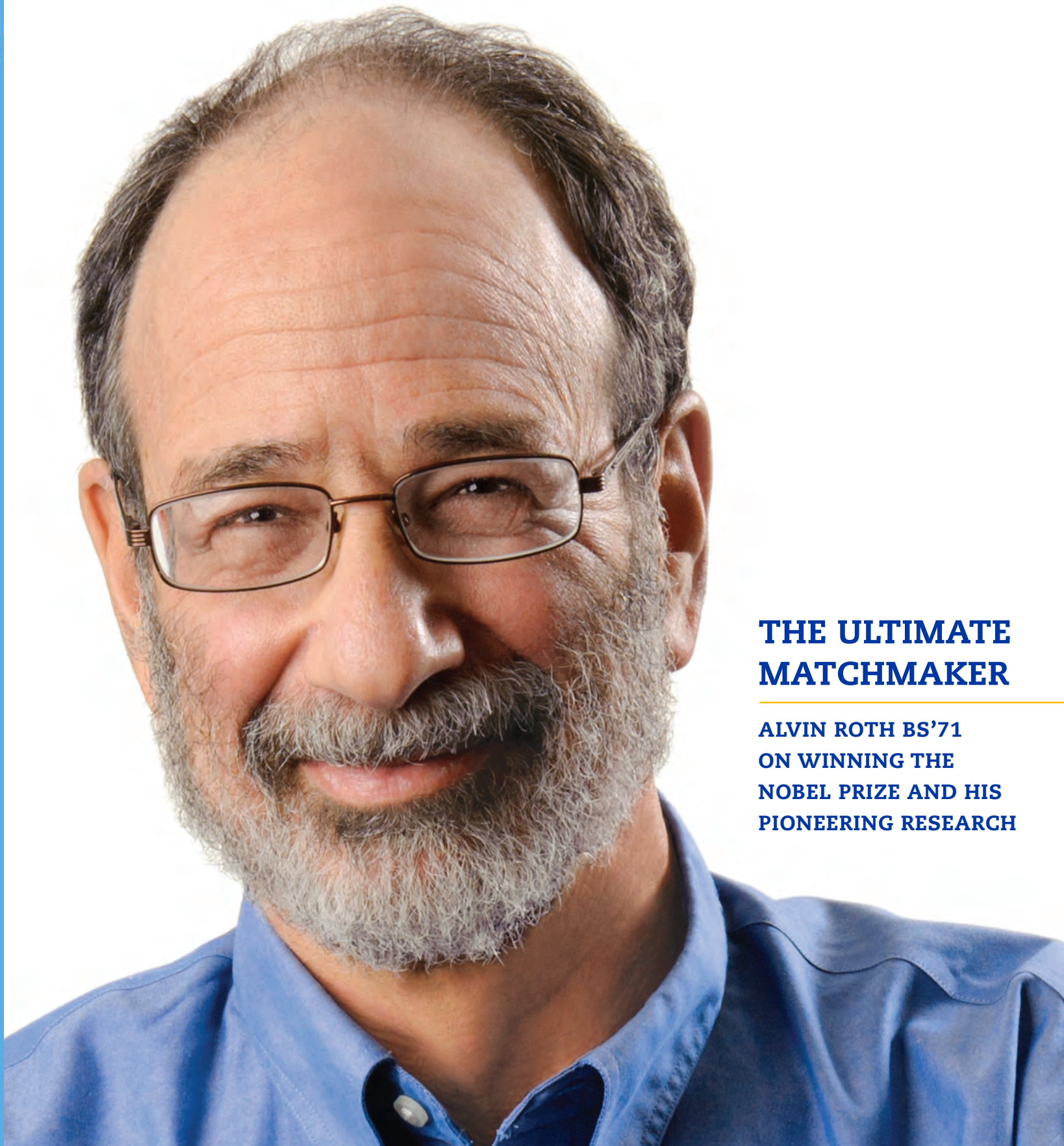
COLUMBIA | ENGINEERING



THE ULTIMATE MATCHMAKER

ALVIN ROTH BS'71 ON WINNING THE NOBEL PRIZE AND HIS PIONEERING RESEARCH

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This issue of *Columbia Engineering* magazine is one to which I feel a great personal connection. Two of the featured subjects, the distinguished alumnus Alvin Roth BS'71 and "genius" faculty member Maria Chudnovsky, are from my department, Industrial Engineering and Operations Research.

Professor Roth, now the Craig and Susan McCaw Professor of Economics at Stanford, received what is often referred to as the Nobel Prize in economics—the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel. In a fascinating interview, Alvin shares with us his thoughts on his research, his time at Columbia, and his future plans.

Professor Chudnovsky's exceptional work has been recognized by the MacArthur Foundation in selecting her as a recipient of a MacArthur "Genius" Award. When I learned of Maria's groundbreaking proof of a long-standing open problem of graph theory, the perfect graph conjecture, it became my goal to recruit her to the faculty of the IEOR Department. My efforts were enthusiastically endorsed by the other senior department faculty and by then-dean Zvi Galil. I am delighted that she accepted the offer and has been part of the IEOR Department since the fall of 2006.

This issue also examines the almost overnight success of MOOCs, the massive open online courses that are bringing college classes via the Internet to eager students around the world. Columbia Engineering is spearheading the University's entry into this fledgling market of MOOCs. I invite you to see our three courses currently being offered at Coursera.org/columbia: Financial Engineering and Risk Management; MOS Transistors; and Natural Language Processing. Professors from other units of the University are expected to teach courses through Coursera and we are looking forward to those as well.

We also are highlighting eight SEAS alumni working in big data. These alums, whose graduation years range from 1978 to 2006, are turning oceans of data into useful information and using this information to construct charts and graphs, form business models and long-range plans, provide analysis of large-scale behaviors and trends—all in areas that extend from smart cities and education to health.

In addition, you will read about some impressive students and alumni who have created engineering start-ups—from health care to environmental sustainability—that were showcased at the School's recent Entrepreneurship Networking Night in New York City. It is always exciting to see how the entrepreneurial spirit manifests itself in each new generation of our students.

As we prepare for Reunion 2013, I invite alumni whose graduation years end in '3 or '8 to join with your College and Barnard classmates for a full weekend of nonstop events, from May 30 to June 2. I also invite all SEAS alumni to join us on Thursday, May 30, for the special Welcome Dinner and CEAA Awards Presentation, and on Saturday, June 1, for daylong activities beginning with the Dean's Day Breakfast. Later in the day, the Magill Lecture in Science, Technology, and the Arts will be given by Mark Hansen, professor of journalism, director of the David and Helen Gurley Brown Institute for Media and Innovation, and chair of the Center for New Media in the Institute for Data Sciences and Engineering. I look forward to seeing you at these events!

Donald Goldfarb
Interim Dean and
Avanessians Professor of Industrial Engineering
and Operations Research

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On the Cover:

Nobel Prize–winner Alvin Roth BS'71 was photographed just a few days after returning from his trip to Stockholm where he attended the Nobel Prize Award Ceremony at the Stockholm Concert Hall. Roth studied operations research as a student at the Engineering School, "which is about making things work better," he said. "That's what my market design colleagues and I are still trying to do."

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Making Sense of MOOCs

Columbia Engineering Jumps into the Market of Massive Open Online Courses

Northeastern University President Joseph Aoun calls it "the end of education as we know it." Harvard Professor Clayton Christensen says it's "creative destruction." *The New York Times* hails it as "a grand experiment." The antecedent, in case you missed it, is MOOCs, education's buzziest acronym. It stands for massive open online courses and refers to the unexpected boom in online education offered free to anyone with an Internet hookup. Millions of students worldwide are now soaking up college-level courses by simply logging onto the web to watch video lectures taught by elite professors, take quizzes, and participate in online study groups. It's college without the campus, a class without the classroom, an education without the tuition. But will it last? Will it undermine traditional higher education, or perhaps enhance it? Which online learning platforms merit the extra investment? How to deal with cheating? What's the benefit to enrolled students? Questions abound.

This spring, Columbia University will cautiously dip its toes into the MOOC waters in search of answers when The Fu Foundation School of Engineering and Applied Science begins offering three online courses in partnership with Coursera, the red-hot Silicon Valley start-up founded last January to bring higher education to the wired masses for free.

More than 100,000 students have registered so far for Columbia's three noncredit courses. The classes are described more fully at Coursera.org/columbia and include Financial Engineering and Risk Management, co-taught by Industrial Engineering and Operations Research Professors Garud Iyengar and Martin Haugh, with guest lectures by Professor Emanuel Derman; MOS Transistors by Yannis Tsividis, Batchelor Professor of Electrical Engineering; and Natural Language Processing, given by Michael Collins, Vikram S. Pandit Professor of Computer Science.

"MOOCs represent a unique approach to higher education," says Donald Goldfarb, interim dean of Columbia Engineering. "We are looking forward to exploring the new opportunities that MOOCs provide and seeing how the School and our students can benefit."

The demand for this new breed of online education has surprised everyone. Tsividis, who will lead the graduate-level course on transistors, has taught traditional, accredited distance-learning classes at Columbia for decades. In the 1970s, he was among the first professors to conduct video lectures at the University of California at Berkeley. But, he says, nothing compares to the mania over MOOCs. "It's amazing," he adds, as he watches enrollment in his course increase almost daily. "And this is a course in a highly specialized subject."

Sree Sreenivasan, Columbia University's chief digital officer, a position newly minted last summer in part to help the University navigate this new learning paradigm, calls the response "stunning." Education, he points out, is traditionally a very slow-moving industry. "Now things are changing fast."

One big challenge going forward is figuring out how to keep pace without overcommitting to one learning platform.

"We don't know which technology will prevail and where this space is moving," says Soulaymane Kachani, vice dean for academic programs at Columbia Engineering. "We don't want to tie our hands or do anything that would prevent us from experimenting with other technologies."

