?” Sept. 2). The Financial Times outlined his unique system of ranking emerging markets by relying on 70 variables distributed among six distinct criteria (“Redefining EM: Choosing the best matrix,” Aug. 18) — a methodology he presented in his book, *Cracking the Emerging Markets Enigma*. These criteria include financial market capacity constraints,



operational inefficiencies in trading systems, foreign accessibility restrictions, corporate opacity, limits to legal protections, and political instability.

Democracy requires deliberation

In a Huffington Post blog, (“Why Aren’t Social Media Delivering Democracy?” Oct. 24), **Dana Radcliffe**, Day Family Senior Lecturer of Business Ethics, discusses the essential nature of deliberation in successful democratic processes. Deliberation “requires that citizens and their representatives discuss and debate what the government should or should not do, defending their views by appealing to shared principles and purposes,” he writes. In taking stock of the many instances in which social media has been used to wield



political power, he observes “political partisans using social media as tactical weapons are not concerned about *deliberation*.” He continues: “Who, then, cares about promoting democratic deliberation? It is citizens and leaders who understand that democratic processes necessitate

deliberative disagreement and, in the legislative process, negotiation and compromise. ... In short, with regard to political discussion,” Radcliffe concludes, “current use of social media favors affinity over engagement, expression over debate, silence over disagreement, dogmatism over compromise, and — toward opponents — disdain over respect.”

Have a backup plan

William Schmidt, assistant professor of operations, technology and information management, advises companies to establish relationships with multiple suppliers to avert disaster when the unexpected interrupts a supply chain. “When you have a big disruptive event, suddenly your supplier’s competitor is fielding calls from all kinds of companies,” Schmidt said in an article in the *Wall Street Journal* (“5 Ways Companies Can Prepare Their Supply Chains for El Niño,” Sept. 9). “If you haven’t already established a relationship, that backup firm might not be able to meet all its new demand.”



What's luck got to do with it?

Success and Luck: Good Fortune and the Myth of Meritocracy

By Robert H. Frank

REVIEWED BY JEFFREY GANGEMI, MBA '09

On a chilly November morning in 2007, Professor Robert Frank was playing tennis with a colleague when he started to feel nauseated. A few moments later, Frank collapsed on the tennis court. A victim of “sudden cardiac death,” he wasn’t breathing, and his friend couldn’t detect a pulse. Four days later, Frank was discharged from the hospital “with a clear head,” one of just 2 percent to survive such an event, and among an even smaller minority who do so without severe cognitive and other impairment.

Two weeks later, Frank was back on the tennis court. But it wasn’t due to greater strength, or more resilience, than the less fortunate 98 percent. Not according to him, anyway. Instead, it was the result of a series of incredibly lucky breaks — chief among them a chance event that left an unoccupied ambulance several hundred yards from the tennis court where Frank collapsed — that contributed to his full recovery.

In *Success and Luck: Good Fortune and the Myth of Meritocracy*, due out in March and published by Princeton University Press, Frank uses personal experience to frame the issue of luck’s role in individual success — not only as a lifesaver, but also a life maker.

In the book, Frank expertly weaves personal anecdotes and social science research into a larger policy argument in favor of a progressive consumption tax as

a solution to growing inequality and trillions of dollars in wasteful spending.

The jump from the role of luck in personal success to large-scale tax policy recommendations is a big one, Frank admits. But he cites research suggesting that people who acknowledge luck’s role in their lives are more likely to feel grateful for success they’ve enjoyed. They also demonstrate a greater likelihood of sharing their

wealth to support the common good.

Indeed, luck isn’t a purely passive endeavor; it’s something that requires the right conditions to flourish on a wider scale. “The biggest element of luck is to be born into a place where if you worked hard and you were good, you could make something of yourself,” said Frank in an interview. “The way things are developing in this country, we’re less and less a place like that year by year.”

As the economist Alan Krueger has noted, the correlation between parents’ income and their children’s income in the United States is roughly the same as the correlation between parents’ height and their children’s height. The same goes for intelligence and energy level. “But if you have such qualities, on what theory would it make sense for you to claim moral credit for them? You didn’t choose your parents, nor did you have much control over the environment in which you were raised. You were just lucky,” Frank writes.

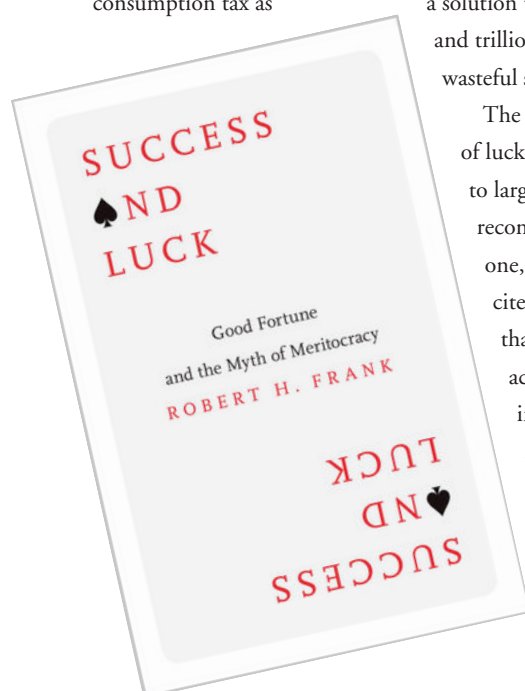
Success and Luck could rely heavily on anecdotes to demonstrate luck’s outsized influence on individual lives, but much of the power of Frank’s argument comes from taking the emotion out of it. In one of the simulations he led in his lab, Frank examines a baseline case with 100,000 contestants, in which luck counts for 2 percent of total performance. Ability and effort comprise the remaining 98 percent.

Where each contestant’s ability, effort, and luck values were independently drawn random numbers between zero and 100, the average luck score of contest winners was 90.23, and 78.1 percent of winners did not have the highest combined total of talent and effort values. The most talented and hardest working, in other words, rarely won the contest.

As competition increases and technology improves, financial rewards for society’s winners balloon. Take CEO pay as the microcosm for the broader society. CEOs of the largest American corporations, who were paid 42 times as much as the average worker as recently as 1980, are now paid more than 400 times as much. In 1976, only 8.9 percent of the nation’s total pretax incomes went to the top 1 percent of earners, but by 2012 that group was receiving 22.5 percent of the total.

Frank concedes that there is good reason why more people don’t acknowledge the role of luck in their lives. When the going gets tough, and in fields where genuine expertise is often an essential precondition for success, sitting back and hoping for luck is probably the worst approach, argues Frank. “Parents who teach their children that luck doesn’t matter may for that very reason be more likely to raise successful children than parents who tell their children the truth,” he writes.

We can’t expect competition to decrease, but we can mitigate the waste and excess that comes from a moneyed top 1 percent competing with each other for material status symbols. “Beyond some



point, additional spending on mansions, coming-of-age parties, and many other goods becomes purely positional, meaning that it merely raises the bar that defines adequate,” writes Frank.

This argument will be familiar to anyone who has read Frank’s *New York Times* column. After basic needs are met, status is largely determined by relativity to others in a society, not by objective standards. “Because much of the total spending in today’s economy is purely positional,” the argument goes, “it is wasteful in the same way that military arms races are wasteful.” And not only that, Frank says private waste is not only far more pervasive than government waste, but also far easier to curtail.

Enter the progressive consumption tax, which would essentially reward individuals and families for saving. The individual tax rate would start out low and would then rise steadily as taxable consumption increased. “My basic claim is that, without demanding painful sacrifices from anyone, this relatively simple policy change would enable us to put trillions of dollars a year to work rebuilding the institutions and infrastructure that reliably translate talent and effort into success — in other words, the kind of environment people would be lucky to be born into.”

Part memoir, part policy prescription, it’s clear that *Success and Luck* is deeply personal for Frank. “With the extra time I’ve been

granted, I’ve continued trying to explain why a few relatively simple changes in policy could produce dramatic improvements for all of us,” he writes.

Aside from being a joy to read, *Success and Luck* is indeed a timely, compelling contribution to the current debate around income inequality — a hard-working, talented volume just searching for a lucky break.



Robert H. Frank is the Henrietta Johnson Louis Professor of Management and professor of economics at Johnson and the co-director of the Paduano Seminar in business ethics at New York University’s Stern School of Business. His “Economic View” column appears monthly in *The New York Times*. His books, which include *Choosing the Right Pond*, *Passions Within Reason*, *Microeconomics and Behavior*, *Principles of Economics* (with Ben Bernanke), *Luxury Fever*, *What Price the Moral High Ground?*, *Falling Behind*, *The Economic Naturalist*, *The Darwin Economy*, and *Success and Luck*, have

been translated into 22 languages. *The Winner-Take-All Society*, co-authored with Philip Cook, received a Critic’s Choice Award, was named a Notable Book of the Year by *The New York Times*, and was included in *Business Week*’s list of the ten best books of 1995.

Predicting buyer behavior

Why People (Don’t) Buy: The Go and Stop Signals

By Amitav Chakravarti and Manoj Thomas

REVIEWED BY TED GOLDWYN ’90

According to Manoj Thomas, there has long been an over-reliance on economics in predicting consumer behavior. Thomas, the associate professor of marketing and director of the Business Simulation Lab at Johnson, argues that many corporate marketing mistakes can be attributed to a critical misreading of consumers’ purchase decision signals.

To counter this, Thomas and Amitav Chakravarti, professor of marketing in the Department of Management, London School of Economics and Political Science, co-authored *Why People (Don’t) Buy: The Go and Stop Signals* (Palgrave MacMillan, 2015). An accessible compendium of business case studies from a wide range of industries, the book proposes a new “Go and Stop Signals” model that uses behavioral psychology to help explain numerous high-profile marketing successes and failures, from the decade-long popularity of the 100-calorie pack to the dismal sales record of the Tata Nano, “the world’s cheapest car.”

“You need deeper insights to understand why certain consumers are buying your yogurt, or why some consumers are more likely to eat fruit than others,” Thomas says. “For these kinds of situations, the macroeconomic models and mathematical models, which are based on general assumptions that human beings are rational, that they always maximize utility and try to minimize payouts, are not very useful in changing behavior.”

The authors support their entertaining examples of practical case studies with rigorous, data-driven research in presenting a new approach to developing effective marketing strategy. Advocating for empiricism over theoretical models, their framework is based largely on two key elements: the Go and Stop model for assessing and predicting buyer behavior, and a “predict, test, and learn” (P-T-L) approach to market research, which eschews more traditional, qualitative methods such as focus groups and consumer surveys.

Above all, the authors are hoping to change marketers’ longstanding reliance on rational economic models to predict human behavior in the real world, referred to in the book as the “*homo-economicus*” view of consumer behavior.

“The academic world has always been influenced by economics, which is often referred to as the imperial social science,” Thomas says.

“Psychology is a nascent discipline, but traditional economists have always been confined by the methodology of mathematical solutions.”

Thomas attributes his decision to pursue a PhD in consumer psychology to his experience of working as a real-world manager on the front lines.

“I have a slightly different background because I spent six years in the corporate world before I came into academia,” Thomas says. “I’m not only interested in theories of psychology but also interested in solving the problems that managers face. So I wanted this book to be rigorous as well as relevant.”

To illustrate Go and Stop signals in action, the authors present the case of retailer JC Penney’s recent brand repositioning. Struggling to grow revenues, the company brought in a legitimate retail superstar, Ron Johnson, who had helped establish Target’s unique market positioning as a hip, designer, middle-priced retailer, and followed up that success as the creator of the Apple Store and Genius Bar at Apple. For Penney’s, a staid but struggling retailing giant, Johnson seemed to be the ideal innovative leader to turn around its flagging fortunes.

Johnson immediately instituted many of the same strategies that were a huge success at Target and Apple, doing away with confusing and frequent discount sales, creating everyday “Fair and Square” pricing, and improving the in-store experience around a “market square” shopping experience. However, the result was completely unexpected: “a rocky roller-coaster ride that had many more downs than ups,” according to Thomas and Chakravarti. Following an investment of over \$1 billion in the new “Fair and Square” pricing marketing rollout, and a significant store remodeling effort, sales continued to decline, and Johnson was ultimately ousted as CEO after just over a year at the helm.

What went wrong? According to the authors, Penney’s neglected to analyze the key drivers of its customers’ purchasing behavior, specifically their Go and Stop signals. By attempting to replicate his success at Target and Apple, Johnson chose to focus on improving

the “go” drivers, such as the in-store experience and brand logos and image, but neglected the “stop” signals, such as price. In fact, the implementation of the “Fair and Square” pricing strategy, which eliminated all deep, sales-day discounts that Penney’s loyal customers

had learned to anticipate, actually had the counterintuitive effect of increasing the strength of the “stop” signals. So consumers who had previously enjoyed shopping at Penney’s because they felt they were “getting a good deal” now hesitated before deciding to purchase a regularly priced item at the store.

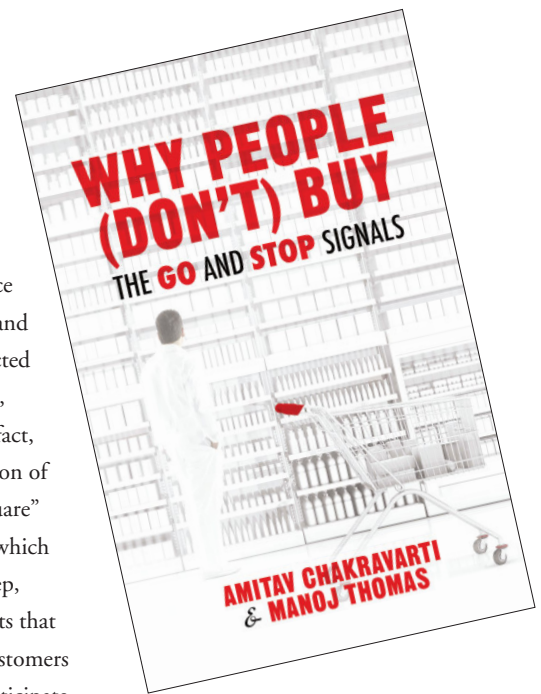
“We are emotional beings,” Thomas says. “Emotions play an important role. Sometimes emotions can lead to biases; sometimes they guide us to make decisions that are good for us and ensure our survival. Understanding these behavioral insights and influencing policy decisions is important, and I think more and more business leaders are realizing that.”

The later sections of the book are devoted to a discussion of how the Go and Stop framework may be applied to public policy issues. The authors share several examples of where monetary incentives have worked, such as in promoting citizens to replace their gas-guzzling vehicles with hybrid cars, and where they have fallen flat, as when Swedish policy-makers attempted to encourage blood donations by offering a \$7 incentive.

According to Thomas, a more empirically based approach toward public policy seems to be taking hold. Britain has been using human behavioral insights in public policy decisions for several years, and President Obama’s administration announced the formation of a team focused on using behavioral insights to inform policy.

For Thomas, the implications for public policy are important, both professionally as well as personally.

“I study those things that help managers create good products and maximize economic growth, but I’m equally committed to protecting consumers’ welfare, too,” Thomas says. “Corporations play an important role in the economic growth of society, but that’s not our sole objective. We want to make sure we don’t come across as people who are helping corporations to make money. We also want to help consumers make the right decisions.”



Manoj Thomas, S.C. Johnson Professor of Marketing and director of the Business Simulation Laboratory, is a consumer psychologist who conducts experimental studies to unveil the nonconscious mental processes that influence consumer behavior. Thomas leads Johnson’s Strategic Marketing Immersion program, a performance- and project-based learning environment that requires students to unravel latent consumer insights and develop marketing solutions for real companies.

Disruption is the norm ... and it's accelerating

A conversation with Donald P. Greenberg

An internationally recognized pioneer in computer graphics, Greenberg has authored hundreds of articles and served as a teacher and mentor to many prominent computer graphic executives, faculty, artists, and animators. At Johnson, he teaches a course in Disruptive Technologies. Here, he shares a few of his thoughts and ideas about the exciting and disruptive technologies that continue to redefine myriad industries in the digital age.

I really was turned on years ago by Clayton Christensen's "disruptive technology" article, which he published in the *Harvard Business Review* in 1993. In that article, he talked about the rate of change of technology and how some products or processes that didn't work or couldn't compete at the present time would ultimately undermine existing strategies because its rate of performance growth was so steep.

When I read this, I was on sabbatical working with Hewlett Packard on their first digital camera. I took a look at the technology with respect to the density of transistors on a chip — drawing on Moore's Law (the observation that the number of transistors on a computer processing unit will double every year, thereby doubling the overall processing power for computers every year). If Moore's Law held true, digital image sensors would totally disrupt the photography industry. The arguments against it were that current implementations didn't have high enough resolution, cost too much, and the performance wasn't as good as film. But I started to plot the trajectories of the technology, and of course now everybody has a digital camera. Only they don't even call it a digital camera, they call it a cell phone.

Break down the silos to see connections and possibilities.