That's where the Coursera partnership comes in. The company's nonexclusive contract leaves Columbia free to explore other MOOC partnerships, and the Coursera platform offers an enormous audience. As of early this year, nearly 2.5 million students had registered

Columbia University's Fu Foundation School of Engineering and Applied Science began offering three MOOC courses to bring higher education to the wired masses for free: Financial Engineering and Risk Management, MOS Transistors, and Natural Language Processing. The primary instructors are (from left to right): Michael Collins, Garud Iyengar, Yannis Tsividis, and Martin Haugh.

for one or more of Coursera's 200 free, university-level courses offered by top-tier institutions, including Princeton, Stanford, Duke, Brown, and Johns Hopkins. "It's exciting to be among those universities that will shape the future of this new educational paradigm," says Goldfarb.

But what's in free online education for universities? For starters, it offers global exposure and valuable testing grounds for new teaching models. "It can enhance how we teach here on campus," says Kachani. "It can help us learn how to use social media to augment student interactions and peer review. It can showcase our programs and faculty to the world."

Meanwhile, university officials are keeping close tabs on the rest of the MOOC universe. Harvard and MIT's joint nonprofit venture, edX, has registered more than 400,000 students for its free online courses. Udacity, founded by former Stanford University Professor Sebastian Thrun, who set MOOC in motion

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—Donald Goldfarb

in December 2011 when his online course in artificial intelligence drew more than 150,000 students, now offers 15 classes in computer science and has enrolled nearly a half million students worldwide. Then there's the striking success of Khan Academy, a free online library of more than 3,600 video tutorials taught by MIT grad Salman Khan out of his basement. Since its inception in 2009, Khan Academy has delivered more than 200 million lessons and amassed more than 202 million views on YouTube.

Yet Columbia is no stranger to online learning. Long before MOOCs

Columbia is no stranger to online learning. Long before MOOCs appeared on the Internet scene, there was the pioneering Columbia Video Network.

appeared on the Internet scene, there was the pioneering Columbia Video Network, or CVN. Created by the Engineering School in 1986, CVN has since let thousands of remotely located students pursue Columbia's fully accredited engineering courses, certificates, and degree programs over the Internet. (Not that CVN needed the Internet: in the 1980s, it relied on VHS tapes sent through the mail.) This year, CVN will enroll 600 students. In many ways, MOOC is a natural extension of what CVN has been doing for years. "The Engineering School made perfect sense to start with," says Sreenivasan. "It's so far ahead of the rest of the campus when it comes to online learning."

Where MOOCs differ from past technologies is scale. By definition, MOOC platforms welcome all, regardless of individual qualifications and commitment, and that has led to retention problems. Fewer than 10 percent of students complete a typical MOOC class. Grading is another issue. Many MOOCs rely on electronic scoring and peer grading, which can create uneven results, and both systems are vulnerable to cheating. Udacity and edX are now offering proctored exams to keep students honest, and Coursera is experimenting with plagiarism-detection software, but supervision will become an increasingly thornier issue as MOOCs move toward accreditation.

Udacity is already there. Earlier this year, the start-up announced a pilot program with San Jose State University that will allow SJSU and non-SJSU students to take introductory college classes online for credit. The pilot will target high school students, wait-listed students at California Community Colleges, and members of the armed forces and veterans.

Tsividis, for one, is thrilled to take the global stage but worries about the lack of interaction with his students. Like most Coursera classes, his will consist of a series of video lectures, possibly divided into 5- to 20-minute segments that students can watch at their own pace on their own time. The experience may "lack the 'live' feeling of a small class, where there is give-and-take between professors and students," he says. "This may or may not prove to be an important difference depending on how interactively one conducts his or her live classes. If you only lecture, and the students listen passively, then there may not be much of a difference."

The Facebook generation may actually prefer the impersonal digital experience. Sreenivasan sees a day when enrolled students come to expect MOOC-style courses in addition to the University's traditional brick-and-mortar classes.

"When this generation gets to college, they'll ask about things like the 'flipped classroom,'" says Sreenivasan, referring to a new model of education in which students watch lectures online at home and then do homework in the classroom. "What do you do with that? Is our answer going to be, well, we don't know anything about that? Or is it that we have a serious plan and this is how we've incorporated our courses online?"

Goldfarb notes that the Coursera partnership is just one part of a broader effort to answer that question. "This past semester, we successfully

"The Engineering School made perfect sense to start with. It's so far ahead of the rest of the campus when it comes to online learning."

—Sree Sreenivasan

experimented with a flipped classroom in one of our MS-level graduate programs. Also, we are working on better leveraging our distance learning unit, CVN, for our on-campus students and for our students participating in study abroad programs."

As for the risk of devaluing the campus experience, Kachani believes nothing will ever compare to the real thing. "There's a lot more to a Columbia education than just attending the lectures and doing homework," he notes. "The interaction with the faculty, the resources and research labs, the networking with students. This is irreplaceable."

By Nicole Dyer

"There's a lot more to a Columbia education than just attending the lectures and doing homework. The interaction with the faculty, the resources and research labs, the networking with students. This is irreplaceable."

—Soulaymane Kachani

Q&A

The Ultimate Matchmaker

Alvin Roth BS'71 on Winning the Nobel Prize and His Pioneering Research

Alvin Roth can be described as any of the following: karate enthusiast, high school dropout, and most recently, Nobel Prize winner. An eclectic blend of characteristics but all true of Roth, who in October was awarded the prestigious Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel, an honor he shares with Lloyd S. Shapley of University of California, Los Angeles. The two scholars were recognized for their contributions to the theory of stable allocations and the practice of market design.

A native New Yorker, Roth attended public high school in Queens, and while a student, he was enrolled in the Columbia Science Honors Program.

He never received his high school diploma though and admits he was "sort of an unhappy high school student." But this bump in the road is all ancient history and did not deter Roth from earning his bachelor's degree in operations research at Columbia Engineering, and his master's and PhD in 1973 and 1974, respectively, from Stanford University. "I had an abrupt break with my high school," says Roth. "People at Columbia knew me and they wrote me letters of recommendation. So that was a college I could get into without credentials, and I was very happy to go there. Talk about life-changing experiences. Columbia threw me a lifeline."

In typical Nobel Prize fashion, Roth, the Craig and Susan McCaw Professor of Economics at Stanford, got the news via a 3:30 a.m. phone call. "By 4:30 a.m., a team of Stanford public relations staff was in our dining room," he recalls with a laugh. "I had 1,500 email messages that day and a lot of them were from news organizations. I would talk to someone for seven minutes and then do it all over again."

So needless to say, when asked what it feels like to be a Nobel Prize winner, Roth simply states, "Hectic but good."

Roth, who is also the Gund Professor Emeritus of Economics and Business Administration at Harvard, remains consistently humble and always mentions "we" when referring to his vast accomplishments, rarely using "I."

While Roth and Shapley worked independently, the combination of Shapley's basic theory—the Gale-Shapley algorithm—and as cited by the Royal Swedish Academy, "Roth's empirical investigations, experiments, and practical design has generated a flourishing field of research and improved the performance of many markets." The men were recognized for their outstanding example of economic engineering.

Roth's market examinations have led to the redesign of aligning kidney donors to patients, matching medical residents with hospitals, pairing students with public schools in large urban settings, and more.

"One way to tell my story is that I started out as an operations researcher who studied game theory. I stood my ground while the disciplinary boundaries in operations research shifted around me," he says. "I'm still doing what I set out to do, but it turns out that that makes me an economist these days."

To date, 82 Columbians—including alumni, faculty, adjunct faculty, researchers, and administrators—have won a Nobel Prize at some point in their careers. Within that number are two Columbia Engineering graduates who have won the Nobel Prize in Economics: Robert C. Merton BS'66 in 1997 and now Roth in 2012, both from programs housed in the Industrial Engineering and Operations Research Department.

Roth made his way back to Stanford just last year after having taught at Harvard for 14 years. At Harvard, he created two new courses—Market Design and Experimental Economics—that he plans to teach to Stanford students.

"When I was a student at Columbia … I eventually got interested in things that involve a lot of people, and that led me to market design," Roth says. "The same thing that was exciting as an undergraduate is still exciting."

"Talk about life-changing experiences. Columbia threw me a lifeline."

Q Please explain the research that was recognized by the Nobel Committee.

A There are two parts to that. One is the study of matching, which they call the study of stable allocations. The other is market design. My colleagues and I study matching markets, which are markets where price doesn't do all the work the way it does in commodity markets. So there are markets in which people on both sides of the market care who they are matched to. These are some of the most important markets in our lives; they determine where you go to school and college, what job you get, maybe even who you marry. In matching markets, you can't just choose what you want; you also have to be chosen.

As we start to understand how these markets work a little bit better, we can help fix them when they're broken. We've helped to design school choice procedures for New York high schools, Boston public schools, and, lately, a number of other cities. We've helped design labor market clearinghouses for a variety of health care professions. We've helped design kidney exchange protocols. A lot of what we do is make small changes that make existing market places run smoother.

Whenever we successfully make a market design solution that gets implemented, there are always a lot of people on the ground associated with that. When we design a school choice system, it means that in the city where it succeeded there are some dedicated educators who got excited about it and carried it forward. When we design a medical marketplace, it means that some doctors got excited about it. When we design a kidney exchange, it means that there are kidney surgeons who are pushing it forward. We help them. Market design is a team sport.

Q When did you know that Shapley's basic theory combined with your research would help to improve some markets?

A When I first started studying the markets for new doctors, I found that the way they had been organized in the 1950s was closely related to the work the late mathematician and economist David Gale and Shapley did in the 1960s. When I noticed that, I started to understand how the work of Lloyd and his colleagues would help me understand how markets worked. The specific work they did on market clearing algorithms has been of big practical importance in designing clearinghouses, and it also serves as a guide to many of the things that even decentralized marketplaces have to accomplish.

Q How do you come up with your research ideas?

A There are times when we reach out and there are times when we're reached out to. New York City called me. The medical marketplace called me. There are other markets where we've approached them. We wrote about the kidney exchange and sent papers to surgeons, and one of them followed up. That was Dr. Frank Delmonico of Harvard Medical School, who was one of my guests in Stockholm. We helped him form the New England program for kidney exchange once we had gotten his interest. I'm still doing lots of work on kidney exchange—that's not done. As things get established, people develop new strategies; the marketplace has to react a little bit. That's an ongoing process of design and redesign. Markets have rules. That's part of what market design is, setting the rules of the marketplace.