In the late 1970s and early 1980s, our only real research funding for computer-aided design (CAD) came from the manufacturing industries: Grumman Aircraft, Boeing, General Electric, Ford, General Motors, Corning, etc. The algorithms developed at that point in time in many CAD communities were superb. But those same algorithms could be used for a totally different venue. In a sense, we were creating techniques in search of a problem.

An algorithm is really just a recipe for how to mathematically construct almost anything. For example, a graphics algorithm expresses how to model a shape or mathematically render a given geometry. I can take a series of points and pass a curved line, called a spline, through all of those points. I can then pass a surface through all of the created splines to represent the complex geometry of a specific car body. But using those same algorithms, I can describe the organs of a human body.

I have had the great good fortune to work with my son, who was an intravascular aortic surgeon at the Cleveland Clinic. We took exactly the same algorithms from the automotive and aerospace industries to model the human aorta, used 3D printing technology, and then he developed personalized stents to put into individuals who now needed only a one- or two-day stay in the hospital instead of two weeks.

As an architect, I always wanted to use computer-aided design for the creation of the built environment. These same algorithms are also used in architecture, for example by architect Frank Gehry for the design of the Guggenheim Museum in Bilbao and the Disney Concert Hall in Los Angeles. In our current research, we are using the same technology to reduce the computation time for energy simulations for the design of green environments.

These approaches are also used to model characters in computer-animated films. Thus, although the techniques are similar, we



(left) Professor Donald Greenberg working on computer graphics with students in the lab in 1976; (right) Professor Greenberg with Phil "Captain 3D" McNally and students at Rhodes Hall looking at 3D images that they have just created.

have former students who now work in four disparate industries: engineering, architecture, entertainment, and health care. Wouldn't it be nice if people from these different disciplines talked to each other?

In today's digital age, we've reached the stage where the convergence of different disciplines will provide even greater opportunities. These are the most exciting projects. A simple example: I cannot think of working in neuroscience today without collaborating with imaging scientists, computer graphics experts, magnetic resonance technologists, and biologists. So you mix computer scientists with engineers, scientists, business students, and doctors, and then you can go after some really difficult problems. But you can't do this type of research in isolation.

Understand the technologies well enough to comprehend what they can do.

While business leaders don't need to understand all the intricacies of high technology, they do need to understand enough to see what it might be capable of doing. They don't have to program or try to understand the math, but they should be able to read the science section of *The New York Times*. They should be able to read *Bloomberg News*. They should be able to read *U.S. News and World Report* or *The Economist*, and they should be able to read *Scientific American*. If they understand that much, and if they surround themselves with the right technical people, they'll know enough to be able to ask the right questions.

Be aware of performance trajectories and systems if you want to anticipate the future.

When I teach business students, I try to teach two important characteristics to be aware of in looking ahead to the future. One is to understand the performance trajectories over time of the different technologies within a particular segment of the business world, so they can understand where the opportunities are going to be. This is particularly relevant with the computer industry and its rate of exponential change.

The other is to understand that everything is a system and all the relationships between the necessary components within a system are important. For example, cell phones obviously wouldn't work without computer chips, but also require the wireless technology to interface with the higher bandwidth of the fiber technology that enables communication.

Last fall, when I gave a lecture at a conference in Cincinnati, I started off by saying: "How do you predict what to do in an industry which, from its start in 1965, roughly, to 2025, 60 years later, is going to have improved its performance by a factor of one trillion?" Yet I've had the opportunity to live through most of this.

I'm starting a new course this January in virtual reality. Why?

Because virtual reality and augmented reality will disrupt the communications, television, and travel industries by changing the way people communicate, watch live sports events, and visit foreign places. Most people want to say, "Well, it's not going to happen." But I'm used to that. And by the way, I have support from nearly all the major companies involved.

New technology raises new concerns and questions — and presents new responsibilities.

I try to raise deep questions for which there are no answers yet. Take privacy, for example. Until recently, it was perfectly legal for me to fly a drone over your property and take pictures, as long as the drone didn't land on your property. So I showed a picture of a drone outside somebody's bedroom to my class.

Another concern is electronic trading. What are the regulations for electronic trading? Is it really fair to place my computer five meters closer to where the signal comes in at the exchange so that I have a trading advantage? Maybe it's only a microsecond or a millisecond — but I can execute a thousand trades in that millisecond, before anybody else gets the same information.

Have the courage to take a risk.

Technology will continue to advance no matter what; understanding the performance trajectories of technologies will instill the courage to take the risks that are necessary and vital to creating disruptive innovations. Failure should not be a stigma! There is a big value to failure.



Donald Greenberg, the Jacob Gould Schurman Professor of Computer Graphics, has been researching and teaching in the field of computer graphics since 1966. During the last 15 years, he has been primarily concerned with research advancing the state of the art in computer graphics and with using these techniques as they may be applied to a variety of disciplines. His specialties include real-time realistic image generation, color science, and computer-aided architectural design. He teaches computer graphics courses in Computer Science, computer-aided design for the Department of Architecture, computer animation for the Department of Art, and disruptive innovation and technology strategy at Johnson. Widely recognized for his many breakthrough achievements, Greenberg received the Steven Anson Coons Award in 1987, the most prestigious award in the field of computer graphics.

What's Driving the Dramatic Reduction in Public Firms?

BY ROBERT PREER



The number of publicly traded firms in the United States has fallen by 50 percent in the past 20 years, according to recent research by **Roni Michaely**, Rudd Family Professor of Management and professor of finance at Johnson.

That means less competition for big corporations, enabling them to wield market power to bolster their bottom lines and deliver handsome profits to

shareholders, according to Michaely.

"The reduction in the number of public firms has been dramatic, and it has happened across practically all industries," he said. "The industries that have seen the largest reduction in the number of firms are also the industries that have had the greatest increases in profitability."

While analyzing more than 40 years of data on publicly traded firms in the U.S., Michaely and two colleagues, Gustavo Grullon of Rice University and Yelena Larkin of York University, found that the number of firms listed on U.S. stock exchanges began falling in the late 1990s.

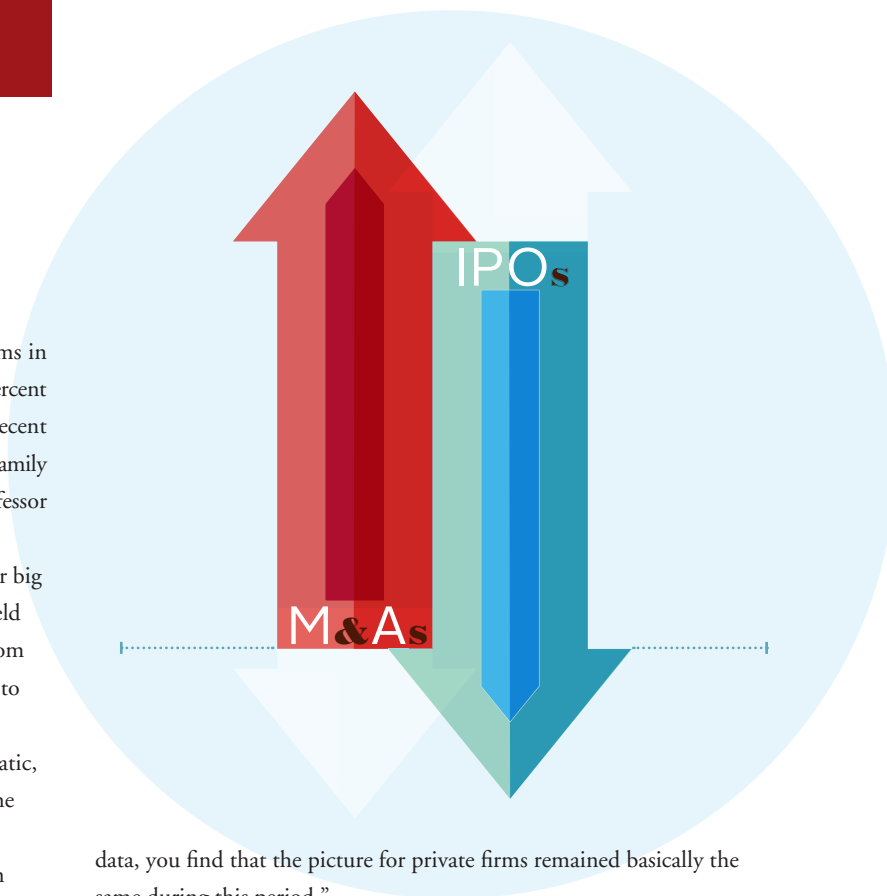
Today, there are roughly half as many firms listed on U.S. stock exchanges as there were in 1997 and fewer than there were in the early 1970s, when U.S. GDP was a third of what it is today. The findings are detailed in the working paper, "The Disappearance of Public Firms and the Changing Nature of U.S. Industries."

The researchers examined several possible explanations for the altered competitive landscape. First, they asked whether the vanished U.S. public firms had simply been replaced by foreign firms or private U.S. companies.

"We found that the decline in public firms was not compensated for by more private firms," Michaely said. "When you look at census

"The reduction in the number of public firms has been dramatic, and it has happened across practically all industries."

— Roni Michaely, Rudd Family Professor of Management and professor of finance



data, you find that the picture for private firms remained basically the same during this period."

Also, there was no evidence of intensified foreign competition. The share of imports of total revenues has been flat since 2000, indicating that U.S. firms have expanded as fast as import growth.

Did public firms dwindle because they were in distressed or dying industries? That's another possibility the researchers considered. But in analyzing the reasons that firms exited public exchanges, the researchers found that liquidations and involuntary delistings were not significant factors.

In the end, the research team concluded that the dramatic decline in public firms stemmed both from increases in mergers and acquisitions and from declines in initial public offerings (IPOs) — developments that came about as firms came to realize that becoming bigger and having fewer competitors is good for their bottom line.

As the 21st century unfolded, mergers and acquisitions reduced the number of public firms while creating larger and more powerful players. IPOs dropped after the bursting of the dot.com bubble in the late 1990s and early 2000s. While the number of IPOs has varied from year to year since then, the overall trend has been downward.

"It's not just that there are fewer IPOs but that the firms that have gone public in the last 20 years are different. The majority of IPOs that we've seen have been the Googles and Facebooks of the world," Michaely said.

Why the competitive landscape changed when it did isn't yet clear, although Michaely is willing to speculate.

The Justice Department under President George W. Bush took a more lenient approach to mergers and acquisitions about the time

the shift toward fewer and more powerful corporations was getting underway, Michaely noted.

Also, the spread of the Internet and advances in computers and communications probably played a role, since investment in technology of the scale needed is something big business can do more easily, according to Michaely.

“Many people, myself included, believed that the Internet and other changes in technology would level the playing field for companies,” he said. “It seems to have done the opposite. To succeed today, investments in technology are so substantial that only large companies can afford to make them.”

Michaely believes that policymakers in the United States should look closely at this shift in the competitive environment for U.S. industries and the possible consequences for the public.

“We have significantly fewer and more profitable companies in this country. It’s really great for shareholders. I’m not so sure it’s great for the consumers,” he said.

Second opinions can make matters worse

BY IRENE KIM



New research by **Sunita Sah**, assistant professor of management and organizations at Johnson, and co-author George Loewenstein of Carnegie Mellon, sheds light on professional second opinions with important implications for policy makers and consumers. While previous research largely suggests that second opinions help consumers make better decisions, Sah and Loewenstein

find that second opinions can have complex ramifications on the decision-making process, affecting the quality of the primary advisors’ guidance, as well as advisees’ accuracy.

Second opinions are often sought to improve decision making. As much as we want to trust our advisors, can we be sure they will lead us to the best outcome? What happens when our advisors have

conflicts of interest — in that what’s good for them is not so good for us? For example, do we really need \$900 of repairs on our car? Do we really need that expensive procedure that our dentist recommends? Second opinions can be another input to correct not only for random human error but also conflicts of interest. Right?

Sah, the leading author on the paper, reports that it is not that simple. “The mere act of having a second opinion available can affect the primary advisor’s behavior, sometimes triggering rationalizations or activating marketplace norms, resulting in a decrease in advice quality,” Sah explains. “It may even change primary advisors’ perceptions of what is ethical or acceptable behavior — a form of moral disengagement.” A decrease in advice quality from primary advisors of course has an impact on advisees’ decisions.

To observe the interactions of primary and secondary advisors and advisees, the researchers conducted four experiments involving thousands of university alumni. Advisors viewed a grid of 900 dots; some of these dots were solid and some were clear. “Advisees” were shown a very small subset of the large grid, were asked to guess the total number of solid dots in the larger grid, and were monetarily rewarded for accurately estimating that number.

“Primary” and “secondary” advisors assigned to guide the advisees were given varying amounts of information and incentives over the four experiments. Primary advisors sometimes worked as “solo advisors,” with no second advisor available to advisees, and sometimes were aware that the advisee would have access to a second advisor. All primary advisors had a conflict of interest such that they received greater rewards the more advisees overshot their estimate of the solid dots. Secondary advisors were sometimes provided for free to advisees and sometimes at either a low or high cost, and in one experiment, they were of high or low quality (given either perfect or little information of the larger grid). These secondary advisors had no conflict of interest and were rewarded for their advisees’ accuracy.

When primary advisors were aware of the presence of secondary advisors, they tended to give more-biased advice (since advisees would get more help, why not make a profit?) than primary advisors who were not aware of a second advisor. Having a second opinion was still valuable, however, since advisees who obtained these good-quality second opinions were more accurate than those that relied purely on their primary advisor.

“These experiments seemed to indicate that it makes sense to seek a second opinion, but not tell the first advisor,” Sah says. However, knowledge about the secondary advisors’ quality and cost also had an impact on the primary advisors’ advice: When the secondary advisor was of low quality or high cost, primary advisors gave more-biased advice; but when the secondary was of high quality and low cost, primary advisors were less biased. *Continued on pg. 18*

“These experiments seemed to indicate that it makes sense to seek a second opinion, but not tell the first advisor.”

— **Sunita Sah, assistant professor of management and organizations**

Alumni lead biotech startup GeneWEAVE to successful acquisition

By SHERRIE NEGREA

Two Cornell alumni who developed a diagnostic technology to detect drug-resistant bacteria while they were students sold the startup they launched to Roche, the world's largest biotech company. The acquisition calls for Roche to pay GeneWEAVE \$190 million up front and up to \$235 million based on the achievement of product-related milestones. The deal was announced in August.

The company's co-founders, Jason Springs, MBA '09, and Diego Rey, PhD '12, met in 2007 at Cornell after they each independently approached Wesley David Sine, faculty director of Johnson's Entrepreneurship and Innovation. Both told him they wanted to work with another graduate student on starting a company. After Sine introduced the two entrepreneurs, they immediately began collaborating on their joint venture, eventually raising \$25 million in venture capital to finance the startup.

"Unequivocally, if I had not been at Cornell, this wouldn't have happened," Springs says. "I feel very strongly about that. There's no one thing that I can point to as the pivotal thing that made it happen. It's an ecosystem or culture that allows people to do these things without burden. It takes a village to raise a company."

Springs and Rey visited campus in September to tell the story of their company to Sine's class, Commercializing University Science and High Technology — a course they both took as graduate

students. During three days on campus, Springs gave a presentation on making a venture capital pitch, and Rey joined a panel of scientists to discuss entrepreneurship, where he learned that two other panelists were inspired to start their businesses after hearing the GeneWEAVE story in Sine's class.

Inspiration is but a starting place on the journey of a company from idea to startup to acquisition, says Sine, who also is a professor of management and organizations at Johnson.

"The sale of GeneWEAVE is just one transaction," he says, taking note of all the work Diego did beforehand and that Diego and Jason did together to create a company Roche would want to buy. "It's a long journey."

A number of Cornell faculty members aided Springs and Rey in gaining the skills to create a startup, including Zach Shulman '87 (ILR), JD '90, who taught a course on law and high-growth businesses and who is now director of Entrepreneurship at Cornell, and Brad Treat, MBA '02, former Cornell entrepreneur-in-residence and now entrepreneur-in-residence at both the Southern Tier Startup Alliance and Rev: Ithaca Startup Works.

Sheer determination led to success

Springs, who had worked at Lockheed Martin, arrived on campus a full month before Johnson's orientation in summer 2007 so he could "contact every single professor on campus who had the word entrepreneurship linked to their name on any Cornell website."

At the same time, Rey was working on his thesis in biomedical engineering under Professor Carl Batt, focusing on nanomaterials to target cancer cells, when he came up with an idea for a startup

THOUGHT LEADERSHIP @ johnson *Continued from pg. 17*

"Primary advisors appear to be worried that their advice could be exposed as being poor in quality," Sah explains. The possibility of multiple rounds — representing repeat business — also tended to make primary advisors less biased, suggesting concerns about future revenue, as well as reputational costs.

The cost of the second opinion affected advisees, too. When secondary advisors were expensive, advisees used them less. Also, when they had to pay for a secondary advisor, advisees tended to trust their primary advisor more.

"Imagine that we receive advice from our primary advisor, and we have the option to seek a second opinion, but it takes time, it will incur a cost, it will be an effort — those are burdens that motivate us to trust our primary advisor a little bit more," explains Sah.

Sah points out that in real life, second-opinion scenarios are yet more complex. "It's hard to judge the quality of advice — and even

very good advice can lead to bad outcomes and vice versa." And, while the secondary advisors in the experiments were unconflicted and generally of good quality, often secondary advisors could have different agendas, conflicts, or motivations.

The bottom line: Policy makers should be aware that the availability of second opinions can have unintended consequences.

"This paper highlights the importance of pilot testing potential policy recommendations to see if they have the intended beneficial effect," says Sah. "For example, if second opinions are made mandatory, do they improve, deteriorate, or have no impact on primary advisors? And what is the resulting impact on the advisees' decisions?"

The paper, "Conflicted advice and second opinions: Benefits, but unintended consequences," was published in the September 2015 issue of *Organizational Behavior and Human Decision Processes*.



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have happened. ...
It takes a village
to raise a company.”**

— Jason Springs, MBA ’09

GeneWEAVE co-founders Diego Rey, PhD ’12, left, and Jason Springs, MBA ’09, are now head of research and head of marketing, respectively, of GeneWEAVE, a division of Roche Molecular Diagnostics.

company. Rey wanted to create a clinical application that would detect bacteria but bypass the extensive sample preparation required to analyze DNA, a costly process that had become a bottleneck in diagnostics.

“I was fortunate to join a lab with such an interdisciplinary and entrepreneurial professor,” Rey says.

By the time he met Springs in fall 2007, Rey had already started Phagenetics with Leonardo Teixeira, PhD ’09, who was working in the same lab but moved back to Brazil. After Springs joined the team, Rey created a business plan that changed the focus of the startup from diagnosing tuberculosis to testing for drug-resistant bacteria. This has remained GeneWEAVE’s core mission.

Technology developed at GeneWEAVE delivers DNA directly into the bacteria, which causes the organisms to light up when detected. The company’s new Smarticles technology can also determine if the bacteria are susceptible to antibiotics.

While the technology is still in development, Rey says the target customer for the first product will be hospitals. Many have been fighting a strain of drug-resistant bacteria known as MRSA (methicillin-resistant *Staphylococcus aureus*).

“Because our technology allows users to skip sample preparation, the value our products bring can be very high, relative to their price,” Rey says. “We want to get every hospital to use our tool.”

In 2010, Rey and Springs moved GeneWEAVE to California after securing their first venture capital investment from Oakland-based Claremont Creek Ventures. Along with a second firm, XSeed Capital, GeneWEAVE raised \$1 million in its seed-funding round. By 2014, the startup had secured \$25 million in venture capital financing.

Roche “shared our vision”

As the startup grew, it began to attract the attention of larger companies, including Roche Molecular Diagnostics, the world leader in *in vitro* diagnostics. GeneWEAVE’s top managers started discussions about the company’s long-term goals with Roche, which operates a molecular diagnostics division.

“Roche shared our vision for solving the problem of drug-resistant bacteria in hospitals,” Springs says. “To us, it was obvious that joining Roche would allow the combined teams to achieve our shared vision faster and with a much broader reach.”

Proceeds of the acquisition of GeneWEAVE will be split among the startup’s shareholders, founders, investors, and employees. Rey and Springs now have new titles: head of research and head of marketing, respectively, of GeneWEAVE, a division of Roche Molecular Diagnostics. Roche has retained all of the company’s employees.

While startups are typically either acquired or become public companies to allow investors to recoup their money, GeneWEAVE’s sale to a company the size of Roche reflects the importance of the technology it has developed, says Tom Schryver ’93, MBA ’02, director of Johnson’s Entrepreneurship and Innovation Institute.

“What these guys have done, through their hard work and the potential of their technology, is to take a significant amount of venture capital and turn it into something much more valuable,” Schryver says. “There may be something of even greater value to come from it, which is what Roche is hoping will happen.”

Startup Snapshots

Luxury vacations with all the comforts of home — and hotels



Henry Parry-Okeden, MBA '11,
co-founder, InvitedHome
PHOTO COURTESY OF INVITEDHOME

InvitedHome is shaking up both the hospitality and home-sharing industries by working with homeowners to bring hotel standards to luxury home rentals. Vacationers can now personalize their trip by staying in a beautiful home and still enjoy standardized, high-quality accommodations.

“When you think about all the different hotel companies, you know exactly what to expect, whether it’s the Four Seasons or Motel 6,” says co-founder Henry Parry-Okeden.

“But with vacation homes, a guest has no idea what they’re going to get. We offer a consistently great experience and a brand you can trust.”

Not only are InvitedHome’s rentals held to meticulous cleaning and maintenance standards and fully stocked with everything a

guest needs; the startup provides 24/7 guest services, “just like a hotel’s front desk.” InvitedHome manages unique vacation homes in popular vacation spots in California, Colorado, Florida, and Hawaii.

Parry-Okeden met his co-founders, Tom Feldhusen and Michael Joseph, when he moved to Boulder, Colo., for his MBA internship at startup accelerator Techstars. They were using the Techstars program to develop a software startup for homeowners of vacation rentals. In an industry that Parry-Okeden says “hasn’t had huge amounts of innovation and change in a long time,” he and his co-founders knew they had a great opportunity to offer something new.

Parry-Okeden, who now heads up strategy and growth at InvitedHome, says Johnson gave him the well-rounded business skills and the confidence to take risks that he needed to launch a successful startup. InvitedHome grew a whopping 8,000 percent between 2011 and 2015, landing it 28th place on *Inc.* magazine’s list of fastest-growing private companies in the United States and first place in the magazine’s Travel & Hospitality section.

“Most entrepreneurs are never satisfied,” says Parry-Okeden. “As soon as you reach one milestone, you’re already on to the next. In 2011 we were only in Lake Tahoe, and now we’re in nine markets.”

Rentals made easy



Adam Kirsch '15, MBA '16,
founder, Yorango

After experiencing firsthand the frustrations students encounter when searching for rentals in Ithaca, Adam Kirsch '15, MBA '16, decided to found Yorango — a company that provides student tenants and landlords with a safe, easy-to-use platform for listing, finding, and managing rental properties.

Once into the project, Kirsch identified landlords’ need to simplify as well — especially landlords who manage multiple properties. “Our focus is on

addressing the intersection of landlord and tenant needs to create a simple and positive rental experience,” Kirsch says.

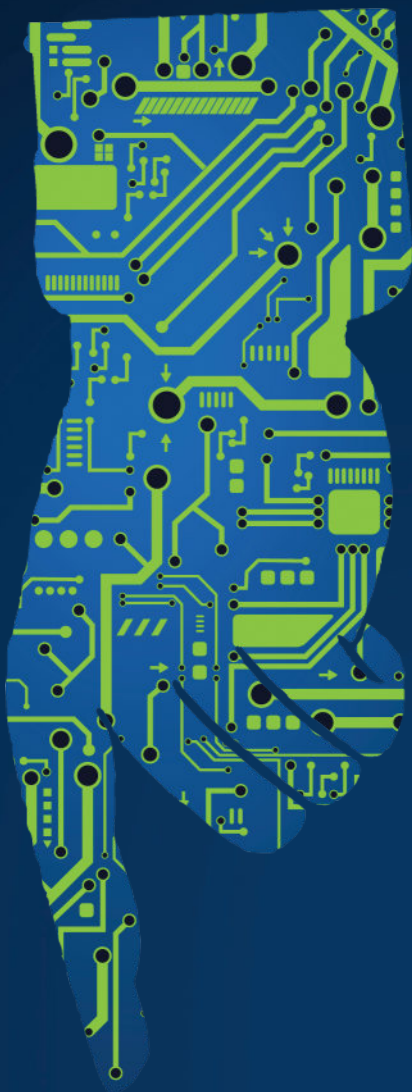
Yorango’s future is not just listings, but in “an integrated, end-to-end rental environment,” which will drive growth beyond peak rental seasons, Kirsch says. To that end, his team is developing management and communication software enabling tenants to pay rent, sign leases, and track maintenance online. The software, scheduled for release in

2016, will improve efficiency and communication between renters and landlords, addressing another pain point for both parties.

“A lot of people look at rental as a transaction, but we look at it as a relationship,” Kirsch explains. Thanks to its clean and simple interface and its dedication to rentals available in Ithaca, many find Yorango to be more user friendly than other platforms. That is reflected in the rapid growth of its user base — which now includes several thousand Ithaca renters — and may have helped Yorango win Tech.co’s 2015 New York Startup of the Year Readers’ Choice award.

“Cornell’s eLab gave us the opportunity to refine our product,” says Kirsch, citing eLab instructors Tom Schryver '93, MBA '02, executive director of Cornell’s Center for Regional Economic Advancement and Johnson’s Entrepreneurship and Innovation Institute; Steven Gal '90, serial entrepreneur and senior lecturer; and Ken Rother, senior executive and visiting lecturer, as “huge influences” on the development of the business. In addition, Kirsch’s role as a fund manager with Big Red Venture Fund (BRV) enabled him to see startups from an investor’s point of view. He credits eLab and BRV as “tremendously in-depth, practical programs” where you make real decisions and impact real people and companies. “Between Johnson and Cornell as a whole, I’ve gained a great understanding of the entrepreneurial ecosystem.”

— KATIE O'BRIEN '16



CREATING SUCCESSFUL HIGH-TECH STARTUPS IN ITHACA

BY SHERRIE NEGREA

WITH A DOCTORATE IN MATERIAL SCIENCE FROM CORNELL, GREG GALVIN UNDERSTOOD THE INTRICACIES OF PHYSICS AND ELECTRICAL ENGINEERING BUT DIDN'T WANT TO SPEND HIS DAYS IN A LAB. WITH A CORNELL MBA, HE ALSO KNEW THE PRINCIPLES OF ACCOUNTING AND MARKETING BUT DIDN'T WANT TO LEAVE THE SCIENCE BEHIND.

So in 1993, he combined his complementary strengths and launched his first startup, Kionix, licensing a groundbreaking technology developed at Cornell. By 2009, Galvin had sold the company twice — for a total of \$533.5 million — and created 250 technical and manufacturing jobs in Ithaca. He had also started his second company, Rheonix, which produces molecular diagnostic testing systems.

A soft-spoken and self-effacing man, Galvin built a portfolio of successful high-tech startups in Ithaca with a strong dose of perseverance, grueling days, and dedication to his employees. Yet his unusual background in both science and business allowed him to become that rare type of entrepreneur who can not only envision the technology that will thrive in the marketplace but who can also develop the organization needed to produce it. “Greg is probably the most talented person I’ve ever known or worked for,” says Jim Kirkwood, the former chief operating officer of Kionix, now CEO of Endicott Machine and Tool in Endicott, N.Y. “He understands all the different aspects of owning your own business. He understands the technology as well as the engineering. He understands the sales and marketing so he can go into a customer meeting and understand all the players at the table. If he’s in a room with engineers, he can speak the technical talk. I always say, ‘Greg is two or three steps ahead of anyone else sitting in the room.’”

Galvin’s first passion for science was a childhood dream to become a doctor. But after discovering he despised organic chemistry, he ended up graduating from the California Institute of Technology with a degree in electrical engineering and followed a professor to Cornell to become one of his first graduate students.

PROFILE IN leadership

Galvin then spent four years conducting research on the solidification dynamics of silicon under ultra-rapid heating.

By the time he earned his doctorate, Galvin had become more interested in the business side of science, but the positions he was offered didn't match his diverse skill set. "The companies had this idea that if you're a PhD, you go in the lab and do science," he recalls. "I found it very difficult to get anyone to consider me for more of a product management position or something that merged the business side of the organization along with the science."

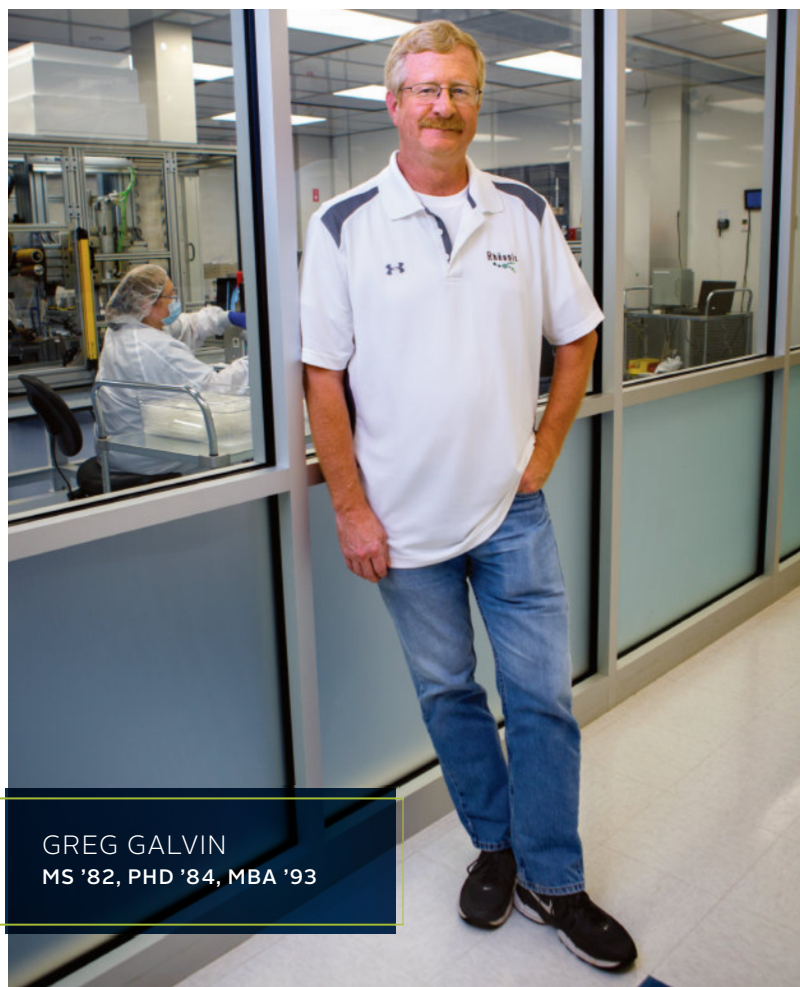
Instead, Galvin took the less typical path for a newly minted PhD: He became deputy director at the Cornell Nanofabrication Facility, where he made connections with the scientists whose research would eventually become the basis for Kionix. Developed by Professor Noel MacDonald, the technology, known as MEMS (micro-electro-mechanical systems), builds mechanical systems on a microscopic scale.

After taking a position with Cornell's corporate research relations, Galvin was asked to identify companies that wanted to license the MEMS technology. Unable to find any, he decided to develop the technology himself and invited an electrical engineering doctoral student he had met on campus, Tim Davis, PhD '93, to join the startup. He called it Kionix, taken from the Greek word *kíōn*, meaning "pillar," as he viewed the microstructures comprising the MEMS device as tiny silicon pillars.

"For Kionix, Greg jokes that we did everything wrong," says Davis, the company's chief technology officer. "We started a company that needed a lot of money to develop the technology and create both a product and a market. But even though we did everything wrong, he made it work."

Galvin made it work primarily because of his doggedness seeking venture capital for a startup in Ithaca, which has traditionally been overlooked by the major investment firms on either coast. Upstate New York, Galvin notes, ranked third from the bottom in the amount of venture capital it received among all regions across the country in the second quarter of 2015, according to a report by PricewaterhouseCoopers. While upstate generated \$22.2 million in financing, the number one region — Silicon Valley — raised \$9.1 billion, followed by the New York metro area, with \$2.3 billion. "There's a ton of federal research funding coming into this region, but we rank nearly last for venture capital," Galvin says. "That to me epitomizes the problem that we face in trying to generate this entrepreneurial ecosystem and entrepreneurial activity in Central New York."

Despite those odds, Galvin was able to raise \$13 million to launch Kionix by securing small amounts of money from a large number of investors, including family members, friends, and Cor-



GREG GALVIN
MS '82, PHD '84, MBA '93

Pictured here in his trademark jeans, polo shirt, and sneakers, Greg Galvin is chairman and CEO of Rheonix and Mezmeriz as well as co-founder and former CEO of Kionix. He was named Cornell Entrepreneur of the Year in 2014.

nell associates. One of those investors, Cayuga Venture Fund, based in Ithaca, not only provided financing for Kionix but also funded Galvin's succeeding business ventures.

"We felt that their technology was advantaged and was going to create a marketplace for them, although they were competing against huge companies," says Phil Proujansky, a managing partner with Cayuga Venture Fund. "It took awhile to get there — it's always hard for a startup to compete against huge companies — but they got traction in the marketplace."

Kionix's first product was a set of micromirrors — each less than a millimeter on its side — that could switch fiber-optic signals. This niche product was in demand during the telecommunications boom in the late 1990s, as companies were exploring how to transmit and redirect fiber-optic signals in the Internet backbone.

As its products gained visibility in the market, Kionix attracted the attention of Calient Networks, a California optical circuit

switching company that bought the startup for \$300 million in 2000. But in a move Davis, his co-founder, calls “brilliant,” Galvin spun off a separate technology that focused on inertial sensors, creating the framework for a second incarnation of Kionix.