Q What are some of your favorite Columbia memories?

A My main activity at Columbia wasn't academic. My most vivid memories of Columbia involve being a karate player. It wasn't a varsity sport, it was a club, but we had a team and we played other clubs. I was involved in a Japanese style of karate called Shotokan karate. I was only at Columbia for three years, so it was something I did all three years. I also have fond memories of many of my professors, including Cyrus Derman, who convinced me to go to graduate school.

Q After Stanford, you set off on an academic career. Where have you taught?

A I taught at the University of Illinois (1974–1982), the University of Pittsburgh (1982–1998), and Harvard (1998–2012). Illinois was my first job, and I started the work on kidney matching there, and I met my wife there. Pittsburgh was a great job, and we built a big center of experimental economics there. I did my first design work there. I redesigned the medical match while I was at Pittsburgh. Our children were born there. Harvard was great, and that helped make these things into recognizable fields. Here at Stanford, I'm going to be colleagues of some of my Harvard students. That's a special thing.

Q Is anyone in the family following in your footsteps?

A Our son Aaron graduated from Columbia College with a joint major in computer science and mathematics in 2002. He's now a professor of computer science at the University of Pennsylvania. Our son Ben is a first-year PhD student in economics at MIT, thinking about development economics. My wife Emilie has the exciting job in the family. She's a human factors engineer. She thinks about the man—the person—in the system. She and I are both concerned with complicated systems that involve people, but she's concerned with them dealing with machines. I'm concerned with them dealing with markets.

Q Who was with you in Stockholm for the Nobel Prize ceremony?

A We were allowed 14 guests. Our guests were our children, some relatives and friends, and a bunch of colleagues on market design projects—other economists, operations researchers, practitioners, two kidney surgeons, an education professional, and a job market matchmaker.

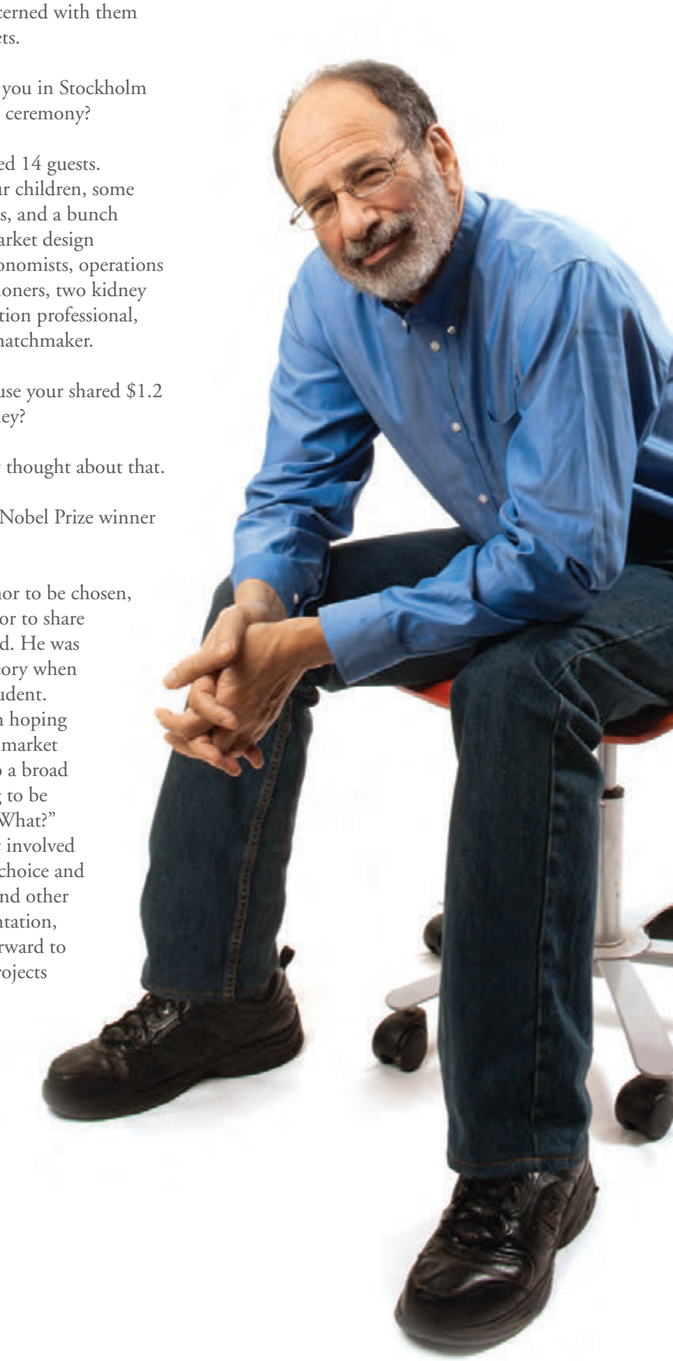
Q How will you use your shared $1.2 million award money?

A I haven't really thought about that.

Q Where does a Nobel Prize winner go from here?

A It's a great honor to be chosen, and it's a great honor to share the prize with Lloyd. He was a giant of game theory when I was a graduate student. Going forward, I'm hoping to write a book on market design addressed to a broad audience. It's going to be called "Who Gets What?" I'm also still deeply involved in work on school choice and kidney exchange, and other aspects of transplantation, and I'm looking forward to seeing what new projects materialize.

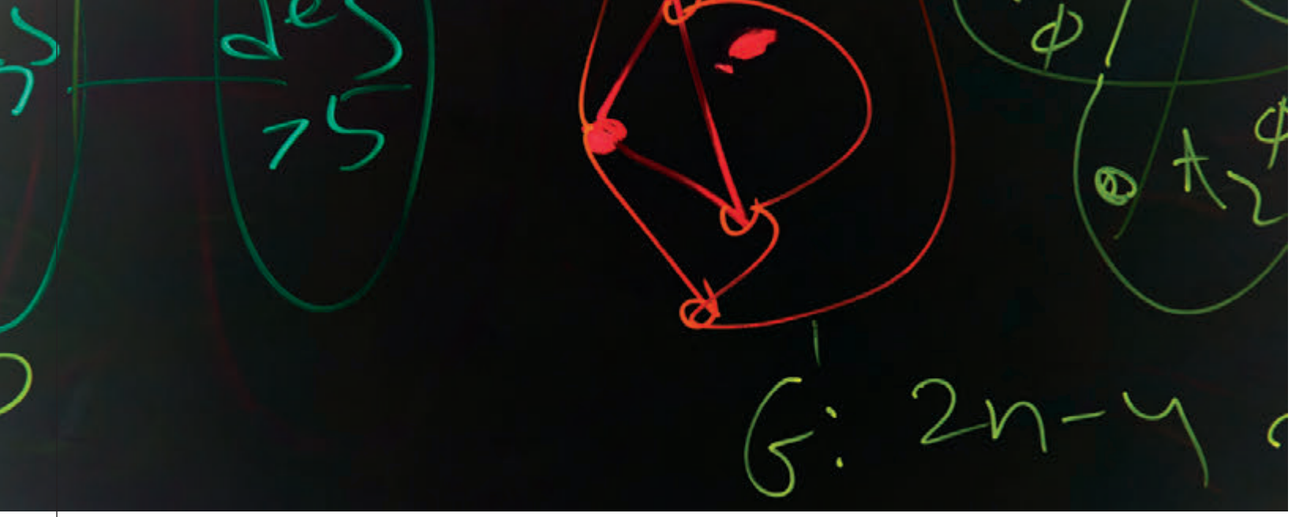
By Janet Haney



The Genius Behind This MacArthur Fellow

Associate Professor Maria Chudnovsky

As a young graduate student and only 25, Maria Chudnovsky coauthored a proof of a longstanding mathematical theorem on perfect graphs—a problem posed more than 40 years ago that no one could crack. With four other mathematicians, Chudnovsky's completion of this significant proof—150 pages of mathematical complexity—gained her recognition among a tight-knit community of graph theory researchers as a scholar of unparalleled creativity and ability. Chudnovsky joined Columbia Engineering in 2006, and now as an associate professor of industrial engineering and operations research (IEOR), things just keep getting better for this extraordinary theorist.



Chudnovsky's research focuses on graph theory, which involves mathematical constructs that can record connections between pairs of objects. She specializes in discrete mathematics.

In October, Chudnovsky, 36, won a MacArthur Foundation Fellowship, a five-year, $500,000 grant given to the best and brightest individuals who show exceptional creativity in their work and the promise to accomplish even more down the road. Often referred to as a "genius grant," MacArthur Fellowships are considered a great honor, a highly coveted award that gives individuals the ability to focus on any research project without restrictions. Recipients don't even know they are being considered for the award. The Foundation contacts fellows out of the blue, via a phone call.

In fact, when Chudnovsky received her call from the Foundation, she actually thought they were calling for a recommendation for someone else. From her husband, who is a musician, she had learned that MacArthur fellows are generally "from more well-known fields, not somebody in math or engineering." It took a while for the news to sink in.

"It's a really awesome feeling. Suddenly somebody really believes in you, really thinks you can do something," she says. And, as she put it to the officials at MacArthur, the fellowship will enable her to "work on exactly the problems I want to work on. This is important if you want to be creative."

Chudnovsky specializes in discrete mathematics, and her research focuses on graph theory. She is quick to make the distinction between the graphs she studies and the graphs that come to the minds of most people.

"In graph theory, a graph is not an *x* axis and a *y* axis and a curve," she explains. Referring to the white board in her office riddled with graphs of various shapes, she says, "They are things that look like that. You have points, there are lines between some pairs of points, and there are no lines between some other pairs of points. These represent some structure in the world. Basically, graphs are mathematical constructs that allow you to record connections between pairs of objects."

Graphs model a range of things—the Internet as a network, an automated mapping system like a GPS, cell phone towers, and maps of cell phone frequencies. "What I mostly do is study the abstract properties of graphs in order to help people develop real-world applications," she says. As examples, she notes, "Graph theories can help with planning things efficiently, fix scheduling problems, or create various timetables."