“The brilliance in it was structuring the deal so that he could sell only part of the company and retain part of the intellectual property to develop in new fields,” Davis says. “By being able to manipulate that situation so that you could retain enough and yet get enough money in the sale to fund the new activity was, I think, the key turning point not only for Kionix, but for Greg.”

The next generation of products of what came to be known as the “new Kionix” were devices that could be installed in laptop computers to detect if they were falling — if they sensed free fall, the devices would lock the heads on the disk drives before impact, preventing any damage to stored data. Kionix reached a milestone with the product when Apple purchased it to use in its MacBook, catapulting the startup to the top of the consumer electronics market.

Kionix developed two more highly profitable applications for its inertial sensors: enabling cell phones to switch from portrait to landscape mode and making possible motion-based computer gaming systems. When the technology was adopted by such major manufacturers as Samsung, Microsoft, and Nintendo, employment at Kionix grew to 250 people.

“The company ultimately went to a 24/7 operation,” says Galvin, who is known for wearing jeans, a polo shirt, and sneakers to work. “We had four shifts staffing the production facilities as well as a growing sales force and technical support worldwide.”

As Kionix became a leading supplier of inertial sensors, another buyer for the technology emerged: Rohm Co., Ltd., a Japanese semiconductor company, which bought the startup for \$233.5 million in 2009. A year before the sale, however, Galvin had already spun off a different product line developed at Kionix — a platform

for the molecular diagnostics industry — that became the basis for his second company, Rheonix — taken from the word rheology, the study of fluid flows.

With 62 employees, Rheonix is now conducting clinical trials on its first product, a completely automated molecular diagnostic system that will identify sexually transmitted infections. Future iterations of the platform will be designed to detect respiratory viruses and cancer.

Delving into medical diagnostics is another example of Galvin’s winning strategy. While devices that detect infectious diseases are already used by hospitals, Galvin believes Rheonix can improve the technology by fully automating the process, guaranteeing test results in hours rather than days, and reducing the cost of the test while delivering more clinical information.

“Greg is a very strategic thinker,” says Kenny Salky, vice president for sales for Rheonix, who formerly worked for Kionix. “He understands the market and understands where we should be and how to get there, and he doesn’t do it in a very complicated way.”

Galvin’s latest venture is Incodema3D, a company he founded with three partners in Ithaca last January. The startup is applying 3D printing to manufacture parts for the aerospace industry that weigh less and can have much more complex geometric shapes than those fabricated through traditional machining.

3D printing is yet another disruptive technology Galvin is guiding into what he predicts will become a rapidly expanding industry. “I don’t know that there’s something magic about what I do versus somebody else,” he says. “I think I’m pretty good at organizing and managing people, understanding the technology, understanding the marketplace, and setting the vision for where it is we should be going to be successful. But at the end of the day, it’s about getting the right set of people together who have the right talents and abilities to actually execute it.”



Every time you turn your phone on its side, think of Greg Galvin and Kionix — the company responsible for developing the technology that enables cell phones to switch from portrait to landscape mode.



THE FINTECH REVOLUTION

DISRUPTIVE INNOVATION, DRIVEN BY
DIGITAL TECHNOLOGY, IS TRANSFORMING
FINANCIAL SERVICES.
BY MERRILL DOUGLAS

TECHNOLOGY GIVES MORE PEOPLE ACCESS TO FINANCIAL SERVICES, FASTER AND MORE SIMPLY, AND OFTEN AT A LOWER COST.

Having redefined the way we shop, communicate, enjoy music and more, digital technology is now getting ready to shake up our relationship to money.

If you want proof that financial technology (fintech) has launched a campaign to flip the finance industry upside down, just ask the 1,500 people who gathered in Manhattan last September for a conference devoted to that subject, Finovate 2015.

Or ask Simon Yoo, MBA '98, founder and managing partner of Green Visor Capital, a San Francisco-based venture firm that invests exclusively in fintech startups.

"The digitization of content, broadly defined, has fundamentally altered the world forever," Yoo says. "Combined with the proliferation of smartphones, that changes the dynamic for all financial institutions."

The term "fintech" describes a variety of ventures taking aim to disrupt the financial services industry. Among other things, fintech firms are trying to change the way we: make payments, borrow and lend money, evaluate credit risk, transfer funds, finance purchases, invest, manage wealth, and conduct bank transactions. Examples of well-known fintech entities include Square, Stripe, Kickstarter, Lending Club, Apple Pay, and Bitcoin.

Interest in fintech is accelerating fast. According to a 2015 report from Accenture, global investments in fintech firms totaled \$4.05 billion in 2013 but tripled to \$12.2 billion in 2014. A paper published by MarketResearch.com and Banking Reports predicts that this figure will reach \$19.7 billion in 2015.

And according to a Goldman Sachs report in March 2015, technology-enabled startups could grab more than \$4.7 trillion in revenue that would otherwise have gone to traditional financial services.

One big factor in the rise of fintech is a desire to make finance more democratic, says Rich Marin, clinical professor of management at Johnson and a general partner in Green Visor Capital. "People ask, 'Why do the credit card companies get such huge fees? Why rely on banks for loans, when banks take forever to say yes or no and charge high margins? And why go to an investment banker on Wall Street to raise money for a startup, when you could do it on the Internet through a crowdfunding platform?'" Technology gives more people access to financial services, faster and more simply, and often at a lower cost.

Digital innovations in other industries have created expectations that are now prompting similar changes in finance, notes Savneet Singh '05 (Applied Economics

and Management). Singh is president and founder of the fintech startup Gold Bullion International (GBI) and an angel investor who focuses on fintech.

"Consumers today are much more comfortable going directly to a service provider rather than always having to go through their bank, financial advisor, or other middleman," Singh says. And people who work in financial institutions want access to technology tools that are just as advanced as the ones they use in their personal lives.

Another force behind fintech is the unprecedented volume, variety, and quality of data that companies can tap to gauge consumer needs and understand credit risk, says Wesley Sine, professor of management and organizations at Johnson. "This is allowing banks and non-banks to create new kinds of services and deliver those services in ways that were not possible before."

For example, in the past you might open a savings account to earn a few interest points on money that the bank then lent out for several points more. If you needed a loan, you might borrow from a bank at a moderate rate, use a credit card at a higher rate, or turn to a payday lender at an exorbitant rate.

Today, an online peer-to-peer lending platform such as Lending Club or Prosper gives both depositor and lender an alternative. "It provides an opportunity

THE FINTECH revolution

to loan money to someone who would otherwise borrow from a credit card company at 15 percent and make a higher return than if you were leaving the money in a savings account,” Sine says.

MACHINE-MADE STOCK TIPS

Along with banks, financial advisors are also seeing tech-driven services move in on their turf. One of the invaders is TipRanks, a startup that uses natural language processing to scrape data from the writings of professional stock analysts and then ranks those advisors by how well their predictions pan out. The results help investors decide whose advice to follow.

Roni Michaely, Rudd Family Professor of Management and professor of finance at Johnson, serves on TipRanks’ board.

Besides marketing its service directly, TipRanks collaborates with the online trading platform E-Trade, helping investors

choose which stocks to buy, Michaely says. “If an analyst gives a recommendation, you can also see what the other top analysts are saying about that stock.” Within the past year, TipRanks has started ranking financial bloggers and ranking corporate insiders by the success of their trades, so investors can decide to follow the insiders who demonstrate the best timing.

Some aspects of fintech have made headlines but have not yet made serious inroads into business as usual. Notable among those are digital currencies, including Bitcoin, an open-source payment system that enables peer-to-peer transfers.

Bitcoin is considered a “cryptocurrency” in that it operates without a central bank or other authority to mediate transactions. But Bitcoin isn’t as decentralized in practice as it is in theory, says Ari Juels, a professor at the Joan & Irwin Jacobs Technion–Cornell Institute at Cornell Tech whose interests include computer security, financial cryptography, and cybersecurity. “The code is maintained by just a handful of coders. The vast majority of coins in the system are held by a small group of users, and most of the mining power [the process for creating new coins] resides in a few big mining pools.”

In the future, Bitcoin’s main impact might not be in currency but in other applications of the underlying technology, Juels says.

One intriguing possibility is the “smart contract.” Juels cites a new platform called Ethereum, which lets users place contracts on the blockchain — the distributed database used to process transactions in payment networks such as Bitcoin.

“People can create autonomous contracts, programs that can do whatever you like and can manipulate money,” Juels says. A smart contract might automatically sell stock when it reaches a certain price or issue an insurance payout when temperatures in Florida drop

low enough to ruin an orange crop.

Blockchain technology also interests Susan Joseph ’81, an attorney and consultant who has done work for several fintech firms. Joseph blogs about fintech, has founded two fintech groups on LinkedIn and, as co-founder of the fintech startup Leverage LLC, is working to modernize the process of transforming assets into securities.

Because the blockchain lets people make transfers in a trusted manner without an intermediary, it eliminates inefficiencies and reduces costs, Joseph says. Systems based on the blockchain won’t gain millions of users overnight, but the technology offers exciting prospects, she says. “If you look at emerging markets, the non-banked are going to benefit from blockchain-based transactions almost immediately, and this should help improve their access to financial services.”

Companies that now spend as much as 40 percent of their budgets on complying with financial regulations will benefit as well, Joseph says. The blockchain simplifies compliance because its transactions are inherently transparent. “Regulators will be happier, because they’ll be able to see what’s going on,” she says. And transfers made in near real-time will make trade more efficient. “Cross-border transactions might settle in a day, or ten minutes, versus 30 or 45 days.”

FINTECH HERE AND NOW

While much of the potential of cryptocurrency lies in the future, many fintech entrepreneurs promise benefits today. They say their services provide efficiency, simplicity, economy, and — in some cases — access for people who have been shut out of traditional financial services.

One example is Finexkap, a Paris-based factoring service co-founded by Cédric Teissier, LL.M. ’03.

A factor is a party that purchases accounts receivable, at a discount, from companies

GG

IN THE FUTURE, BITCOIN’S MAIN IMPACT MIGHT NOT BE IN CURRENCY BUT IN OTHER APPLICATIONS OF THE UNDERLYING [BLOCKCHAIN] TECHNOLOGY.”



Ari Juels, a professor at the Joan & Irwin Jacobs Technion–Cornell Institute at Cornell Tech whose interests include computer security, financial cryptography, and cybersecurity

that need quick cash. In Europe, where most factors are large banks, such services impose onerous terms on their customers, with fee schedules that are almost impossible to interpret, says Teissier, Finexkap's CEO.

Finexkap eliminates the paperwork, delays, and constraints that businesses encounter when they work with institutional factors. "You can submit your invoice for financing 24/7 with your iPad on your couch," Teissier says. "It takes just five minutes to create an account and less than one minute to submit a funding request." CEOs don't become personally liable for the invoices they sell if Finexkap can't collect. Businesses don't have to commit to selling a set number of invoices over a specific period. And the fee structure is simple.

Finexkap uses publicly available data to qualify its customers. "When the company enters its tax ID, we automatically get all of its financial information," Teissier says. Algorithms also define the risk associated with individual invoices.

As a champion of fintech, and a FinTech Advisory Group Member at the World Economic Forum, Teissier has called for new regulations to cover this nascent industry. Regulations would create standards of quality, plus guideposts to tell fintech firms what they may and may not do, he says. "Our biggest challenge is making sure our clients trust us and know that we are credible and worthy of their membership."

Many proponents look to fintech for services that traditional financial institutions simply don't offer. That's Yoo's focus at Green Visor Capital, whose partners include Joe Saunders, the former CEO and chairman of Visa. Green Visor seeks out not just tech innovations with financial applications, but startups focused on substantive and currently unfilled needs. "We also want to make sure we're always backing socially responsible entrepreneurs," Yoo adds.

PHOTOS COURTESY OF JASON THANH LA, CÉDRIC TEISSIER, AND LAURA WANG



WE PROVIDE ANALYTICS THAT HELP OUR CUSTOMERS UNDERSTAND THEIR CUSTOMERS.



Jason Thanh La
MBA '14, CEO,
Merchant Service Group



YOU CAN SUBMIT YOUR INVOICE FOR FINANCING 24/7 WITH YOUR IPAD ON YOUR COUCH. IT TAKES JUST FIVE MINUTES TO CREATE AN ACCOUNT AND LESS THAN ONE MINUTE TO SUBMIT A FUNDING REQUEST.



Cédric Teissier, LLM '03,
Co-founder and CEO of
Finexkap, a Paris-based
factoring service



WE'RE TRYING TO FIND HOW TO BRING THE MOST FRICTIONLESS EXPERIENCE TO BOTH CUSTOMERS AND MERCHANTS, WHETHER THAT INVOLVES DIGITAL WALLETS OR EASIER WAYS TO GO THROUGH ONLINE CHECKOUT SECURELY.



Laura Wang, MBA '12,
vice president, digital
products and strategy
at JPMorgan Chase

Those values have prompted Green Visor, for example, to back CreditShop, an online service that makes loans to working people with non-prime or scant credit histories. "Their product is more expensive than a credit card, but these people could not get traditional credit cards," Yoo says. CreditShop offers a far more attractive alternative to predatory payday lenders, with no hidden fees, he says. "It gives people a chance to get back on their feet and meet emergency liquidity needs."

Like CreditShop, the point-of-sale financing service Zibby targets people who don't qualify for traditional credit. Zibby is a service of the fintech company Cognical, founded while still at Johnson by Brandon Wright, MBA '12, together with Chinedu Eleanya '12. Cognical won the Cornell Venture Challenge, the university's prestigious business plan competition, in 2013.

Zibby is designed for non-prime consumers — people with low FICO scores. Cognical markets the service to e-commerce and brick-and-mortar merchants, who use it to offer a lease-to-own option and qualify consumers on the spot. Zibby targets merchants selling durable goods such as furniture, electronics, appliances, musical instruments, and noncustom medical devices.

The approval process is faster and less burdensome than methods that in-store credit programs have used in the past, says Wright, Cognical's CEO. And customers don't need to provide pay stubs, utility bills, or other documentation. Using a birth date, social security number, cell phone number, and email and physical addresses, Zibby goes online to access thousands of data points that hint at a customer's ability to make monthly payments. It then instantly determines whether to underwrite the purchase.

Non-prime consumers make up nearly half the U.S. population, Wright says. Many

THE FINTECH revolution

lack conventional credit simply because they haven't generated the kind of data FICO takes into account. "Serving the non-prime consumer is a data problem, not a creditworthiness problem," he says.

Extending credit to people who couldn't secure it in the past is also the mission of ProducePay (see story on page 32), a fintech service for growers of fresh produce that emerged from the fall 2014 Fintech Hackathon, an annual Johnson event held at Cornell Tech in New York City.

VALUE-ADDED PAYMENT PROCESSING

While some fintech services focus on unmet consumer needs, Merchant Service Group, run by CEO Jason Thanh La, MBA '14, targets the needs of businesses. Based in Huntington Beach, Calif., Merchant Service Group, LLC, provides payment-processing solutions and technology to merchants who serve a diverse population. Delivering service in more than a dozen languages, it uses technologies such as imaging, mobile payment, and data analysis to offer speed, plus extra value on the front and back ends of a transaction.

For instance, while it normally takes a merchant 24 hours or more to get approved to accept credit cards, a customer of Merchant Service Group can gain that approval in less than two hours, La says. And it uses data from merchants' transactions to provide extra services. "We provide analytics

that help our customers understand their customers," he says. "That helps them conduct better marketing campaigns and provide superior customer service."

La also backs fintech startups as a partner in the early-stage investment fund K5 Ventures. Among the companies K5 supports, one particularly interesting one, he says, is Coin, which allows customers to load multiple credit, debit, and loyalty cards onto a single card. Others include Wonder Technologies, which lets consumers purchase electronic gift cards for local businesses and national brands, and Ivy Pitch, a platform whereby Ivy League alumni connect with and invest in other Ivy League alumni. "Many investors would like to fund startups but don't have the opportunity to do so," he says. Companies such as Ivy Pitch give them that chance.

For Singh's New York-based fintech business, GBI, the focus is buying, selling, and arranging to store precious metals. GBI brings digital technology to a marketplace that, until now, has relied mainly on face-to-face transactions and phone calls.

"If you want to buy a position in gold or silver, we take your order, we bid it out to the dealers who participate in our exchange, and whoever gives the best price gets the transaction," Singh says. "That creates transparency, much lower pricing, and, maybe most importantly, ease of use, since you can do it from your computer or phone."

As an investor, Singh — whom Forbes

named to its "30 Under 30 in Finance" list in 2012 — targets fintech ventures that remove the middleman and those that use new data sets to reinvent old industries. One example of using a new data set, he says, might involve deploying a sensor to track how many people enter and leave a coffee shop. "Based on that data, you could probably create a better insurance product than exists now. You'd know exactly how much traffic is coming in and out of that shop and hence could price the insurance better."

Online lending is an especially exciting area for fintech, because it generates entirely new models for business and credit, Singh says. "No one ever dreamed a bank could face competition, but now that it's here, it's coming fast."

ARE BANKS HISTORY?