When Chudnovsky proved the conjecture on perfect graphs, which are graphs roughly defined as being easy to "color," she and her colleagues showed that only two types of defects keep a graph from being perfect and that all perfect graphs fall into a handful of different categories. "A graph is perfect if it behaves nicely with respect to a mathematical concept called coloring, and our work was to describe precisely all perfect graphs," says Chudnovsky.

Chudnovsky's completion of the strong perfect graph theorem gained her recognition among a tight-knit community of graph theory researchers as a scholar of unparalleled creativity and ability.

Born and raised in Israel to parents who are engineers, Chudnovsky always thought she would follow in their footsteps. However, a fascination with pure math sent her on a different path. After earning her bachelor's and master's degrees from Technion-Israel Institute of Technology, Chudnovksy's unwavering interest in the subject brought her to Princeton, whose Mathematics Department is strong in graph theory, to study discrete mathematics.

After graduation, she sought out the IEOR Department at the Engineering School. "It was a natural place for me to be," she says. "Great location, great university, and an excellent department."

Chudnovsky is constantly thinking about mathematical problems and thrives on the fact that in her field, there's the potential to do so much more. "You'll never solve every problem in the world. You ask yourself, 'can I solve this problem or not?' Maybe a year later you'll know, maybe two years later you'll know. And, well, if it's something big like the strong perfect graph theorem, then you feel pretty good. If it's something small, well, you still feel pretty good."

If anyone's face can light up while discussing highly abstract mathematical concepts, it's Chudnovsky's, and hers does without a trace of arrogance. Even when she talks about the perfect graph proof, she describes that experience as simply, "pretty cool."

Another point of pride for Chudnovsky was being able to tackle a complex problem closer to home.

"I modeled the seating chart for my wedding and nobody complained," she says with a laugh. "It only took me half a minute to do. So on my end, it was a good one."

By Melanie A. Farmer

"You'll never solve every problem in the world. You ask yourself, 'can I solve this problem or not?' Maybe a year later you'll know, maybe two years later you'll know. If it's something big like the strong perfect graph theorem, then you feel pretty good. If it's something small, well, you still feel pretty good."

DATA-DRIVEN ALUMNI: THE FACES BEHIND DATA SCIENCES

With the big data deluge comes too much information. And who best to wade through this tidal wave of TMI than people who have the right talent and skill sets to capture, analyze, store, and understand data, and lots of it.

A comprehensive report on big data by McKinsey Global Institute predicted that by 2018, "the United States alone could face a shortage of 140,000 to 190,000 people with deep analytical skills as well as 1.5 million managers and analysts to analyze big data and make decisions based on their findings." Of the leading indicators for this massive data surge, McKinsey researchers highlighted the pervasiveness of digital data—from social networking sites to YouTube videos to the fact that there were five billion mobile phones in use in 2010.

Our data-driven society is bringing with it a wealth of job opportunities at a time when jobs are scarce in so many other sectors. Data-centric people with the right training are poised to experience what web developers did in the 1990s during the dot-com boom.

By the end of 2011, the number of mobile subscriptions increased to six billion globally, according to a study by International Telecommunication Union (ITU). The ITU also noted that Internet users grew by 11 percent from 2010 to 2011. By year-end, there were some 2.3 billion users surfing the web.

Our data-driven society is bringing with it a wealth of job opportunities at a time when jobs are scarce in so many other sectors. Data-centric people with the right training are poised to experience what web developers did in the 1990s during the dot-com boom.

"There was an explosion in hiring—companies around the world needed skilled employees who had the expertise to create a whole new way to communicate, market, and conduct business through the web," says Kathleen McKeown, the inaugural director of Columbia's new Institute for Data Sciences and Engineering (IDSE). "And today the same thing is happening in big data—there is a tremendous need for data science specialists who can develop and use new tools to help us manage this exciting new landscape."

Part of IDSE's mission, in fact, is to create a culture of translational research and education that addresses the unprecedented challenges and opportunities posed by a data-rich society, notes McKeown, who is also the Henry and Gertrude Rothschild Professor of Computer Science at the Engineering School. The Institute, which plans to hold its first symposium in April at Columbia, will focus on innovative research and education that will drive successful entrepreneurship, create new businesses, and develop a skilled workforce that will have an impact on this ever-increasing challenge.

Here, *Columbia Engineering* magazine profiles a sampling of the School's alumni—and not just the pure data scientists—who are utilizing their interdisciplinary backgrounds in the arts and literature, research and development, social policy, high tech, computer science, and machine learning to gain a foothold in the burgeoning field. Suddenly, there is an absolute demand for people who know their way around data, and these Engineering alums have found themselves knee-deep in it, constantly learning and meeting these new challenges successfully.

Internet users grew by 11 percent from 2010 to 2011. By year-end, there were some 2.3 billion users surfing the web.

Michael Idelchik BS'78
Vice President, General Electric

In 1877, a restless young genius invented the phonograph and changed the world. Thomas Edison didn't stop there. He went on to invent the incandescent light bulb, the modern telegraph, and more than a thousand other contraptions. His company, General Electric, has proven equally prolific over the past 130 years and today stands as the third largest company on Earth, according to *Forbes*. You may recognize some of its innovations: the radio, plastic, the garbage disposal, the x-ray tube, the jet engine, lasers, the MRI, CT scans. The list goes on. And Michael Idelchik makes sure of it.

Idelchik is the vice president of Advanced Technologies for GE Global Research, the company's R&D division, where experimental ideas worthy of the Edison legacy become world-changing innovations. An inventor himself who holds 14 patents, Idelchik manages dozens of projects, spanning every major discipline. He's helped innovate designs for jet engines, x-ray tubes, water-recycling systems, a new breed of battery, wind turbines, and light-emitting diodes, to name just a few.

Of course, innovation has changed a lot since Edison's days. Modern machines are now equipped with sensors and consume and emit massive volumes of information. The ability to find meaning in all that information—the challenge of big data—has become central to Idelchik's job as an engineer. Gone are the days of trial and error and guesswork. If he and his team want to test a new machine—say, a jet engine—they turn to analytics and computer modeling. Sifting through sensor data can identify performance thresholds, predict failure points, and lead the way to design improvements.

"Working with large data is critical to understanding how equipment will perform in the field," Idelchik says. In fact, big data has become so important to GE, it recently invested $1 billion in a new software center in San Ramon, CA, to help clients better manage sensor data built into GE equipment such as jet engines, electrical turbines, and locomotives.

But big data or no data, for Idelchik, success in engineering comes down to one thing. "It's all about understanding engineering principles," he says. That's something he learned at a very young age from his father, who was also an engineer. Idelchik loved math as a kid and considered a career in it, until his father counseled against it.

But big data or no data, for Idelchik, success in engineering comes down to one thing. "It's all about understanding engineering principles."

"There's no money in it," his father told him, jokingly. Idelchik laughs recalling his father's sense of humor. "What he really believed is that engineering is the best foundation one can have," he says. So when Idelchik left his homeland of Belarus and headed for Columbia University, he decided to enroll in the Engineering School. It turned out to be a wise decision.

"At the time there were only 28 other people majoring in mechanical engineering," recalls Idelchik. "I could easily go from department to department. I knew all of the professors. It was an outstanding education."

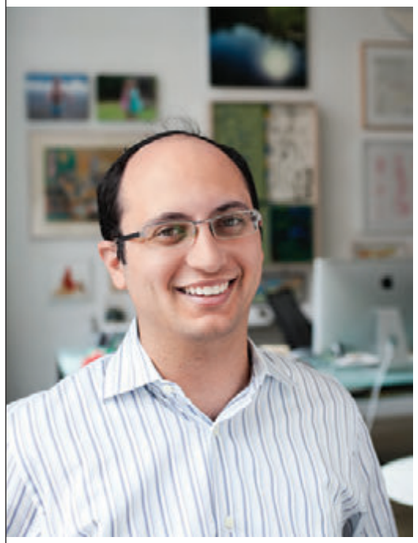
Success at Columbia led to success at GE, where Idelchik signed on as an engineer in 1978 shortly after graduation. A few years later, Idelchik earned GE's Young Engineers award, which recognizes exceptional talent among engineers under 30. His work on jet engines earned him the Engineer of the Year award in 1988. By 1998, he was overseeing the introduction of the world's first multi-slice CT scanner, one of GE's most prized innovations. And in 2006 GE CEO Jeff Immelt awarded him the Chairman's Award for Technology Leadership.

Idelchik credits his success to his lifelong love of learning. In his spare time you're likely to find him watching engineering tutorials online. "You cannot do my job without being a learner," he says.

Edison may very well have agreed.

By Nicole Dyer

"Ultimately, I didn't want to regret missing my opportunity to take a bigger risk and do something new and untested while I was still young. The idea of starting my own company or joining one in the very early stages really appealed to me. It still does."



Isaac Greenbaum
BS'06, MS'10
Data Scientist, Chartbeat

Problem solving comes naturally to Isaac "Yitzi" Greenbaum. As a kid growing up in Los Angeles, he and his father would take long walks to synagogue and do math problems along the way. "Math is something I've always done," he says. "I was inculcated from a very early age." When he earned his degree in applied math in 2006 from The Fu Foundation School of Engineering and Applied Science, he didn't just graduate; he was valedictorian.

Greenbaum, now 29, has parlayed his aptitude for numbers into a thriving career in big data, a field born to help wrangle meaning from the 2.5 quintillion bytes of information created daily. In 2010, he landed a coveted job at the booming tech start-up Chartbeat, an innovative analytics company that helps clients like *The New York Times*, Gawker, and Fox News turn vast oceans of online user data into useful charts and graphs.

As Chartbeat's lead data scientist, Greenbaum finds imaginative ways to improve the company's signature tool, a browser-based dashboard that gives clients an at-a-glance visual reference to the relative performance of individual articles on their websites. Resembling an instrument panel in a pilot's cockpit, the dash can tell you in real time which stories are attracting the most clicks, how long readers spend on each story, how readers found the stories (from social media or a search engine, for example), and how often those stories have been shared, among other vitals.

When clients want a new metric, Greenbaum steps in to make it happen. Take click-through rates. Sometimes just knowing how many clicks a particular link generates is not always enough, Greenbaum explains.

"Clients may want to know why a particular link is attracting more clicks than others," he says. Is it because the link is displayed prominently on the homepage, or is the content itself attracting attention? So he's developed computer models that capture and analyze many different datasets to find out. "We just try to provide our clients with the tools they need to make good decisions," he says.

Greenbaum is pleasantly surprised to find himself in the start-up scene. He was sure his lifelong love of numbers would lead to a career on Wall Street. In fact, before earning his master's degree in computer science from the Engineering School in 2010, he was structuring credit derivatives at Citigroup. "My original intention was to go into finance," he says. That changed during his master's studies, when Applied Mathematics Associate Professor Chris Wiggins introduced him to the idea of going to work for a tech start-up. Greenbaum began meeting up with entrepreneurs from Columbia Business School and learning about new opportunities in the tech world. "Professor Wiggins got me excited about options I didn't even know existed," he says.

So far, Greenbaum is thrilled with his career change. "Ultimately, I didn't want to regret missing my opportunity to take a bigger risk and do something new and untested while I was still young," he says. "The idea of starting my own company or joining one in the very early stages really appealed to me. It still does."

By Nicole Dyer

Vanessa Frias-Martinez
MS'03, PhD'08
Researcher, Telefonica Research

Vanessa Frias-Martinez spends hours sifting through and analyzing huge datasets of calling records for telecommunications giant Telefonica. She labors over massive reams of data, attempting to understand the relevance and its use. For some, this may seem like an unappealing, overwhelming task, but for Frias-Martinez, it is time well spent and an incredible opportunity to affect societal change.

As an associate researcher at Telefonica Research, one of Frias-Martinez's main goals is to analyze and reveal large-scale behaviors and trends that might be useful to policy makers in areas like smart cities, epidemiology, or education.

To this end, she combines data-mining and machine-learning techniques to extract "socially significant" information from so-called digital traces of mobile and ubiquitous technologies. Digital traces are trails left behind by user interactions with different digital platforms. "Ultimately, my goal is to provide decision makers with relevant information or with novel tools to enhance their decision processes and thus help the advancement of our societies," she says.

Frias-Martinez credits Columbia Engineering with giving her the tools to carry out the research she conducts today.

One way Frias-Martinez and her Telefonica team are attempting to do this is with a tool they are developing to help national statistical institutes trim the budgets they allocate to compute socioeconomic maps. "Such information is extremely relevant because many policy decisions are based on these types of maps," explains Frias-Martinez. "Computing them, however, is highly expensive because it requires hiring a large number of enumerators to carry out personal interviews."

To overcome this issue, Frias-Martinez and her colleagues have proposed a method that uses calling records to predict the socioeconomic levels of regions instead of having to compute them through interviews. This approach has the potential to help public institutions cut costs and enhance their decision process.

For Frias-Martinez, it is crucial to approach big data research as a team.

"We need to put a lot of effort on creating meaningful collaborations with decision makers in institutions working toward the social good," she stresses. "Only if we understand their needs and what prevents them from sleeping at night, will we be able to enhance their processes and contribute to social development."

For someone who always had a love of science, a career doing applied research at a major tech firm is essentially a dream come true. As a kid growing up in Valladolid, Spain, Frias-Martinez thrived in mathematics, physics, and biology. While studying at Universidad de Valladolid, she had a tough time choosing between a major in math or computer science. Family ultimately influenced her final decision to pursue the latter.

"The fact that my dad brought home a Commodore 64 when I was 8," she says, "and that my brother was already a geek studying computer science in college, made me decide."

Frias-Martinez moved to New York City in 2001 to pursue her master's and doctorate in computer science at the Engineering School, having been attracted by the department's solid reputation.

"I was struck not only by the quality of the professors but also by the departmental environment," adds Frias-Martinez. "Many professors have an open-door policy, which helps to navigate the already daunting task of finishing a PhD. I was very lucky to learn from Professors Sal Stolfo and Angelos Keromytis."

She credits Columbia Engineering with giving her the tools to carry out the research she conducts today. She truly enjoys the challenges that come with analyzing huge sets of data. But there is also more to it than that.

"My geeky side likes the excitement attached to working with data no one else has worked with before," she says. "However, what ultimately drives my research and excites me the most is the personal goal of having an impact on society. It's the reason why I focus on big data analytics for social development."

By Melanie A. Farmer

"Big data can't be fully harnessed by computer scientists working in intellectual vacuums."

David Elson
BS'02, MS'05, PhD'12
Software Engineer, Google

When David Elson entered Columbia Engineering as a computer science major, he also took advantage of the University's film program and zoomed in on a few electives. "I led a double life through high school and college as a filmmaker and programmer," Elson says. "I was the only SEAS student in my many undergraduate film classes."

Fusing those interests is part of a longtime production for Elson, whose data science expertise and computational creativity is influenced by the arts and literature. It also provided him a stepping stone to his current job as a software engineer in Google's speech group, where he works on natural language processing—including data-heavy projects related to voice search—for Android.

Elson, a New York City resident, earned his bachelor's and master's in computer science from the Engineering School. He earned a PhD from the Graduate School of Arts and Sciences. When looking back at how his big data interest began, Elson gave a starring role to his middle-school English teacher who he said ingrained in him the mantra: "Better readers make better writers, and better writers make better readers."

Elson remembered that connection when he took an artificial intelligence class, prompting him to think about how ideas and thoughts are learned, organized, and stored.

"If the human brain can learn to build a prosperous society and create great works of art using only observation and practice—lots and lots of it—why can't a machine brain do the same?" he says.

Questions such as this took on even greater meaning when Elson was a PhD candidate in computational linguistics. He wrote his dissertation on storytelling and the analysis of narrative, including how social networks are created from conversations between characters in British novels.

At the time, he asked, "Since we exchange stories with each other every day, shouldn't our phones and computers be able to listen to our personal stories and tell us stories we want to hear?"

To help answer that question, he created a software program that reads for dialogue in digitally scanned novels in order to piece together social networking maps.

"My thesis looked at how computers can be better readers and better writers with practice," he says. Elson's adviser was Kathleen McKeown, Henry and Gertrude Rothschild Professor of Computer Science and the inaugural director of Columbia's new Institute for Data Sciences and Engineering.

"Professor McKeown was receptive to the idea of taking her research toward literature and narrative," Elson says. "She provided an excellent grounding in linguistics and was a great mentor to me."

Elson's work was supported, in part, by a fellowship awarded by the Engineering School through the National Science Foundation's GK–12 program. As a fellow, he taught science in middle schools, as well as three semesters of computer science to Columbia Engineering undergraduates, for which he received the Presidential Teaching Award from the Office of the Provost.

At Google, the literature enthusiast has gone on to develop an even keener sense of the importance of data science. Through his work, he says that big data makes voice search far more accurate than it would have been just a few years ago. "As more and more people use it around the world, the system gets better."

Big data's potential—especially as it relates to providing society new tools—is one of the big reasons Elson is excited to work in this field. Not to mention, there are vast opportunities to learn more about big data and use it effectively to improve health, education, and many other fields, he adds.

"Big data can't be fully harnessed by computer scientists working in intellectual vacuums," he says. "SEAS buys fully into Columbia's commitment to interdisciplinary learning, and the Core Curriculum works well to give engineers a broader perspective."

By Cecily O'Connor

Jordan Becker
BS'84, MS'88
Vice President, BAE Systems

From a technology standpoint, big data is a very exciting space because there are a lot of unsolved problems, and from a business perspective, it is an area where there's growth within the government and commercial markets.

Jordan Becker's lifelong passion for technology got a kick start during his undergraduate years at Columbia Engineering when he jumped on an opportunity to join IBM Research's summer intern program. That exposure early on helped fuel a thriving career in tech.

"A lot of my focus has been involved in building complex software systems that deal with big data," says Becker, who is now a vice president at security and defense giant BAE Systems Inc.

The Internet certainly deals with massive amounts of data, and Becker was at the forefront of this life-changing technology due to his work at IBM. After starting at the tech behemoth in 1981, Becker carried on there even after earning his master's degree in electrical engineering at Columbia. His initial work at IBM was on signal processing algorithms and control systems for scanning tunneling microscopy.

During the early 1980s, Becker got involved in Internet research and development pursuits that focused his career for years to come.

"I was able to work on interesting programs at IBM, including the replacement for the ARPAnet Internet backbone with the National Science Foundation Internet backbone," Becker says. The Advanced Research Projects Agency Network (ARPAnet) was the first experimental Internet pillar. "That was the big Internet program during the '80s, and we built the router systems and management software for it at IBM."

IBM and MCI formed a new company called Advanced Network & Systems (ANS) in 1990 that Becker cofounded. That spin-off was sold to America Online (AOL) and became the Internet's core foundation for several years during the 1990s. Becker joined AOL with the acquisition of ANS in 1994 and helped run that Internet business as a subsidiary for several years.

Five years later, Becker transitioned to Science Applications International Corp., another high-tech leader in R&D and builder of systems for the U.S. government. He worked at Science Applications for 12 years as senior vice president and chief technical officer for the Information Technology and Network Services Group. These days, Becker leads a workforce of 1,200 employees as vice president and general manager of the Geospatial Intelligence (Intelligence, Surveillance and Reconnaissance) business area within BAE Systems Intelligence & Security.

Big data plays a pivotal role in his day-to-day functions when dealing with agencies within the Department of Defense and the U.S. Intelligence Community. "We develop software for several of the government's intelligence agencies," Becker says. His group looks at ways to access, store, and analyze data. "It's an area of innovation. It challenges us in terms of storage systems, high-performance computing, and software processing technology."

Becker adds that from a technology standpoint, it is a very exciting space because there are a lot of unsolved problems, and from a business perspective, big data is an area where there's growth within the government and commercial markets.

Still, in broader terms, Becker believes there's much to be done in terms of big data.