That competition raises an obvious question: Will traditional financial institutions fall to the same rude shocks as print newspapers and video stores?

While talk about fintech often highlights its potential for disruption, fintech entrepreneurs should view traditional financial services not just as rivals to overthrow but also as potential partners, says Yoo, a former investment banker who provided strategic advice for 15 years to traditional financial institutions and served briefly as chief financial officer of a fintech startup before launching Green Visor. "The operation you're trying to build may require



**THE CAPITAL ONES OF THE WORLD
ARE SETTING UP LABS IN NEW YORK CITY.
THEY'RE TRYING TO ATTRACT GREAT DIGITAL TALENT."**

—
Wes Sine, professor of management and organizations

licensing, and you might have to adhere to a regulatory framework.” A partner with an infrastructure in place for meeting those needs can prove invaluable.

Nevertheless, the old guard clearly needs to change with the times — and change isn’t always easy for banks and their brethren, Michaely observes. “When you go to a bank, you want something you can trust, something with zero tolerance for failure. While by definition, you cannot have a startup if you have zero tolerance for failure.”

Some banks are embracing fintech, says Marin. “They find ways to start or buy small businesses.” They’re also adding services based on new technologies, such as mobile apps that let customers make deposits by scanning checks.

“Others run and hide,” he adds. “They get caught in the tsunami, and eventually they’re out of business.”

Many financial giants are clearly banking on fintech. Investors in the payment-processing startup Stripe include Visa and AmEx. Citigroup’s Citi Ventures division has invested in Square.

Banks have established laboratories to develop their own innovations and accelerators and incubators to nurture potential partners. “The Capital Ones of the world are setting up labs in New York City,” says Sine. “They’re trying to attract great digital talent — computer programmers and MBAs who think about how to create value for consumers.”

Laura Wang, MBA ’12, is one of the innovators leading fintech efforts at JPMorgan Chase in New York. As vice president, digital products and strategy, Wang is overseeing the end-to-end product development of a new omnichannel payments product, Chase Pay, while also strategizing about digital payments for the future. “We’re figuring out what types of solutions we want to bring to market and



**IF YOU WANT TO BUY
A POSITION IN GOLD
OR SILVER, WE TAKE
YOUR ORDER, WE BID
IT OUT TO THE DEALERS
WHO PARTICIPATE IN
OUR EXCHANGE, AND
WHOEVER GIVES US
THE BEST PRICE GETS
THE TRANSACTION.”**



—
Savneet Singh ’05, president
and founder of Gold Bullion
International

how we want to partner — if we want to partner — to develop those types of experiences,” she says.

Chase already collaborates with other major banks in initiatives, such as ClearXChange, that provide peer-to-peer payment transfers. “You just type your payment request in your mobile app or online, and that connects through the back end between the sender’s and recipient’s banks so you can see those funds delivered right away,” Wang says.

Among the many varieties of fintech, digital systems for making payments are especially interesting, Wang says. “We’re trying to find how to bring the most frictionless experience to both customers and merchants, whether that involves digital wallets or easier ways to go through online checkout securely.” Chase’s credit card

customers are largely embracing the current innovations in digital payment systems, she says. “There are more Chase customers who have provisioned their cards to Apple Pay than customers of any other bank.”

To engage digital-native millennials, banks can’t rely on old models such as brick-and-mortar branches, says Ben Weiss ’03 (Engineering). Weiss worked with fintech startups at several consulting and venture capital firms and is now involved in a fintech project currently in stealth mode. In his venture capital work, Weiss worked with startups such as StockTwits, a platform for social investing, and Opera Solutions, which focuses on data analytics.

“The likelihood of a young person just out of college going to a bank branch more than once a year is shockingly low,” Weiss observes. “Many of those folks don’t even have a signature, let alone an understanding of why they would write a check.”

Along with obsolete business models, banks today struggle beneath decades’ worth of legacy technology, Weiss says. As they’ve added ATMs, interactive voice response systems, Web services, and mobile services, banks have continued to bolt new technology onto old, creating customer service nightmares such as the call center rep who can’t view a customer’s mobile transactions.

“Startups obviously have a huge advantage, because none of us have legacy customers, or we have only a few,” Weiss says. So they can forego outmoded business models. “And startups are building the technology from scratch in a modern way that is designed to scale.”

Whoever emerges triumphant from the fintech revolution, technology will surely reshape the financial landscape in ways we have not yet imagined. “We’re just at the Netscape phase,” says Teissier. “Our Google has not even appeared.”



AG TECH: FEEDING THE WORLD WITH BIG DATA

BY LAURA SULLIVAN

MORE THAN NINE BILLION
PEOPLE WILL POPULATE THE
EARTH BY 2050. HOW WILL
FARMERS FEED THEM?

Finding inspiration in the effort to address this global dilemma, several Johnson alumni have channeled technological developments into agricultural business solutions — an area gaining traction known as ag tech. These enterprises aim to transform how farms operate, increase their yield, and enhance their sustainability. Specifically, they see new possibilities in big data's ability to transform massive amounts of information into insights that inform farmers' decision making, facilitate financing, enable them to generate a steady cash flow, and sustainably enhance farmers' ability to achieve success overall.

These nimble organizations recognize farms as an underserved market. They have tailored big data solutions to meet farming's needs while promoting an unbiased approach to help convince farmers to collaborate on data sharing and trust the data-backed advice they get in return.

WHERE BIG DATA IS OLD NEWS

“Dairy farmers have been doing what I consider ‘big data’ for a long time,” says John Tauzel ’03, MBA ’12, the director of business development at Dairy One, based in Ithaca, N.Y. Now, the ability to draw on years of data, generate new kinds of data, and analyze different sets of big data is generating increasingly valuable information.

Dairy One has helped farmers with data-based farm management solutions from its inception in the 1940s as the New York Dairy Herd Improvement Cooperative. Data on raw milk still informs its farmers’ decisions on which cows should be milked, treated for a health issue, bred, or taken out of milking rotation. For members of the Dairy One cooperative, refining those choices can translate into an average of 2,700 pounds more milk per cow annually, or roughly \$23,000 of additional revenue each year for a farmer with 50 cows.

The amount of data collected from its laboratory tests over the years, together with data analyses made possible by computing advances, enable Dairy One to generate more — and more precise — solutions from big data. And since their stores of information extend beyond milk to include feed, soil, manure, and plant tissue, those solutions help more than Northeast dairy farms.

The Dairy One feed library, for example, has become a worldwide tool for optimizing livestock diets. The Agro-One branch, which provides soil testing for all types of crops across the Northeast, also leverages Dairy One’s laboratory and library-building capabilities to help Finger Lakes wineries decide how to grow the best grapes based on data gathered for a dedicated Northeast wine

industry library. Through another project now in the works, Tauzel intends to provide similar data-based assessment services for the region’s hop and barley farmers.

For each agricultural sector it serves, Dairy One’s goal is “getting more out of everything that we do on the farm,” Tauzel says. “That’s really where big data is going to help us — better management down to the acre, down to the individual cow. So that by helping farmers manage each unit of production in the best way possible, we help reach that broader goal of feeding the world.”

DEMOCRATIZING DATA

As co-founder and CEO of Farmers Business Network, Amol Deshpande, MBA ’05, has brought big data services to crop farmers. His Silicon Valley-based company aggregates the digital information collected in modern farming and converts it into information farmers can use to make better farming decisions.

“Farmers Business Network turns the world into a scientific plot trial,” says Deshpande.

From the computers and GPS units on everything from tractors to harvesters and information tracked on tablets and laptops, farmers generate data on soils, seeds, fertilizers, chemicals, yields, and weather. Each Farmers Business Network member submits that data and gets data-backed analyses in exchange. These reports tell farmers which seed choices and planting and management practices, specific to the conditions on their land, have shown the greatest success rates among all members.

Now farmers can supplement the anecdotal evidence on best practices they

receive at the local coffee shop with the recorded experience of vast numbers of farmers from across the United States. For everything from the speed of the seeder as it travels across the field to which hybrid seed performs best on each acre, farmers can use big data-informed analysis to make the most efficient use of their land. This, Deshpande says, is how a sharing economy “democratizes data.”

Established in 2014, Farmers Business Network differentiates itself from mammoth big data competitors as a “completely independent and unbiased” resource. Deshpande has sought to ease farmers’ concerns over privacy with strict terms and conditions and assures his clients that Farmers Business Network will not engage in ulterior business lines that conflict with their interests.

To establish that trustworthiness, Deshpande knew those “independent and unbiased” core values would have to apply to funding as well. He sought “long-term, mission-oriented, and patient investors,” and found them in Kleiner Perkins Caufield & Byers (where he was formerly a partner), Google Ventures, and DBL Investors. “They believe in the mission to help the farmers and understand that we cannot build a company fast with the intent to sell it because that goes against our commitment to the farmer.”

Those values also helped Deshpande attract a cohesive team of individuals who engage in everything from field outreach to technological innovations. “You can weave together all these different roles — from the office to the farms — when there is an underlying understanding of the mission,” he says. “We all pride ourselves in being unequivocal partners, without compromise,



“WE ALL PRIDE OURSELVES IN BEING UNEQUIVOCAL PARTNERS, WITHOUT COMPROMISE, WITH THE FARMERS.”

— AMOL DESHPANDE, MBA ’05, CEO OF FARMERS BUSINESS NETWORK

PHOTO COURTESY OF AMOL DESHPANDE



PHOTO BY MITCH WOJNAROWICZ

**“THAT’S REALLY WHERE BIG
DATA IS GOING TO HELP US —
BETTER MANAGEMENT
DOWN TO THE ACRE,
DOWN TO THE INDIVIDUAL COW.”**

— JOHN TAUZEL ’03 (CALS), MBA ’12
DIRECTOR OF BUSINESS DEVELOPMENT
AT DAIRY ONE

with the farmers.”

With Farmers Business Network, Deshpande has found the “bold vision that could change the world” that he began to seek at Johnson. Referring to his journey from being an investor to becoming an entrepreneur and CEO, “There isn’t a good substitute for being a protagonist in this sector,” he says. “You have to take ownership and drive change and set the culture and values for an enterprise. This mission of helping farmers and transforming global agriculture needs that type of commitment. You can’t really do that as a board member or an investor.”

By enabling big data-powered decisions to be layered with local farmer intuition, Deshpande hopes to see yields go up and costs go down, more calories per acre to feed the world, and future generations holding on to family farms.

DIGITAL FINANCING FOR THE PRODUCE MARKET

“I find it inspiring to walk around here,” Pablo Borquez Schwarzbeck, MBA ’15, said

as he regarded the boxes of bananas, onions, and strawberries at the Los Angeles Produce Market one fall morning.

Borquez Schwarzbeck’s inspiration fuels his role as founder and CEO of ProducePay, a financing solution provider that connects fresh produce farms with U.S. distributors and provides immediate access to liquidity — something growers traditionally have not had. He came up with the idea for the company at his family’s asparagus farm in Mexico, incubated and launched his startup as an MBA student at Johnson, and opened an office in a tall financial building in downtown Los Angeles, just a few blocks from the produce market, in spring 2015.

Typically, he explains, a grower assumes the risk and cost of growing and shipping produce, then waits to be paid when it sells. The limited liquidity comes just as labor-intensive harvests demand cash the most, leaving growers at the mercy of advances from their distributors.

Borquez Schwarzbeck aims to change that dynamic. Using big data analytics

to set a value for that fruit or vegetable as well as to assess the risk, ProducePay facilitates immediate payment of up to 50 percent of the value of a farmer’s fresh produce shipment. The startup draws on new produce pricing information from the U.S. Department of Agriculture (USDA) to build the models that determine how much



**“I WANT TO REACH
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— PABLO BORQUEZ SCHWARZBECK,
MBA ’15, FOUNDER AND CEO OF
PRODUCEPAY

PHOTO BY BRADFORD ROGNE



“AG TECH IS GOING TO DO SOME AMAZING THINGS TO CHANGE THE WORLD IN WAYS THAT PEOPLE CAN’T EVEN IMAGINE TODAY. THE NEED IS GREAT AND THE TECHNOLOGY EXISTS.”

— JEFF PETERSON ’77 ENGINEERING, MBA ’88, MANAGING DIRECTOR OF THE YIELD LAB

PHOTO COURTESY OF JEFF PETERSON

to invest and how much price variability to expect. As long as sufficient pricing data are available, any fruit or vegetable shipped from anywhere in the world to the United States can be managed through ProducePay.

In spring 2016, Borquez Schwarzbeck plans to launch a ProducePay virtual marketplace that will bring more financial independence to growers, reduce price opacity for fresh produce, and bring about price stabilization by reining in the chaos of in-the-flesh markets. Currently, at wholesale markets like the one in Los Angeles, each box of bananas can sell for one price at one seller and two dollars more just a few stalls down. Even the collection of pricing information could eventually be transformed, ending the need for USDA agents to walk from stand to stand at the wholesale markets to record daily sales figures.

An efficient and transparent digital marketplace could strengthen the produce industry overall, Borquez Schwarzbeck says. He also hopes it will expand the potential pool of new farmers. “I want to reach that percentage of people [worldwide] who could be farming — but aren’t because they don’t have the means — by providing access to funding [and markets] that give them the ability to grow.”

FOSTERING THE AG TECH FUTURE

As the former VP of strategic negotiations for Monsanto and a member of the executive board of the Center for Emerging Technologies in St. Louis, Jeff Peterson ’77 (Eng), MBA ’88, understands the impact of

big data on agriculture. In 2013, before he retired, Monsanto had already purchased a big data firm, The Climate Corporation, for nearly \$1 billion and promoted big data as a major platform for growth in agriculture.

A few months into retirement, however, he decided to apply his experience in a new enterprise and became a founding partner and managing director of the Yield Lab, an agriculture technology accelerator based in St. Louis. He wanted to address what he saw as “a need to accelerate ag tech beyond what the big companies were coming up with.”

The Yield Lab’s mission is to “accelerate, mentor, and cultivate ag tech innovation that builds a sustainable, food-secure future for all.” In selecting early startups to invest in, “we closely look at the impact, scalability, and timing of the venture,” Peterson says. To find those companies that will be successful, “a big part of our job is to see things that may not be obvious to other people.”

Through mentoring, networking, training, and investment, the Yield Lab team aims to strengthen the viability and success of innovative ag tech startups. Whether or not they decide to invest in them, Peterson reveals a genuine enthusiasm for ag tech entrepreneurs when he discusses their proposals and shares his “investor’s perspective” for nudging good ideas toward success.

For example, one Yield Lab candidate Peterson encountered, a big data startup that fit much of the Yield Lab selection criteria, would be entering a crowded space among established big data service providers, in his view. So he encouraged the startup’s founders

to pivot their idea toward other farmer-focused businesses that could use the data. As a result, that startup is focused now on farm insurance, banking, and leasing — a niche with a whole new set of customers and far less crowded with competition.

While that startup did not make the cut for the 2015 Yield Lab class, its founders asked to participate in the program at their own expense. Such dedication makes Peterson optimistic for future ag tech solutions.

“Ag tech is going to do some amazing things to change the world in ways that people can’t even imagine today,” Peterson says. “The need is great and the technology exists. Major investors and global tech companies not yet involved in agricultural technology are connecting the dots, and ag tech is going to take off as never before.”

FARMERS ARE THE NEXUS

Ag tech entrepreneurs “want to make a positive impact,” Peterson says. “They don’t want to create just another app or social media program; they want to sustainably ensure that there is affordable food on the table for everyone.”

They all start with a high regard for farmers, the work they do, and what they produce. As Deshpande puts it, “the farmers are the nexus.”

“These are people who spend every single hour of sunlight on their farms working to grow something from nothing,” Borquez Schwarzbeck says. “That creates a big human element to this industry. We have to understand that and respect that to grow within it.”



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THE FUTURE OF CLEAN ENERGY: ACHIEVING RESILIENCE

BY TED GOLDWYN '90

WITH TRADITIONAL ENERGY PRICES FALLING, THE RENEWABLES SECTOR STRUGGLES TO REMAIN COMPETITIVE WHILE MAINTAINING A FOCUS ON LONG-TERM GROWTH.

K

evin Johnson, MBA '09, watched the Iraqi oil fields burn while on deployment to the region in 2004–05. The experience left an indelible impression on the former U.S.

Army Captain.

“My service in the military is the key reason why I got into renewable energy in the first place,” says Johnson, managing director, of federal and microgrid business development at Canadian Solar. “The military has led our energy transformation many times; for our national security, for resiliency, and to reduce the cost of our force.”

U.S. energy independence, establishing resilience in the power grid, and the prospect of global instability caused by climate change are some of the leading factors driving growth in the renewable energy industry. But with oil and natural gas prices declining steeply over the past few years, investment in the sector has taken a hit.

Leaders in the renewable energy field, including several Johnson alumni, are confronting multiple challenges: low fossil fuel prices, reduced investment, and the impending expiration of government tax incentives. At the same time, they are keeping an eye on the future and on clean energy’s role in shaping the world’s energy mix.