"There is a lot of fundamental improvement ahead," he says. "With increasing performance requirements, there are new challenges just preventing the legacy systems from breaking down. And there are new systems required to push the envelope to leverage the new generation of powerful sensors being deployed to collect intelligence data. That's the next big step."

By Janet Haney

Jenny Finkel BS'02
Chief Software Architect, Prismatic

One might say Jenny Finkel took a gamble when she signed on as chief software architect at a San Francisco–based data-rich start-up.

Fortunately, the New Jersey native has found herself knee-deep in a field that she felt well prepared to handle. And it doesn't hurt that this six-person company just nabbed $15 million in funding from heavy-hitter investors. So far the gamble seems to be paying off.

"When you start to get attention, it's like 'game-on,'" Finkel says. "We have a ton of work and we want to deliver."

At Prismatic, she gets to flex the computer science skills she developed as a student at Columbia Engineering.

"Having a solid computer science background was great preparation for almost anything, and if it's analytical, it's even greater preparation," Finkel says. "It teaches you to think precisely, really precisely. It teaches you to think about, 'What are the right questions I should be asking, and how do I find the answers to them?'"

After Finkel earned her bachelor's degree in computer science from the Engineering School, she went on to receive her master's and PhD in computer science from Stanford. She also did postdoctorate work at both MIT and Columbia. Finkel had her sights set on being a professor, but the tug of returning to the West Coast and pursuing imaginative, technology quests won out.

"Having a solid computer science background was great preparation for almost anything, and if it's analytical, it's even greater preparation."

"Software engineering is a really creative pursuit. You're building something, and it's not like there's one way to build a program to do a task," Finkel observes. "There are an infinite number of possibilities of how to do it. Your goal is to think: how can I build this thing that's elegant and has all these features?"

Being the chief software architect at Prismatic complements Finkel's background in machine learning and natural language processing. Prismatic makes and provides consumers with an application-based newsfeed that utilizes machine-learning algorithms to suggest news and other content to users based on their activity. But don't think of it as a big data company.

"I actually don't like the term big data," says Finkel. "I see myself as a machinery person. A lot of what I do is data science. I don't think anyone who looks behind the covers would look at [Prismatic] and think big data since usually that involves where you dump everything you possibly can into your database and then you have to run these big Hadoop jobs." (Apache Hadoop is an open-source software framework for data-intensive applications.)

Finkel credits Columbia Engineering Professor Kenneth Ross's Programming and Problem Solving class as a big influence on her career. Students got to work on open-ended research problems that didn't have one set solution, and Finkel relished that problem-solving approach.

"It was the realization that I can actually do this as a job, and I can actually solve puzzles and write the code to solve those puzzles," she says, adding that Ross encouraged students who liked the class to consider graduate school and pursue research.

"That class captured my imagination in a way that propelled me onto the next step," says Finkel, "and I don't know if it would have happened otherwise."

By Janet Haney

Shawn Edwards
BS'90, MS'95
Chief Technology Officer, Bloomberg

By the mid-90s, Shawn Edwards had mapped out a career path for designing and building circuits. At the time, he was primed to pursue a PhD in the field, but for various personal reasons scrapped that plan and enrolled in a graduate-level software design course.

The Springfield, MA, native had a similar awakening when he transferred to Columbia Engineering his sophomore year from Western New England College—a move made because he sought a school with greater research and facilities, as well as a graduate-level engineering program.

"Coming from a town like Springfield and going to New York City, I started meeting people from cultures I had never met before," Edwards says.

That transition underscores how Edwards's Columbia education is important to the work he is doing today and ultimately helped put him at the forefront of big data opportunities. The exploding volume of data that U.S. industries face is amplified on Wall Street, given colossal storage needs of transactions and other data for access and analysis.

The exploding volume of data that U.S. industries face is amplified on Wall Street, given colossal storage needs of transactions and other data for access and analysis.

The class, Object Oriented Design and Programming Using C++, was taught by former Adjunct Computer Science Professor John Lakos and opened Edwards's eyes to the fact that many electrical engineering fundamentals could be applied to software design.

"Meeting [Lakos] changed my view and got me into software," says Edwards, who considers the professor to be an early mentor in large-scale design and testing, and team management.

Edwards currently serves as chief technology officer at Bloomberg, overseeing the tech giant's network of financial data and news terminals. It's a job he's held since 2008, although he'd been at Bloomberg five years before the promotion, working in programming and research and development.

Before Bloomberg, Edwards was a managing director at Bear Stearns & Co.—his first foray into Wall Street—where he was introduced to the "challenges, problems, and complexity of analytics," he says.

Opportunities to "work with brilliant people" and innovate around complex market data issues are a few reasons Edwards says he enjoys his job.

As CTO, Edwards steers Bloomberg's tech direction through its flagship Professional Services product. This platform, or "Terminal," delivers real-time market data, news, and analytics, and accounts for approximately 85 percent of Bloomberg's annual revenue.

Financial markets are "one of the original big data consumers," says Edwards, noting Bloomberg has seen peak real-time market data rates of six million messages per second, from more than 5,000 feeds linked to exchanges, contributors, and other sources.

Bloomberg also aggregates, stores, and classifies more than one million news stories from over 100,000 sources daily.

In addition, just about everything Edwards's team of 50 tech professionals touches has a low-latency element to it, meaning Bloomberg clients need speedy data access to respond to market events faster than the competition to increase profitability.

To that end, Edwards spends a great deal of time working on predictive analytics, which he considers the "next promise" for data sciences since it's aimed at better understanding and pushing forward relevant information to traders.

"These are the things that excite me [about the job] … incredibly hard problems, volumes of data that's increasing, timelines and immediacy, and pressing up against the boundaries of what computers can do."

By Cecily O'Connor

Edwards spends a great deal of time working on predictive analytics, which he considers the "next promise" for data sciences since it's aimed at better understanding and pushing forward relevant information to traders.

Inder Singh BS'79, MS'81
Senior Vice President, Comcast

Inder Singh is onto something, though he can't yet tell us what. "I have to be careful here because we're on the cutting edge of doing some very cool things at Comcast, with big data definitely in mind."

As the senior vice president for strategy, finance, and business intelligence at the cable and communications giant, Singh works with big data every day.

Of his many responsibilities at Comcast, Singh manages its cable business strategy, a $40 billion operation, incubates new businesses, and oversees the $2 billion product marketing finance operations. All of these priorities are driven by big data—by the company's need to collect and manage information and to acquire what Singh calls "business intelligence."

"As a media company," he explains, "we handle lots of data as part of our normal course of business, whether it's the network we run and how we optimize it or the types of content, like multichannel TV and video-on-demand that we deliver to consumers. We have a plethora of structured data that we've been looking at for years; it's a part of the DNA of our company."

But a new focus for the next five years, he says, will be looking closely at relationships across unstructured data, information that's more difficult to organize: "This is where understanding changing customer preferences is key, knowing where they watch their content, how they like to consume it (on a big screen in their living room or on the move on a tablet) and developing the entertainment solutions that consumers want—giving them the chance to personalize, and also a wider array of entertainment options to enjoy, from sports to news to the top-rated shows."

Turning this ever-increasing data tidal wave into business insights means identifying predictive patterns that explain the future. We want to "use data to improve and deliver services that consumers want the most."

The big quest for Singh and his team at Comcast is how best to continue to optimize Comcast's products, technologies, and offerings in a way that takes into account all of that more personalized information, examining customer patterns and insights. The big drivers of this trend, Singh says, are increasing user mobility, the proliferation of social networking, and new offerings like TV Everywhere. "A lot of the infrastructure behind this, a lot of the content and programming we put on it, a lot of the network operations and technologies all create, as well as depend on, huge amounts—petabytes—of data."

Turning this ever-increasing data tidal wave into business insights means identifying predictive patterns that, Singh says, explain the future. We want to "use data to improve and deliver services that consumers want the most; and to offer them more choices than they have ever had in the past, we need to bring a sharp focus on understanding evolving consumer preferences and integrating these insights into our business model."

From his job at American Express in the 1990s, one of the first companies to use big data to understand consumers, to his positions at AT&T, Prudential Financial, Lehman Brothers, Cisco, and now Comcast, Singh has had a passion for innovation and building new things, for figuring out new businesses and markets.

Singh graduated from Columbia Engineering with both a BS and an MS in mechanical engineering, and then got his MBA at NYU. He credits SEAS and the University's Core Curriculum with giving him a strong foundation in "appreciating not only the engineering side of things but also the arts, the sciences, and math."

"The unique thing that Columbia provides is the fact that you can major/minor in multiple areas both within and outside engineering," he adds. "Those several years at Columbia really laid the foundation for understanding diverse things, whether in finance, marketing, engineering, or for that matter, in handling big data. The underlying foundation that SEAS provided was for the quantitative, algorithmic, and logic-based building blocks you need to appreciate the power of big data."

"The underlying foundation that SEAS provided was for the quantitative, algorithmic, and logic-based building blocks you need to appreciate the power of big data."

Singh is excited that Columbia has launched an innovative new Institute for Data Sciences and Engineering and says the University is on the right track in making critical investments in big data research, in training students, and especially in allowing them to custom-tailor their curriculum so they can become the specialists that businesses will need while providing them that core foundation.

"You don't want to maintain the rigidity of a set way of doing things because the world is rapidly changing," concludes Singh. "Moving innovation forward at the speed of Moore's law is no longer sufficient. Big data is core to almost every business, and I think the Institute will really set Columbia on the leading edge of this revolutionary new capability that will unfold over the next decade and transform virtually every aspect of winning in business."

By Holly Evarts

SEAS START-UPS

TAKE ON NYC TECH BOOM

From left to right: Ben Horowitz '88CC, cofounder of VC firm Andreessen Horowitz, and University Trustee Bill Campbell '62CC, '64TC

Columbia Engineering Entrepreneurship Night in NYC attracted more than 350 alumni, students, faculty, and friends to network and learn about the bubbling NYC start-up industry.

Two of the most powerful figures in Silicon Valley imparted words of wisdom to a packed audience at Columbia Engineering's Entrepreneurship Networking Night held at the Metropolitan Pavilion in New York.