GROWTH IN WIND AND SOLAR FACES HEADWINDS FROM TRADITIONAL ENERGY

Although renewables have made impressive strides in both efficiency and capacity in recent years (Fig. 1), investment is lagging due to competition from low-priced fossil fuels.

Through the first half of 2015, solar has accounted for 40 percent of all new electricity generation capacity brought on line in the United States. Solar energy powers 785,000 homes and small businesses in the country, and a new solar project is installed every two and a half minutes.¹

The story is similar for wind, with a total of \$8.3 billion in new investments made in 2014. Wind now provides almost 5 percent of total electricity in the U.S.²

“Unlike with oil, there is a very meaningful connection between natural gas prices and the competitiveness of wind and solar.”

— FRANK NICKLAUS, '04, MBA '12, VICE PRESIDENT, GREENTECH CAPITAL ADVISORS

¹ 2015 Solar Energy Industries Association.

² U.S. Office of Energy Efficiency & Renewable Energy, 2014 Wind Technologies Market Report, August 10, 2015.

Efficiency metrics have also improved in both wind and solar, with average prices falling by two-thirds for wind and nearly 50 percent for solar over the past five years (Fig 2). According to the U.S. Energy Information Administration³, by 2020 the levelized cost of electricity from wind will be on par with conventional natural gas-fired power plants, and solar photovoltaic technology will be approaching parity as well. (Levelized cost is determined by the cost to install a renewable energy system divided by its expected lifetime energy output.)

Despite these impressive cost reductions, low conventional energy prices have impacted the market for renewables. This would seem to defy reason, since oil does not compete directly with renewable energy sources in terms of electricity generation, according to the U.S. Energy Information Administration. Oil is used primarily as fuel in the transportation sector and as feedstock in manufacturing materials such as plastics. In fact, less than 1 percent of electricity is generated by oil-fired power plants in the United States. Nevertheless, the recent dramatic drop in global petroleum prices has had a dampening effect on investment in solar and wind.

“Since wind and solar don’t really compete with oil, there shouldn’t be much of a correlation between oil prices and the performance of shares of renewable energy companies,” says Frank Nicklaus, ’04, MBA ’12, a vice president with Greentech Capital Advisors, “But nonetheless, declining oil prices have certainly contributed to a big sell-off in renewable energy stocks during the last three to six months.”

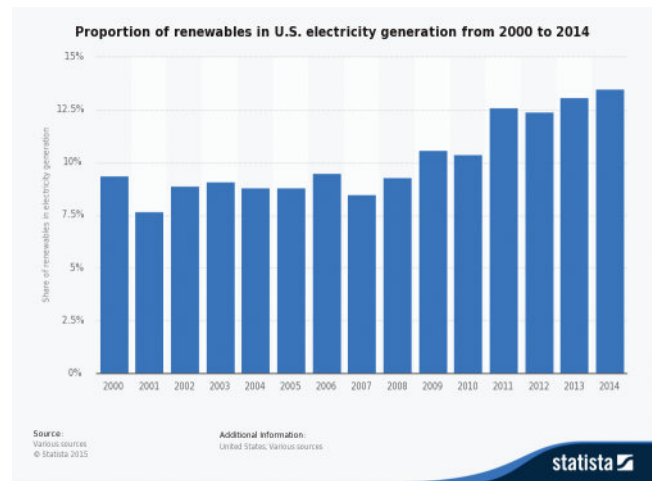
Nowhere has this trend been more evident than in the declining values of “yieldco” stocks. Yieldcos are publicly listed companies that acquire and operate businesses such as renewable energy assets. They generally have stable underlying cash flows, the majority of which are paid out as dividends to shareholders.

Recently, the market values of yieldcos have fallen in close correlation with those of master limited partnerships (MLPs), a similar type of investment vehicle typically comprised of oil and gas commodity assets. Industry analysts have blamed the drop in yieldco values on the market’s irrational correlation of renewables with low conventional energy prices, combined with the likelihood of interest rates rising in the future, which would increase the cost of capital and therefore reduce the value of yieldco projects.

“Unlike with oil, there is a very meaningful connection between natural gas prices and the competitiveness of wind and solar,” Nicklaus says. “About 30 percent of our electricity in the United States is generated from gas-fired power plants, which typically set the market clearing price for power. It is a lot easier for renewables to compete if you’re in a high gas price environment and you’ve got



Fig. 1
Proportion of renewables in U.S. electricity generation from 2000 to 2014



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“The need for carbon-free energy production is a separate driver altogether regardless of the price of oil.”

— PROFESSOR MARK MILSTEIN

\$75 per megawatt-hour power, instead of say \$30 per megawatt-hour power like we’re seeing with such low gas prices today.”

“Natural gas really did upset the economics of renewables over the last several years,” says Mark B. Milstein, clinical professor of management and director of Johnson’s Center for Sustainable Global Enterprise. “It’s not going anywhere. It’s a cheap fuel, there’s a lot of it, it’s certainly better than coal, and it’s a cleaner burning energy than oil. But it’s still got its environmental challenges.

“If we’re going to deal with climate change in a serious way, the fact of the matter is that there are energy assets that we know exist that we have to leave in the ground,” Milstein adds. “Natural gas is going to fall into that category eventually.”

SHIFTING GOVERNMENT SUBSIDIES

Another big challenge facing clean energy firms is the deepening shadow of expiring federal and state grants and tax incentives. Much has been made on both sides of the political fence about the government’s use of subsidies and other incentives to help drive investment and deployment in the renewable energy sector, but they have made an impact.

³ U.S. Energy Information Administration, Annual Energy Outlook 2015, April 14, 2015.

achieving resilience

“On average, government subsidies have strongly helped the sector,” says Glen W.S. Dowell, associate professor of management and organizations at Johnson. “But what any business relies on is having a nice, predictable institutional environment, and so the problem with the government subsidies and policies is: ‘When are they expiring?’ And it’s not clear that they’re going to be renewed. The more uncertainty there is in the length and scale of these government programs, the more it forestalls investment.”

Since 1999, there has been a strong correlation between the presence of government subsidy programs for wind and installation activity. Each time the government’s wind production tax credit (PTC) program expired in 2000, 2002, and 2004, new installations declined markedly (by 93 percent, 73 percent, and 77 percent, respectively) (Fig. 3). Based on this history, there is trepidation that the scheduled expiration of the federal solar tax incentives at the end of 2016 will precipitate a significant downturn in new installations. Industry leaders are doing their best to plan for this eventuality by taking a conservative approach toward expansion and hiring.

“Current tax incentives certainly have helped get this industry moving forward,” says Alex Hagen, MBA ’03, vice president of finance at Renovus Energy, an installer of residential and commercial solar-electric photovoltaic systems in the Finger Lakes region of New York State. “But as the cost to install solar has dropped, these incentives have been gradually reduced. Uncertainty is the part that’s most grating on us. It’s not knowing whether we can expand from 70 employees right now up to 200 by the end of 2016.”

According to Robert Petrina ’00, MBA ’08, four conditions are necessary for solar and similar renewable energy sources to become viable. “You need to have relatively high traditional power prices,” says Petrina, managing director and president of JA Solar USA, a

“The problem with government subsidies and policies is: ‘When are they expiring?’”

— PROFESSOR GLEN DOWELL

leading manufacturer of high-performance solar power products based in Shanghai, China. “You need to have good solar or other resources. You need to have the policies in place that enable the deployment of solar. And you need access to reasonably priced capital. You may be able to trade off between higher power prices and lower solar resources, but you can’t do without policy support and access to capital.”

Petrina points to Europe’s up-and-down investment in renewables over the past decade as evidence of what can happen without adequate balance among these critical factors. “You can go as far back as Spain in 2008, which had essentially over-incentivized the solar sector, and you had a huge boom in installations followed by an immediate crash and subsequent retroactive cuts to already contracted incentives. It was clear that it was not a sustainable level of investment.”

CORNELL AND JOHNSON LEAD THE WAY

Johnson is demonstrating a commitment to help solve these challenges facing the renewable energy sector by both attracting and developing leaders in the field. Johnson’s Center for Sustainable Global Enterprise is successfully attracting MBA candidates interested in renewable energy, and counts many alumni who are propelling the industry forward.

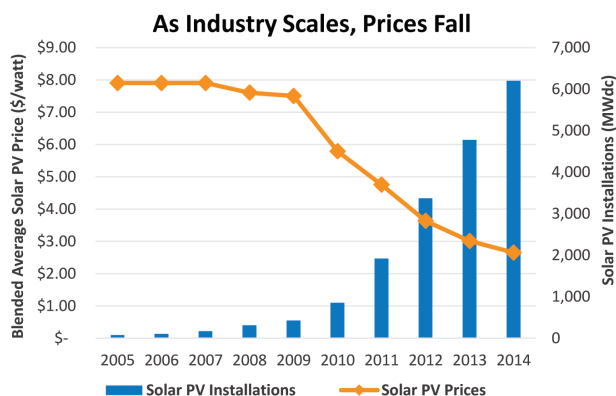
“The big driver of why I went to Cornell and the Johnson School was the immersion program in sustainable global enterprise,” says Johnson of Canadian Solar. “The school has graduated many leaders in the renewable energy space. I would say that in almost any major institution in renewable energy, there is a Johnson-Cornell graduate.”

Sustainability and the “triple bottom line” are ideals drawing leaders into the clean energy sector. “Triple bottom line” refers to redefining corporate impact and measures of success evenly across financial, sustainability, and social parameters; it is an accounting term originally coined by John Elkington in 1994 and sometimes referred to as “People, Planet, Profit.” The concept resonates within the clean energy sector, with its focus on environmental sustainability.

“The business school was a very early pioneer and trailblazer in educating the next group of executives in sustainability and in giving people the tools to understand that there was more to assessing a business than just its financial performance,” Petrina says, referring to Johnson. “Cornell has a very strong network with established leaders in this quickly growing space, especially when you look at the size of the school relative to others.”



Fig. 2



SEIA/GTM RESEARCH U.S. SOLAR MARKET INSIGHT REPORT. REPRINTED WITH PERMISSION.

HISTORIC IMPACT OF PTC EXPIRATION ON ANNUAL WIND INSTALLATION

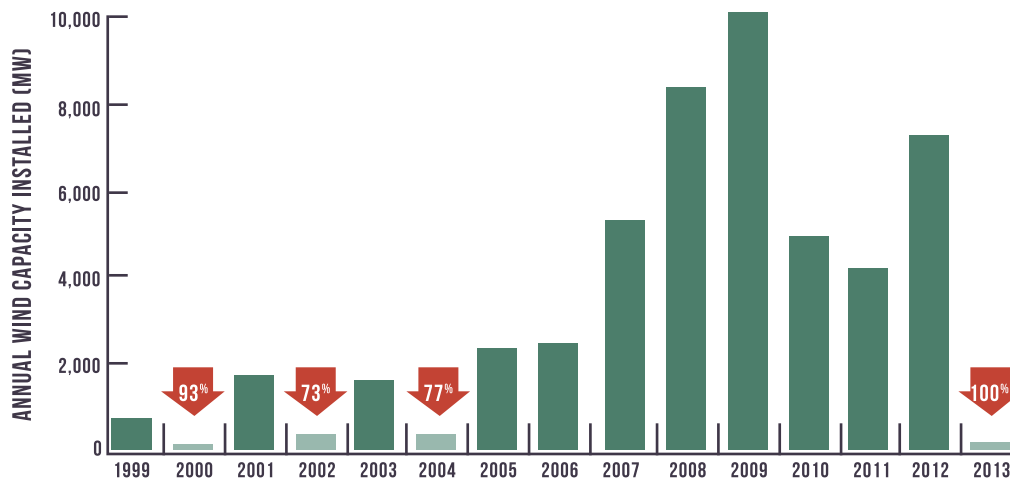


Fig. 3
Each time the government's wind production tax credit (PTC) program expired, new installations declined markedly.

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The Cornell Energy Club helps to grow that network by connecting Johnson students with interest in the energy industry across both renewable and traditional sectors. The club hosted its seventh annual Johnson Energy Connection conference this past October, bringing graduates working in the industry back to campus to meet and network with current students. Nicklaus is one of those leaders.

"It's very unique in that you have a sustainability-focused center nested within an MBA program," Nicklaus says, noting that Johnson is strategically differentiated to attract students with an interest in renewables.

Milstein says that part of the core mission of the Center for Sustainable Global Enterprise is to work with the private sector to help commercialize new technologies and support financial investment in the clean energy sector.

"Just this year alone, we've worked with solar companies to look at development of microgrid businesses internationally," Milstein says. "We've looked at the development of the energy storage market, which is critical to the long-term development and expansion of solar and wind, and we've worked with very large utilities facing an upheaval in the regulatory market.

"When it comes to business and sustainability, that's a sweet spot for us," Milstein adds.

Cornell has also made clean energy a focus on campus, implementing new technology to reduce both the university's carbon footprint and energy expenses. To this end, Cornell's most recent climate action plan has set a goal of net carbon neutrality by 2035. One major project was the Combined Heat and Power Plant, built in 2009 and now supplying the majority of Cornell's total heat and power needs with reduced emissions.

Last December, Cornell signed an agreement with the Black Oak Wind Farm in Enfield, N.Y., to purchase all of the wind farm's

energy for at least ten years. The purchase is projected to provide about 20 percent of Cornell's annual electricity use, and it will reduce the university's greenhouse gas emissions by about 5 percent.⁴

TAKING THE LONG VIEW

There are reasons to believe that the renewable energy sector will continue to attract strong investment, despite the recent downward pricing pressure from conventional energy sources.

"Energy is a highly cyclical industry," Milstein says. "Oil prices are extremely low right now, but they are more than likely to go up again in the future. It almost seems that the link between the investment in renewables and the price of oil and gas is not what it once was, because you've got climate change that's putting pressure on the need for renewables in the energy mix. So there is a separate driver altogether regardless of what the price of oil is, which is the need for carbon-free energy production."

While there is some debate as to what renewable energy source has the best chance of dominating the industry in the long term, experts agree that renewables will have to be part of the overall energy mix.

"If we think about the bigger issues and what renewables are trying to solve — which is climate change and energy security — then we need a portfolio approach," Dowell says. "We're not going to be able to mitigate everything. We have to think about adaptation; we have to think about cleaner energy; we have to think about conservation."

"Uncertainty is the part that's most grating on us."

— ALEX HAGEN, MBA '03, VICE PRESIDENT, RENOVUS ENERGY

⁴ Casler, Andrew. "Black Oak Commits to \$99K in Tax Payments." *Ithaca Journal*, Feb. 25, 2015



BRIGHT & BOLD

Women MBAs envision the possibilities and make them shine.
By Mark Rader, MFA '02

A CEO and media visionary at the forefront of building new digital media and technologies. A strategist and operations manager determined to put an end to slavery in all its forms. The driving force behind one of the most lauded makers of fine chocolates in America. As the three profiles below make crystal clear, a woman with an MBA from Johnson is a force to be reckoned with, no matter where her degree takes her.

© BILL MAYER

a builder of empowering technologies

SUZANNE HORTON, MBA '91



“
I truly love creating
a vision that lever-
ages cutting-edge
technology to help
women empower
and streamline
their lives.
”

Before she was a nationally recognized CEO in the digital tech space — in fact, while she was a full-time student at Johnson — Suzanne Horton built houses for a living.

As the general contractor of Di-Tech Corporation, a custom homebuilding firm she ran with a partner, Horton was directly involved in every aspect of every project. She drafted floor plans alongside her clients. She acquired the land and secured funding. She managed all the vendors and subcontractors — and was usually the only woman on the construction site: “A bright blonde in a hard hat,” she laughs. It was a great management experience, Horton says, that, along with her entrepreneurship and finance classes at Johnson, primed her for her eventual success as a business leader in a variety of tech and digital media roles.

“Whether it’s building a unique house, creating a company in an emerging industry, or designing a cutting-edge online platform, I love visualizing a project and seeing it take life.”

Horton first gained recognition for identifying and capitalizing on leading-edge technology and digital media trends when she helped found the first tech venture capital arm at American Express in the late '90s. There, she managed a \$32 million portfolio that invested in soon-to-be-ubiquitous Internet companies like Citysearch, Ticketmaster, and MapQuest.

Later, Horton combined her interests in homebuilding and digital technologies when she spearheaded the digitization of the new home industry as general manager of Homebuilder.com. She led the industry in targeting female consumers in the space — which later led to a new role as CEO of

BeJane.com, a leading website in the \$80 billion female home improvement space. She also leveraged this skill when helping to launch Jitterbug, now the leading senior cell phone.

“Women control 83 percent of all the purchasing power in the United States and spend about \$5 trillion annually, so they are remarkably powerful,” Horton says. “I truly love creating a vision that leverages cutting-edge technology to help women empower and streamline their lives.”

How did she cut through and gain top leadership roles in media, tech, investment, and homebuilding — all male-dominated industries? “The barrier I had was having a voice in the room,” she says. “And the way I found it was to do the research and know more about the topic than anyone else, which enabled me to fight for the top positions I wanted and to find ways to become an asset to the firm and an ally to my boss.”

Most recently, Horton served as the CEO of tech startup MamaBear, a parenting app designed to protect kids from cyberbullying and online predators — and keep families virtually connected. With MamaBear, parents can track where their kids are, what they’re doing on social media, what they’re texting, and even how fast they’re driving on the interstate.

During her tenure with the startup, Horton and the veteran executive team she assembled created a global strategy and product roadmap to expand the platform’s capabilities and repositioned the brand as a leader in the emerging digital parenting space. They integrated the product with top social media sites, redesigned the platform, and added key features such as text monitoring and a new panic button enabling children to alert guardians to their exact



SUZANNE HORTON, MBA '91, IS A NATIONALLY RECOGNIZED CEO IN THE DIGITAL TECH SPACE, FORMER CEO OF FEMALE HOME IMPROVEMENT SPACE WEBSITE BEJANE.COM, AND CEO OF TECH STARTUP MAMABEAR, A PARENTING APP

PHOTO COURTESY OF SUZANNE HORTON

location when alarmed; acquired KidNotice, an app that enables parents to conveniently share critical data (allergies, emergency contacts) with other parents in advance of, say, a sleepover; and engineered a PR strategy that got the app national acclaim on ABC, NBC, CBS, Nickelodeon, and Telemundo.

Early last fall, Horton departed MamaBear to care for her mother during a difficult transition after the sudden passing of her father. “It was a very tough decision,” she says, “but I believe family is always the top priority.”

Ever impassioned, Horton says she would look forward to taking on a large-scale global challenge that would position her to be a public advocate that inspires others, particularly women around the world.

“Life is truly an adventure, so I’m sure in the new year I’ll start building something wonderful again.”

disrupting oppression with the power of data

MELISSA KIM ’09, MBA ’10

In seventh grade, at the encouragement of her biology teacher, Melissa Kim set out to test the pH levels of the streams near her home in Westchester, N.Y. In the process she discovered something troubling: One stream contained very high concentrations of potentially harmful ammonia, the source of which, she discovered, was pesticide runoff coming from a nearby golf course development.

Soon after, 12-year-old Kim presented her findings to the town council and eventually won a judgment against the responsible party — a well-known real estate mogul — for corrective action. It was a

singular and transformative experience, she says, that “ignited the fire in me to want to help people and the environment.”

Fast forward 16 years, and Kim is now burning brightly as the director of global operations and regional coordination for the Global Fund to End Slavery. The organization’s strategy, Kim says, is driven by “a systems approach” to identify interventions that will make the exploitation of humans unprofitable. Specifically, she and her operations team hunt down and analyze enormous amounts of country data to identify the highest concentrations of vulnerable populations and the governments most likely to sustain projects the fund invests in — as well as to “get to the ground of who’s making money off whom and how, and how those people can be incentivized to change.”

The goals of the organization are both ambitious and specific: It plans to rigorously reduce and dismantle slavery — forced labor and marriage, debt bondage, human trafficking — a humanitarian field that is challenging both to measure and to sustain eradication without displacement.

Kim’s current role is both a continuation and an extension of the human rights-focused work she did in her previous position at ExxonMobil. One day, while immersing herself in the minutiae of the corporation’s supply chain as the organization’s lead planning analyst, Kim says she realized “there was a need to better identify risks for human rights issues.” The petroleum giant prided itself on providing “the gold standard for safety.” According to Kim’s far-reaching research and what she observed during field visits, the company needed to better equip itself and its suppliers with tools to protect the supply chain from human rights-related risks. She developed frameworks to identify hotspots of potential risk by purchase category and geography, such as gravel in Nigeria or bricks in Peru.



“
**We have
key leaders in
governments, NGOs,
IOs, and businesses
alike committed to
building the
largest investments
in freedom
the anti-slavery field
has ever seen.**”



MELISSA KIM ’09, MBA ’10,
IS THE DIRECTOR OF GLOBAL
OPERATIONS AND REGIONAL
COORDINATION AT THE GLOBAL
FUND TO END SLAVERY

Encouraged by her mentor Jean Baderschneider, PhD ’78 (ILR), then the VP of global procurement at ExxonMobil (and a fellow Cornell alumna), Kim used these frameworks to inform what is now the company’s Supply Chain Sustainability Program and successfully recommended that it be embedded in the company’s existing policy and process risk-management frameworks. Two years later, Baderschneider, who had foregone her retirement to head the Global Fund to End Slavery at zero salary, made Kim an offer she ultimately couldn’t refuse: Come on over and help me make this organization great.

PHOTO COURTESY OF MELISSA KIM

“We have key leaders in governments, NGOs, IOs, and businesses alike committed to building the largest investments in freedom the anti-slavery field has ever seen,” Kim says. “We’re looking to build a fund that exceeds the current worldwide yearly spend on the cause by more than 600 percent.”

Understandably, Kim is excited about what the future holds.

“We’re on a mission to do something really impactful in this field,” she says. “Personally, my goal is simple. I want to lead positive change with the same authenticity and fire I had when I was in the seventh grade.”

the sweetest job in seattle

ANDRINA BIGELOW, MBA '03

“
Working
for chocolate
is fantastic.
”



As a girl, Andrina Bigelow would walk to her mother’s Parisian-style patisserie — the internationally renowned Fran’s Chocolate’s in the Madison Valley neighborhood of Seattle — after school and help wrap the shop’s signature chocolate gold bars, and in high school, she and her brother worked the cash register of the first retail store. But as an undergraduate studying economics, and later, as an MBA candidate at Johnson, Bigelow had no interest in small-business entrepreneurship; she was most excited about working in brand management for bigger companies — which is exactly what she did, at Mattel, Johnson & Johnson, and T-Mobile.

Even once she, her husband (Mark Eskridge, MBA '03), and their daughter had moved back to the Seattle area to be closer to family, Bigelow had no thoughts of joining the family business. But then one day in 2006, she was talking to her brother, Dylan, the head chocolatier at Fran’s, about how fast the business was growing. That’s when she discovered there was a need for a leader with pretty much her exact skill set — and realized she really was the perfect person for the job.

“Of course, now, looking back, I can’t believe it ever was even a question.”

A lover of fine foods, wines, and desserts her entire life, Bigelow says that “working for chocolate” is fantastic. Since she took on the role of CEO in 2007, Fran’s Chocolates has more than doubled in size, launched a successful mail-order business website, opened two more retail

stores regionally, and moved its entire operations into a former brewery that she and her brother were able to build out to their exact specifications. (Highlights include a temperature-controlled ganache crystallization room and a viewing area that looks into the chocolate kitchen.) It also didn’t hurt business when President Obama and the First Lady professed their love for the company’s signature smoked salted caramels during a Washington State campaign swing in 2008 — to this day, the White House gifts the sweets to special visitors in a box embossed with the presidential seal.

The company’s 33-year success, and the devotion of its loyal and growing clientele, Bigelow says, can be explained by the company’s exacting standards in sourcing its ingredients, her brother’s commitment to constantly improving even its signature products, and the attention to detail and work ethic of the employees in production. Because most of Fran’s employee are first-generation Vietnamese immigrants, the company has developed a strong relationship with this community, and Fran’s has become a big supporter of Neighborhood House, a nonprofit devoted to helping mostly South Asian refugees become self-sustaining members of the community.

As for her future as CEO and the future of the company as a whole, Bigelow says she envisions herself staying on the rest of her career — and expects the company to continue to grow regionally, but at a manageable pace.

“We want to make sure that whatever we do, we can maintain the quality of our products, first and foremost,” she says. “Everything we sell, we want to be really proud of.”

➔ ANDRINA BIGELOW, MBA '03, IS CEO OF FRAN’S CHOCOLATES, A SEATTLE-BASED FAMILY BUSINESS STARTED BY HER MOTHER, WHERE HER BROTHER IS HEAD CHOCOLATIER. UNDER HER LEADERSHIP, THE COMPANY HAS MORE THAN DOUBLED IN SIZE, LAUNCHED A SUCCESSFUL MAIL-ORDER BUSINESS WEBSITE, OPENED TWO MORE RETAIL STORES REGIONALLY, AND MOVED ITS ENTIRE OPERATIONS.

PHOTO BY JOHN GRANEN

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THE 1950s

CLASS OF 1954

Calvin "Cal" Graziano '53 came back to campus this May to participate in Johnson's MBA commencement ceremony on Saturday, 60 years after missing his own MBA commencement. On Sunday, May 24, 2015, he walked with his granddaughter, Liza Christina Marie Graziano '13, MILR '15, who received her graduate degree that day. Cal was unable to attend the MBA commencement ceremony in June 1954 because "he was attending a wedding ceremony to marry my mother, Diane (Johnston) Graziano, a Cornell cooperative extension agent and class of '53 graduate, before heading off to Marine Officer Candidates School in Quantico, Va.," wrote his son, Gary C. Graziano '79.

CLASS OF 1959

Charles L. "Chuck" Jarvie '58, chairman of Equity Appreciation



Partners and managing partner of Proctor Partners, was honored

with the Samuel C. Johnson Distinguished Service Award on May 1 at the Alumni Recognition and Celebration Dinner in New York City.

THE 1960s

CLASS OF 1961

Larry Latta '59 has retired after 25 years of managing a private



hedge fund portfolio of \$500M — but he is still active in personal hedge fund management. Larry is also an active sailor, tennis player, and kick boxer.

CLASS OF 1963

Andrew Byong-Soo Kim is the first Korean-born chartered financial analyst (CFA 1969) and a member of the Council on Foreign Relations in New York City. He co-founded Sit/Kim International Investment (SKSI) in 1989. Since his retirement as president of the firm, he has managed its Asian private equity investment portfolio as an advisory director. He is also actively involved with the Kim

Family Foundation, which is dedicated to promoting Korea's cultural heritage; the foundation provided funding to help build the Korean Gallery at Cornell's Johnson Museum.

CLASS OF 1966

Arnold Barkman retired from the accounting department of the Neeley School of Business at Texas Christian University in Fort Worth after serving on the faculty for 40 years.

CLASS OF 1969

William H. "Bill" Besgen '68 is president, COO, and director of Hitachi Capital America (HCA), located in Norwalk, Conn. He was promoted to vice chairman of HCA's board of directors. On a personal note, he and his wife, Cathy, live in New Canaan, Conn., and also have a home in Key Largo, Fla. They have four children and 13 grandchildren.

THE 1970s

CLASS OF 1970

Jack Ferraro was appointed to Merriman Capital's advisory board.

CLASS OF 1971

Abraham Pizam, PhD '71, is dean of the Rosen College of Hospitality Management at the University of Central Florida, Orlando, Fla.

THE 1980s

CLASS OF 1980

Lisa Fogel has owned the Corner Shoppe in Douglass Township, Montgomery County, Pa., for 21 years. The shop is "all things gifts ... housed in a colonial revival-styled home dating back to the 1850s."

CLASS OF 1981

Jeff Berg '79, MEng '80, Todd Rethemeier '93, MEng '94, MBA '95, and Tom Storey, MBA '81, played golf at Desert



Highlands Scottsdale in November. "This was part of a one-day member-guest event and the team of Jeff Berg and Tom Storey took 5th place while the team of Todd Rethemeier and Jeff Berg finished one stroke out of 5th place (both in flight two of the event)," writes Jeff.

Jim Lyons has a blog, Jim Lyons Observations, in which he "comments on business and marketing developments in the printing and imaging industry, combining

many years of experience with an ever-enthusiastic eye on the future.” You can find it at jimly-onsobservations.blogspot.com.

CLASS OF 1985

Sanford Argabrite is VP of finance at Shaklee North



America, based in Northern California. He recently met with Dr. Elizabeth Blackburn, one of only seven living female Nobel Prize winners in the sciences; she is working with Shaklee to advance brain health research. In addition, Sandy completed the Association for Financial Professionals’ Corporate Financial Planning & Analysis Certification. On a personal note, Sandy and his wife welcomed a son, Sander, in 2013.

Wai-Leong Chan ’83, MEng ’84, is a founding partner of DTCA Executive Search Partners in Asia, based in Singapore. He was formerly at global executive search firm Spencer Stuart, where he led regional technology searches. Married with three children, Wai Leong has been living in Singapore since 1985.

CLASS OF 1987

Kyung-Bae Suh ’86, president and CEO of AmorePacific, a health and beauty products business founded by his father in 1945, was honored with the 2014



L. Joseph Thomas Leadership Award. He shared his vision in his keynote address at Johnson’s eighth annual Alumni Recognition and Celebration Dinner in New York City on May 1: “Transforming the World Through Beauty.”

CLASS OF 1989

Poe Fratt is an analyst with D.A. Davidson & Co., a national, employee-owned, full-service investment firm based in Montana. Poe, who works out of the firm’s Seattle office, recently launched research for Davidson on master limited partnerships.

Ken Goodman was named CFO of Jet Support Services, the world’s largest independent provider of hourly cost maintenance programs for aircraft engines and airframes.

Andrew Parece ’83 rejoined consulting firm Charles River



Associates as a VP in the life sciences practice and is based in Boston. He specializes in

competitive strategy, pricing, quantitative analysis, marketing, and market research in the pharmaceutical, biotech, and life sciences industries.

THE 1990s

CLASS OF 1990

Andrew Samett is a managing director at Cantor Fitzgerald in New York City.

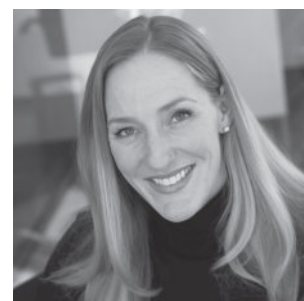
Ajay Singh appeared on the cover of *Forbes* magazine and was featured in a story about his New Delhi-based regional airline, SpiceJet (“SpiceJet’s second take-off,” *Forbes*, 10/26/15). Ajay co-founded the airline in May 2005 and stepped down as director five years later. When the airline subsequently ran into difficulty, he rejoined the company as chairman and managing director, and “pulled [it] ... back from the brink of collapse.”

CLASS OF 1992

Ray Potter ’87 is the founder and managing partner of R3 Funding, a national lender providing mortgage brokers and borrowers access to national commercial real estate lenders in the U.S. and Canada. He and his wife, Lotte, established the Raymond H. and Lotte J. Potter Scholarship because he’s grateful for the strong skill set he acquired at Johnson and appreciates the power of the Johnson and Cornell networks.

CLASS OF 1994

Lara Dickinson reported that she and **Jessica Rolph ’97, MBA ’04**, spoke at Net Impact in Seattle in November on the future



of food packaging. She said: “Jess and I have teamed up via OSC2.org (my nonprofit) and Happy Family to address the mountain of landfill generated by packaging and figure out a new approach via a collaborative model for the natural foods world.”

Devora Zack wrote an article, “Why You Should Stop Multitasking and Start Singletasking,” that was featured on Time’s Money home page as a “must read,” May 26, 2015.

CLASS OF 1995

Tsuguto Arai, a banker with the Bank of Tokyo-Mitsubishi, has moved to Singapore on assignment for the second time.

Peter Gensheimer is the Japan head at Cornerstone Real Estate.

Hideki Goto is a green consultant at Cre-en and an advisory member of Japan’s Ministry of Environment.

Isao Hishikawa is with the International Monetary Fund in Washington, D.C., on assignment from the Bank of Japan.

Ken Ishizaki, marketing director of Red Hat Japan and an avid motorcycle rider, wrote about a small Johnson Class of ’95 reunion held last May at Aman Tokyo in Japan. Ken attended along with **Masa Yamaguchi**,

Sid Bardwell, MBA '89

PLANTING THE SEEDS OF MECHANIZATION

around the world

As a boy in the 1960s, Sid Bardwell spent summers on his grandparent's dairy farm outside Madison, Wisc. During college, as an Asian studies and economics major, he spent an eye-opening year abroad in Japan. And during the latest chapter of his distinguished career with John Deere, Bardwell found a way to wed his appreciation of both agriculture and far-flung places by serving as a company representative in Europe, Asia, and Africa.

The highlight of Bardwell's international stints was in Russia where he, his wife, and his (then) high-school-aged son lived from 2004 to 2010. His role as the general manager for John Deere Russia, Bardwell says, "was extremely tactical." In six years, he oversaw the construction of the first company manufacturing plant in the region and opened 18 sales dealerships, most of which specialized in selling and servicing the giant tractors and air seeders commercial farmers in the "new Russia" were just beginning to invest in. It was a position, Bardwell says, that involved both formal meet-ups with government officials in Moscow and informal visits out to wheat and dairy farms from Krasnodar to Altai, during which he was always met with hospitality, a hearty meal, and — if it was after five — "a vodka or two."

A three-year stint in Singapore that followed saw Bardwell in a more strategic and developmental role. Traveling throughout China, India, and Africa, he helped chart the development of the next generation of tractors and harvesters suited to smaller farms, a task that often presented some difficult logistical challenges. For example, how do you help a Tanzanian farmer improve his productivity through mechanization when the nearest diesel station is 50 to 100 miles away? (Answer: partner with the dealer to develop a fleet of local trucks to deliver fuel, lubricants, and spare parts to him on a cycle every few weeks.)