In a lively exchange, University Trustee Bill Campbell '62CC, '64TC, board chairman at software giant Intuit, and Ben Horowitz '88CC, cofounder and general partner at venture capital firm Andreessen Horowitz, agreed that the start-up scene in New York City is bubbling with activity, and now's the time for budding entrepreneurs to throw in their hats. It is especially promising for skilled engineers and talented computer scientists, they noted.

Campbell and Horowitz spoke energetically about the "tech boom" in New York City, stressing that the Engineering School plays a key role in giving the City top-tier engineers and talented computer scientists who can tackle this burgeoning market.

Said Horowitz, "It is important to keep in mind that all the start-up successes have been in technology, and all the tech successes have been in computer science. . . . The emphasis on computer science is very, very critical."

As two of the highest-profile investors in the tech world, Horowitz and Campbell enjoyed talking about not just what they look for in start-ups but also what founders should look for in an investor. Simply put, said Campbell, "You find someone you can call in the middle of the night and who will answer the phone."

Campbell also said that one of the most critical things to do when you're starting a new company—and also one of the most challenging—is to hire the right people for the right job. "It's never too early to get good people on your team," he said. Another big challenge the two underscored: recruiting engineers. The second half of the evening's program proved that Columbia Engineering is certainly doing its part to chip away at that problem.

Ten start-ups recently launched by Columbia students and alumni got the chance to demonstrate their innovative ideas to more than 350 people who attended the event. Four of the 10 were ideas brought to life at the Engineering School, including Radiator Labs, the developer of an after-market product for steam-heated buildings that could reduce carbon emissions by more than six million tons per year; Jibon Health, whose low-cost, low-tech device aims to reduce postpartum hemorrhage in women in developing countries; Udacomm, maker of an ultrasonic environmental sensor that requires less than a tenth of the power that normal sensors require; and Lumiode, which is developing a new microdisplay platform that is 30 times brighter and 5 to 10 times more efficient than what is currently on the market.

Promoting and supporting entrepreneurship is a major part of the School's mission. One of its most popular minors is entrepreneurship and innovation. The School often hosts networking events that put start-up founders in the same room with heavy-hitting VCs and Columbia alumni who have had much success leading their own businesses.

Lumiode founder and CEO Vincent Lee MS'09, PhD'12 said, "Networking events like the Columbia Entrepreneurship Night are very important to us at this stage. We need as much feedback as we can get … and the only way to get this feedback is to talk to as many people as possible."

Cosponsored with the Columbia Alumni Association, the School's Entrepreneurship Networking Nights are ongoing and bicoastal. Last summer, Campbell and Horowitz were joined by Steve Chiang BS'93, president of games at Zynga, at the School's entrepreneurship networking event held in Mountain View, CA. Visit entrepreneurship.columbia.edu to find out more about upcoming events.

Jibon Health cofounders, from left to right: Jason Rosenberg (COO), Anthony Elder (creative director), Mikail Kamal BS'12 (CEO, president), John Esau BS'12 (vice president of technology), Marissa Dreyer BS'12 (vice president of marketing)

ENGINEERING START-UP AIMS TO PREVENT MATERNAL DEATHS IN DEVELOPING NATIONS

Led by a team of biomedical engineering alumni, biotech start-up Jibon Health Technologies Inc. took first place at Columbia Engineering's annual Fast Pitch Competition held in the fall, beating out nearly 30 other competitors. Jibon Health's low-cost, low-tech device aims to reduce postpartum hemorrhage (PPH) in mothers delivering in rural communities and developing countries where PPH is the leading cause of maternal death.

Fast Pitch, the Engineering School's elevator pitch competition, gives start-ups a chance to sell their ideas to a panel of judges, comprised mainly of Columbia alumni and student entrepreneurs. Each team had just 60 seconds to deliver their pitches. This proved to be a winning one-minute for the team at Jibon Health.

Jibon CEO Mikail Kamal BS'12 and fellow alumni Anmol Gupta BS'12, John Esau BS'12, Marissa Dreyer BS'12, and Xin Zhang BS'12 are the co-inventors of the company's first product, Tampostat. They developed Tampostat for their senior year design project and won the Biomedical Engineering Capstone Award for best design. Tampostat is an emergency obstetric device that stops postpartum hemorrhage in patients, giving them enough time to get to a hospital for treatment.

"As a junior I came across Professor Samuel Sia's lab-on-a-chip design that allows for cheap and rapid diagnosis of many diseases in places where fancy lab equipment is unavailable," says Kamal. "This really inspired me to think outside of the box."

Kamal and his teammates knew immediately that they wanted to focus on global health. They chose postpartum hemorrhage after learning it was the leading cause of maternal death worldwide. In Bangladesh, where Kamal was born and raised, the majority of pregnant women still prefer to give birth at home with a midwife.

"Just in Bangladesh, we learned 15,000 women die from postpartum hemorrhage each year, and more than 100,000 suffer from it," he says. "We wanted to come up with a solution to this problem."

Though devices similar to Tampostat are available on the market, only trained doctors are able to administer them, and they are expensive (averaging around $250). Tampostat costs $10 to manufacture and its simple design makes it user-friendly, says Kamal. The design pairs a common male condom with simple bulb pumps to inflate the condom once the device is inserted against the cervix. The inflated condom minimizes blood loss by applying pressure on the uterine wall. Early product testing using a uterine model has demonstrated that Tampostat can successfully reduce blood loss by as much as 53 percent.

Since graduation, it has been quite a ride for the founders of Jibon Health. Kamal credits the Engineering School for supporting entrepreneurship and for hosting key networking events that give student-led start-ups the help they immediately need, like connecting them with alumni mentors.

"The chance to present our invention to these distinguished individuals and successful entrepreneurs and to get firsthand advice on how to succeed was invaluable," he says of the School's entrepreneurship event in New York City.

In January, Jibon COO Jason Rosenberg visited the hospitals in Dhaka, Bangladesh, where they plan to hold clinical trials soon, and met with the country's health minister to discuss future collaborations. Jibon Health also was recently chosen for the Bio and Health Tech NYC Entrepreneurship Lab, a six-month training and mentorship program for the City's life sciences and health care technology community, sponsored by the NYCEDC (Economic Development Corporation).

"It's a different day each day," says Kamal of launching a start-up. "It's an emotional roller coaster but it's exciting."

SEAS STUDENTS

PROVIDE POWER IN WAKE OF HURRICANE SANDY

Two Columbia Engineering graduate students brought positive energy to a community devastated by Hurricane Sandy, where many residents were without power for several months.

Rob van Haaren and Garrett Fitzgerald, both doctoral candidates in earth and environmental engineering, have co-designed and built a portable solar array. Days after the hurricane, the duo set it up at St. Gertrude's Church and Youth Center in Rockaway Beach, Queens. The church operated as a volunteering center where donated goods and hot meals were being distributed to Rockaway residents. The solar array provided power to lights, refrigerators, phone chargers, computers, and a temporary medical clinic housed inside the church.

Consisting of 72 solar panels that measure about 20 feet by 60 feet, the portable charging station was originally designed by Fitzgerald and Van Haaren to power an electric car and travel cross-country raising awareness about electric vehicles and solar power. They intended to start their so-called "solar journey" this summer, but until then, had been storing the array in a facility in New Jersey.

"We immediately thought about doing something to help after Hurricane Sandy but didn't have a contact," said Van Haaren. "The panels were just sitting in New Jersey not being used. So why not put them to work?"

The two eventually connected with David Gibbs, an expert in solar photovoltaic (PV) systems and a consultant on their Solar Journey project, who connected them to St. Gertrude's. They kept the solar array stationed there for several weeks in November and December.

"It was really awesome to be in the Rockaways and see just how many people were coming to volunteer," said Van Haaren. "In Manhattan, things went back to normal for the most part fairly quickly, but out there—and it is not even that far from here—parts were really destroyed."

Added Fitzgerald, "We set out on this project to promote the use of solar panels and electric vehicles with a focus on education outreach. We're really happy that what we've developed had a direct impact on people's lives after Sandy."

Van Haaren and Fitzgerald met at the Engineering School in 2008 as master's students in the Earth and Environmental Engineering Department. Their planned trip across the United States includes stops in 25 cities with Berkeley, CA, as the final destination. The plan is to travel approximately 180 miles a day, which is as far as they can go before having to recharge the electric car. Their sponsors include First Solar, Outback Power, Global Environment Fund, Columbia's Center for Life Cycle Analysis, and Columbia's Earth Engineering Center. They are still hoping to receive a sponsored electric car to use for the trip.

"Maybe even more important to us is that we want to make people aware of the resources they're using," said Van Haaren. "Nowadays, people are completely disconnected from the primary resources they use and what happens to the waste they produce. We believe that more public insight is needed about what goes on behind the scenes—what would make people appreciate more the perks they have from living in this era and perhaps prevent the unnecessary idling of car engines, cooling of unoccupied rooms, and the use of wasteful plastic and paper bags."

The two already demonstrated their solar panels at the Farm Aid Concert last fall in Pennsylvania and also as participants in the Driving Congress Green event last year. Down the road, Van Haaren and Fitzgerald have plans to build a smaller, portable solar backup system—one that people can use to run their refrigerators, lights, phones, and laptops.

SCHOOL HONORS LONGTIME PROFESSOR, SENIOR VICE DEAN EMERITUS

In recognition for his unwavering dedication to The Fu Foundation School of Engineering and Applied Science, the School has renamed the Dean's Conference Room, located on the fifth floor of the Seeley W. Mudd Building, the Morton B. Friedman Conference Room. Morton Friedman (Mort) is a longtime professor of civil engineering and engineering mechanics, and of applied physics and applied mathematics, and is senior vice dean emeritus.

At the School's annual Faculty Excellence Celebration held in the fall, Interim Dean Donald Goldfarb paid tribute to Friedman and thanked him for his commitment and devotion to the School. Dean Goldfarb, who has known and worked with Friedman for 30 years, said he is grateful for the wise counsel Friedman provided him throughout his own career at SEAS as a professor, department chair, and as interim dean, twice now. When Goldfarb first served as interim dean in 1994, Friedman was senior vice dean.