Currently based at John Deere corporate headquarters in Moline, Ill., Bardwell feels thankful he's had the opportunity to work for a company so committed to expanding its global presence and looks back with great fondness at all the farmers he had the chance to assist all over the world.

"The people you get to meet, the diversity of the experiences you have ... I have to say, it's been extremely rewarding."

— MARK RADER, MFA '02



Sid Bardwell, MBA '89, manager of strategic projects at John Deere
PHOTO COURTESY OF SID BARDWELL

Hideki Goto, and **Akira Soejima**. "We talked about Cornell days and about our friends [in the] class of '95. We surely miss Ithaca! ... Everybody seems to be working, busy, and surviving; glad everyone in Japan seems to be physically in good shape after 20 years."

Kazu Miyabayashi is with Hitachi Solutions America and moved to the U.S. in April.

Rohit Philip was appointed corporate treasurer of Xerox.

Tom Sammons was promoted to CFO of TechPrecision Corp., a manufacturer of precision, large-scale fabricated and machined metal components and tested systems located in Westminister, Mass.

Akira Soejima is fund general manager at Invesco Asset Management Tokyo.

Gregory Taber was promoted to senior managing director of Linsalata Capital Partners, a Cleveland-based private equity firm.

Tetsu Taniyama is an attorney at Mizuho Securities.

Masa Yamaguchi is CFO of Tomoegawa and is also an under-four-hours marathon runner.

Noboru Yamamoto is an investment banker at BNP Paribas Tokyo.

CLASS OF 1996

David Kroll '90 was named chief marketing officer of Miller-Coors.

CLASS OF 1997

Jose Basulto is co-founder and president of Basulto Management Consulting (BMC) in Hollywood, Fla., a firm that offers program management, financial oversight, and emergency response services. In July, Jose was elected chairman of the South



Broward Hospital District Board of Commissioners. He was appointed to the board in 2010.

CLASS OF 1998

Jeff Lynch left corporate America four years ago to start his own



business serving the trucking and transportation industry, Idle Smart, “an automated engine start-stop solution that reduces overnight idle time, provides year-round cabin comfort, and maintains fleet uptime by keeping batteries charged and engines warm.” He and his family live in Longmeadow, Mass. His wife, Marie, sent this photo of Jeff (left) and fellow Johnson classmate **Drew Reynolds**, taken when they unexpectedly ran into one another at a recent lacrosse tournament, where they had children participating

Albert Niemi was promoted to executive director at Ernst & Young, where he is a member of EY’s transaction advisory services practice. He focuses on valuing business enterprises, equity and

debt interests, and various intangible assets associated with businesses for financial reporting, tax planning, and strategic planning purposes.

THE 2000s

CLASS OF 2000

Deanna Dukes has been hired to lead brand and marketing



strategy at PEMCO Insurance in Seattle. She was the owner and principal at Advantage Brand, LLC, a brand and marketing strategy consulting firm, and is a member of the American Marketing Association and the Digital Marketing Association.

CLASS OF 2001

Matt Malanga was appointed chief marketing officer at B2R



Finance, a lender for single-family rental property investors. Matt reports to CEO **Jason Hogg**, MBA ’02, and will drive the company’s national brand

marketing strategy and support the development, deployment, and promotion of its Dwell Finance platform, which analyzes and makes decisions on loans via proprietary data and analytics.

Kimberly “Kim” Stevenson, chief information officer and VP at Intel, was honored with the Robert J. Swieringa Young Alumni Service award. Since she was unable to attend Johnson’s eighth annual Alumni Recognition and Celebration Dinner in New York City on May 1, she thanked the school and spoke to attendees via a prerecorded video. “Information technology has become not only the foundation of how companies run, but in many cases the source of competitive advantage,” she noted in her remarks.

CLASS OF 2002

Ming Yang was appointed CFO of Daqo New Energy, a polysilicon manufacturer based in Chongqing, China.

CLASS OF 2004

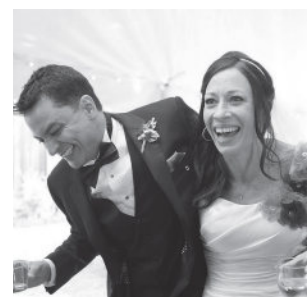
Brett Blumenthal followed the success of her second book, 52



Small Changes: One Year to a Happier, Healthier You, with the publication of her fourth book, *52 Small Changes for the Mind: Improve Memory * Minimize Stress * Increase Productivity*

* *Boost Happiness* (Chronicle Books, December 2015). In it, Brett, a wellness expert, reveals how to hone in on the mind as the foundation of overall health and well-being. She presents one small, achievable change every week — from developing music appreciation to eating brain-boosting foods, practicing monotasking, incorporating play, and more. According to Brett, the accumulation of these lifestyle changes ultimately leads to improved memory, less stress, increased productivity, and sustained happiness.

Charles Hamilton ’95 married Melanie Conroy-Goldman at a



red-white-and-blue ceremony in Ithaca July 4. **Tim Cupp**, MBA ’04, was among the friends and family attending. On a professional note, Charles co-founded Conamix, a battery materials startup housed in Cornell University’s Kevin M. McGovern Family Center for Venture Development in the Life Sciences.

CLASS OF 2006

Andres Araya is founder and CEO of Chicago’s 5 Rabbit Cerveceria brewery, which joined the growing list of businesses severing ties with Donald Trump in light of his comments about Mexican immigrants, *Men’s Journal* reported. The craft brewers

notes

pulled their 5 Rabbit Golden Ale from Rebar, a bar in the Trump Hotel Chicago, which had featured the beer on tap.

Adam Hocherman '97, founder and president of American Innovative, is developing a new product line: Marbleocity, “a STEM product that teaches engineering and physics concepts through a maker experience using dynamic model kits coupled with a lesson told in graphic novella format by cartoon characters named the Tinkerers. The kits are made in America of laser-cut wood.” Adam launched the new line through Kickstarter in 2015.

CLASS OF 2007

Michael Seitz, Lester Koga, and **Ben Sterling** are leaving



jobs at Proctor & Gamble, GE, and Visa, respectively, to start a production craft brewery in San Francisco. Michael says, “Since graduating in 2007, we have been heavily involved in brewing, attending the world brewing academy in Chicago, becoming certified beer judges, and winning several competitions with our original recipes. ... The Barebottle Brewing Company will produce San Francisco-inspired beers ... using local ingredients and processes like the yeast from SF sourdough bread. We expect to be open by October/Novem-

ber 2015 ... please stop by!” (barebottlebeer.com)

CLASS OF 2008

Philippe Khouri has joined the Tropicana in Las Vegas as general manager.

Oneil Rego was named a partner and life sciences information management practice leader at PricewaterhouseCoopers in Philadelphia last July.

CLASS OF 2009

Kate Capossela is chief strategist at MK Ellison Advisors in San Francisco. She also combines her passion for business leadership and social change by tackling a variety of issues, motivating and leading social sector teams at national and international nonprofits. She joined the Young Nonprofit Professionals Network in 2002 and serves on its national board of directors as chair of board development.

Dina Keswani is a senior VP at Jones Lang Lasselle, where she leads the firm’s data governance and process management function with global resources, servicing JPMorgan Chase & Co.

THE 2010s

CLASS OF 2011

Lisa Bonk, a manager at Deloitte Consulting, and **Dana Price**, VP of M&A at McGraw-Hill Education, co-presidents of the Johnson Club of New York City, accepted the Henry P. Renard '54, MBA '55, Regional Alumni Club of the Year award on the club’s behalf at Johnson’s eighth annual Alumni Recogni-



tion and Celebration Dinner in New York City, May 1.

Tom Gallo was named VP and treasurer of ABM Industries, a provider of building maintenance and facility services across the U.S. and Canada.

Sukhi Jagpal became senior managing director of ProNAi Therapeutics, a clinical-stage oncology company headquartered in Vancouver, Canada.

Marlon Nichols, a founding partner at Cross Culture Ventures as well as investment director at Intel Capital, was named one of the inaugural 40 Under 40 Top Diverse Talents in Silicon Valley by the Bay Area Registry (theregistrybayarea.com). In an “MLT Rising Leaders Spotlight,” Marlon shared insights into his experience as one of the few African-American venture professionals and also spoke of how his MBA helped propel his career: “I chose Cornell for many reasons, one being that it had a student-run venture fund — a real venture fund where deci-

sions were truly being made by the MBA students. I ultimately had the opportunity to run that fund for a couple of years while I was there. I led seven other fund managers and about 61 associates. It allowed me to make connections throughout the venture capital industry as a peer, not as a student trying to learn the business. That experience set me up to jump into the role that I ultimately got into at Intel Capital.”

Bob Picone, MILR '11, is a business transformation consultant with Hewlett Packard. He wrote “The top 5 reasons why your employees aren’t being replaced by technology” for HP’s internal online publication, Community Home (Aug. 26, 2015).

CLASS OF 2012

Selina Ang joined Ox Verte, a new food startup that caters seasonal and local food to offices and groups in Manhattan.

Aaron Holiday, managing entrepreneurial officer at Cornell Tech, published an article in Tech Crunch.com: “Setting the right valuation for a competitive Series A round.” He invites any founders thinking about raising a Series A to check it out.

CLASS OF 2013

Justin Barclay has been promoted to senior consultant at Mars & Co, a global management consulting firm specializing in business strategy and operational improvements for large corporations. Justin did his summer internship between his first and second years of business

Jamel Morris, MBA '05

THE CONSULTANT WHO WORE many hats

When the federal government needs help tackling big, unusual projects, they often partner with MITRE, a nonprofit organization that operates a number of federally funded research and development centers out of McLean, Va. Jamel Morris, MBA '05, is one MITRE leader who has helped shepherd a number of the organization's highest profile projects to completion in recent years.

A senior manager with MITRE's enterprise business strategy division, Morris joined the organization in 2010 and was promptly put to work helping the IRS develop the information-gathering processes and tax forms necessary to support its compliance with the (then) newly minted Affordable Care Act. Upon that project's conclusion in 2012, Morris was tapped to help the FDA create a disaster recovery plan that would ensure both the safety of its data and the seamless continuation of its operations in the event of a catastrophe. Now, Morris is finishing up a project for Health & Human Services related to health-care payment reform.

Last spring, in recognition of his pivotal role in these efforts, Morris was awarded a Modern Day Technology Leader Award at the 2015 Black Engineer of the Year Awards Science, Technology, Engineering, and Math Global Competitiveness Conference.

An undergraduate mechanical engineering major, Morris says both his science- and business-based education has equipped him with the perfect toolkit for wearing many different consultant hats at MITRE. "Engineering taught me how to solve complicated problems," he says, "and my MBA taught me how to define problems ... and acknowledge that sometimes there are multiple answers to a problem."

Formerly a consultant for Deloitte, Morris says he also takes great satisfaction in knowing that the problems he works to solve — or the systems he works to fine-tune — are in service of more than increasing profits. "It's a completely different mindset than in the private sector," he says. "Ultimately, [at MITRE] you know that everything you're working on really is meant for the public good."

On deck next for Morris is an exciting new project for the IRS — and Morris welcomes switching gears. "I love that there's constant change," he says. "At first, for each project, you feel fear and doubt. But then you do your research and realize you have the skill set to get it done. I find that exciting."

But first there's an even more pressing logistical challenge ahead of him, one he's doing pro bono: moving his new wife, Janine, still based in Switzerland, to his home in Maryland.

"I can't wait," he says.



Jamel Morris, MBA '05, group leader in MITRE's enterprise strategy and transformation technical center

PHOTO COURTESY OF JAMEL MORRIS

— MARK RADER, MFA '02

school at Mars & Co and joined the firm's office in Greenwich, Conn., after graduating from Johnson. At Mars & Co, Justin has worked on solving a broad range of complex problems for clients in the digital advertising, retail, beverages, packaged snack, and tires industries.

Robert "Bobby" Frisch and Emma Frisch, co-founders of Firelight Camps in Ithaca, were featured in "Glamping, Love, and Entrepreneurship: The Story Behind Firelight Camps," in *AmericanTowns.com* (July 7, 2015). "We have always loved how the serenity and relaxing nature of a campfire has brought people of all ages together," said

Bobby, Firelight Camps CEO, in the article. "That, along with our passion for eco-tourism, sparked the idea for Firelight Camps."

Gagan Singh is a senior instock manager at Amazon in Seattle.

Chengya Liang completed her leadership development program at life science company Thermo Fisher Scientific and became a



senior product manager at Thermo Fisher's next-gen

notes

sequencing business in the San Francisco Bay area in July 2015. She is responsible for developing the business strategy and leading the market development of the infectious diseases genomics market, and also for organizing and leading the company's first Infectious Diseases Summit in 2015. Chengya's leadership development program experience was featured in the *Association for Women in Science Magazine*, spring 2015, and she was also featured in the *Profiles in Diversity Journal*, fall 2015, where she discussed "the challenges women encounter in STEM fields and how to face up to them."

CLASS OF 2014

Andrew Murphy, a VP and director of marketing for emerging consumer technologies and electronics who prepares go-to-market strategies for startup technology firms, reflected on the Volkswagen diesel emissions scandal upon his return from a week-long leadership trek to Peru in a guest blog for *Wifi Hifi* magazine (Oct. 22, 2015): "Reflecting on the importance of corporate ethics." Organized for Johnson MBA graduates by Clint Sidle, who directed the Roy H. Park Leadership Fellows Program for 17 years, the trek was "designed to challenge us while also allowing for personal reflection and growth," wrote Andrew. "When the costs of these scandals are in the billions of dollars, why do smart, leading companies still get themselves into these situations? My travels to Peru with a group of senior leaders in global businesses provided some unique insight into this situation."

Sahr Said '06 is the founder and CEO of Beauty Hooked, a marketplace for beauty services and professionals. She was featured in an article in *Business Standard News*: "Four promising female tech entrepreneurs from Pakistan" (Oct. 15, 2015).

CLASS OF 2015

Bargav Balakrishnan and his wife, Elianne, welcomed twin daughters, Annika and Sonya.

Nima Baiati is director of global sales strategy, key accounts, and enablement at Symantec Corp.

Brad Boone is VP of marketing and business development at Philadelphia Industrial Development, a public-private economic development corporation. Its mission is to spur investment, support business growth, and foster development that creates jobs, revitalizes neighborhoods, and drives growth. Brad is the marketing manager for the industrial and manufacturing sectors, responsible for overall outreach to companies in the sector.

David Cic and his wife, Anna, welcomed a daughter, Alice, who joins big brother, Simon.

Melissa Harris, director of information systems at Louis Vuitton Moët Hennessey (LVMH), manages the information systems strategy for the shared human capital management solution supporting 11,000 employees across 34 brands in the U.S.

Mike Karp participated in a show-and-tell event for inventors called Maker Faire, held in New York City, and was featured



in an article about the event in the *Wall Street Journal* (Sept. 27, 2015). Mike is co-founder of DogStar, which produces a device called TailTalk, a green band placed on a dog's tail that "alerts the owner's smartphone when the dog's tail moves right, which means happy or energetic, or left, meaning anxious or aggressive." He called the device an "emotion sensor."

Ilya Kundozerov, an equity research analyst at Morningstar, researches technology companies, writes equity reports, and interacts with clients.

Claire Lambrecht '06 writes that she and her fellow inau-



gural Johnson Cornell Tech MBA classmates, **Rachel Wang, MBA '15**, and **Miwa Takaki, MBA '15**, won \$10,000 in the "Innovate for the Underserved Business Challenge" at the Health 2.0 Fall Conference in Santa Clara, Calif. Sponsored by the Aetna Foundation, the U.S. Department of Health and Human Services, and the National Health IT Collaborative, the business challenge was designed to identify innovative approaches

to increasing health equity and addressing chronic health issues in underserved populations. Their submission, Let's Epicure, a startup incubated at Cornell Tech and supported by a \$40,000 Cornell Tech Startup Award, was launched with the mission of leveraging technology to make it easier for consumers to eat healthily.

Emily McAllister '11 has built a Chrome plug-in called Meow Met, which turns new Chrome tabs into art cats. She developed the plug-in while interning at the Metropolitan Museum of Art's media lab, working on a project that integrates tech with fine art.

Ben Peterson and his wife welcomed a son, Cass Michael, on Aug. 18.



Jon Poelma '96 was promoted to senior VP and COO of Consolidated Chassis Management, a company that manages six regional chassis pools at U.S. rail and port intermodal locations.

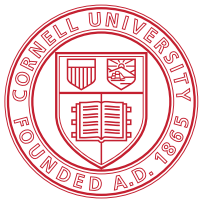
Shaw Yoshitani, a retired military officer, is an operations research analyst at the United States Military Academy, West Point, N.Y.

IN memoriam

Peter Paul Miller Jr. '44,
MBA '48

Rudy Schlobohm, MBA '80

Judy J. Paragamian '83,
MBA '84



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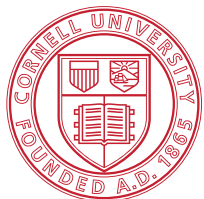
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