In the mid-1960s, Friedman founded the Division of Mathematical Methods and Operations Research, and Goldfarb credits him with keeping the operations research discipline alive and thriving at the School through the years. Among the first students in that division are two winners of the Sveriges Riksbank Prize in Economic Sciences, commonly referred to as the Nobel Prize in Economics: Robert C. Merton BS'66, in 1997, and Alvin E. Roth BS'71, who received the honor just this past year.

"Mort was reluctant to be in the limelight, but we told him it was a requirement and he must show up," said Goldfarb at the event. "Being the kind of guy that he is, he agreed. And that's what he's been doing his whole career—putting the best interest of the School in front of his own."

Friedman was honored by the special recognition. "It's more than I expected, frankly, because I've enjoyed being here at Columbia," said Friedman. "It's been a wonderful experience. . . . I'm proud to say I played an important role in the process of hiring and tenuring faculty. Thank you."

In addition to having the conference room named after him, Friedman was presented with a calligraphic citation that enumerated his many significant contributions to the School. Goldfarb shared an excerpt from the citation with the faculty, students, staff, and friends who attended the event; it resonated with many who know Friedman well. Goldfarb read: "You have become a trusted adviser and friend to all with the wisdom to seek you out. How many crises have been averted, problems solved, and hazy ideas brought into focus because someone had the good sense to utter three simple words: Let's ask Mort."

Morton B. Friedman

Among his many achievements at the School, Friedman enhanced engineering education in the first-year curriculum with project-based design and with discipline-specific professional courses; he created a minors program in more than 20 liberal arts subjects; and he encouraged research opportunities with junior and senior faculty. He served as chair of the Department of Civil Engineering and Engineering Mechanics from 1981 to 1995; and from 1980 to 1991, he also held the post of associate dean for instruction and research.

Friedman received his BS, MS, and EngScD degrees from New York University. In 1956, he joined Columbia as an assistant professor of civil engineering and engineering mechanics. In 1966, he was appointed full professor, a position he still holds. In 1995, Friedman was named vice dean, and then senior vice dean in 2010, and in 2012, senior vice dean emeritus.

Dear Columbia Engineering Alumni, Family, and Friends,

Spring has come again to Morningside Heights and with it, a sense of renewal and rejuvenation. As alumni, it is important for us to take this time to renew our connection with the School and with one another.

What does this renewal look like? Last year, the Columbia Alumni Association issued the "Columbia Challenge" to challenge alumni to "do one new Columbia thing" in 2012. While 2012 has come and gone, we would like to reissue this challenge to all Engineering alumni for 2013. Find a new way to renew your connection with the School like never before: go to an alumni event; contact your roommate; submit a Class Note to *Columbia Engineering* magazine; interview an applicant to the School. **Do one Columbia Engineering thing you haven't done before and find out what the alumni experience can mean to you.**

Regardless of your career, major, age, interests, or location, there is a way for you to engage with the Columbia Engineering community that will be significant and meaningful. Visit engineering.columbia.edu/get-involved to find out more. We have a feeling you'll find it very rewarding—we certainly do!

While there are a multitude of Columbia Engineering events throughout the year, we would like to extend a special invitation to you and your guests to join us for the official welcome dinner at Engineering Reunion Weekend on the evening of Thursday, May 30, 2013, in Low Memorial Library. As part of celebrating our tradition of excellence, the Columbia Engineering Alumni Association (CEAA) will honor Michael Abrahams BS'63, MS'64 and Donald Ferguson MS'86, PhD'89, '82CC with the prestigious Egleston Medal for Distinguished Engineering Achievement. For more information or to make a reservation, you can contact Cliff Massey at cam2171@columbia.edu or 212-854-2317.

We would be proud to have you join us in celebrating Columbia Engineering ingenuity and achievement. Be sure to visit the Columbia Engineering website and check your email for updates on the many opportunities to connect with other Engineering alumni in the months to come. In the meantime, join our conversation on Facebook (facebook.com/myceaa) and Twitter (@myceya), and tell us: what will your "one new thing" be this year?

Russell Baccaglini '63, '64 MS, '72 ProfDeg
President
Columbia Engineering
Alumni Association

Jonathan Lung '06
President
Columbia Engineering
Young Alumni

COLUMBIA | ENGINEERING
Alumni Association

COLUMBIA | ENGINEERING
YOUNG ALUMNI

Class Notes: Undergraduate Alumni

1942

Class Correspondent:
Arthur Graham
asg81@columbia.edu

1943
70th Reunion

To take an active role in your Class Reunion activities, please contact Beth Manchester at em2702@columbia.edu or 212-854-4472.

Frank Brandt, 91, continues on the crusade to point out that the unreliable energy sources, wind and solar are not appropriate for generating commercial electricity while nuclear energy is appropriate. He writes, "This is a continuation of the message taught at the CU School of Engineering back in the early 1940s that hydro energy always had to be backed up by steam plants because it was unreliable." Frank writes letters to the California Energy Commission with that message. California has mandated that 33 percent of the state's electrical consumption be produced with non-reliable energy sources, which will be disastrous to the citizens of the state, says Frank.

1945

Class Correspondent:
Gloria Reinish
reinish@verizon.net

1948
65th Reunion

To take an active role in your Class Reunion activities, please contact Beth Manchester at em2702@columbia.edu or 212-854-4472.

Harry Hall writes, "I received a BNS degree in 1947 (Bachelor of Naval Science, due to the Navy V-12 College Officer Training Program) and a BS as an electrical engineer in 1948. I went to work for what is now called Domino Sugar upon graduating and stayed with them for 43 years, retiring in 1991 as chief engineer and vice president of engineering. I relocated to Sharon, CT, with my then wife, Helen Woolsey Hall, who died two years ago. Building a house in a very rural part of Connecticut, I have spent the happiest years of my life here. In good health at 86, I have three children and three grandchildren. I have been a volunteer member of the Sharon Sewer and Water Commission for 20 years and have been director of the local Duplicate Bridge Club for about 15 years. I would like to make contact with former classmates: Ray Rice, Al Dawson, Larry Weiland, and Roy Fisher. My roommate and best friend, Ted Brockmeier, died several years ago."

1950

Class Correspondent:
Joe Alvarado
Alvarado@behlman.com

1951

Class Correspondent:
Ted Borri
tjb63@columbia.edu

1952

Class Correspondent:
Peter Mauzey, p.mauzey@ieee.org

Filippo Galluppi has recently written a book, *The Missing Human Factor,* in which he includes a number of experiences and observations of his 60 some odd years of engineering and management. Of particular interest, he writes, "may be found on pages 130 to 135 in which I congratulate the education given to me by Columbia University, where I invested an extra year using Columbia's professional option courses that eventually helped me write the book."

Filippo Galluppi

1953
60th Reunion

To take an active role in your Class Reunion activities, please contact Beth Manchester at em2702@columbia.edu or 212-854-4472.

Class Correspondent:
Don Ross
rossd@jbb.com

1955

Class Correspondent:
Leo Cirino, lc550@columbia.edu

1956

Class Correspondent:
Lou Hemmerdinger
LHemmer@aol.com

Lou Hemmerdinger MS'58 writes, "Our Class of '56 yearly winter luncheon in Florida has developed into a successful annual event to which year-rounders, snowbirds, and vacationing classmates alike all look forward. Past get-togethers have elicited near universal positive response, particularly from wives and companions, who generally don't come to the New York City lunches, saying how much they liked getting together in an informal atmosphere.

"This season the time and date has been set for February 26, and Ed Botwinick BS'58, '56CC has graciously offered to host a barbeque on the grounds of his waterfront property on the St. Lucie River in Stuart. The venue will permit much more mingling

and enable easy interaction among us compared to previous occasions, when we were limited to being seated at tables inside a restaurant or country club."

Harold Reisman PhD'65 writes, "Since graduation from Columbia with a BS in 1956 and PhD in 1965 in chemical engineering and an MS from Cornell in between, I've lived across the country. In Pennsylvania, Virginia, and New Jersey with Merck, in California and Connecticut with Stauffer Chemical Company, and in Massachusetts with Organogenisis. My work was in fermentation and pharmaceutical research, tissue engineering, and as a business executive. In retirement for the past 16 years with some consulting to keep my hand in and my knowledge in the field up to speed, Miriam (my wife) and I travel the globe, including many times in Italy to recall our 1960–61 Fulbright year in Rome, but most often to Israel, which is our destination biannually. We visit our daughter, Jocelyn (BS Stanford), her husband, Dan (MD Yale), and their 8 children, ages 6 to 27. In early 2011, our granddaughter's marriage, near Tel Aviv, was a highlight, with 500 guests in celebration. The Israelis are doing well and we are always comfortable there, despite the tensions reported. Prayer helps.

"With the Middle East twists and turns, I've been studying Sharia and the Koran to better understand what makes Israel's neighbors and the world tick. It's been eye opening to me. *The Third Choice* by Mark Durie is an incisive, intelligent, and well-documented book on the topic and I recommend it.

"On our most recent trip to Israel we visited the new wing of the Tel Aviv Art Museum. The architecture is a fine work of art itself. Reviewing the archaeological finds of the late Vendyl Jones with James Long, author of *Riddle of the Exodus,* was a new look into a subject we will never know to completion.

"In the fall we visited friends and family in New York, New Jersey, Connecticut, and Pennsylvania, among them some Columbia alumni. We were saddened by the passing of Elmer Gaden, my Columbia PhD adviser and a good friend. This year we also lost Bob Finn, my Cornell MS adviser and also a dear friend. Our Philadelphia trip was immediately after Hurricane Sandy and prior to the next big storm. We were glad to return to our California paradise.

"Our son, Joe (BS Yale, MS and PhD in chemistry, UCSD, and LLB Bolt Hall, UC), his wife, Sara (MS in Public Health, SDSU), and their three children, ages 10 to 16, are among the many reasons for our move to Carlsbad, CA. Being close to one set of grandchildren and traveling to visit the others is the best of both worlds."

1957

Robert Paaswell '56CC gave an invited presentation on the "Impacts of Hurricane Sandy on Regional Transportation" at a Transport Conference held at the Conservatoire National des Artes et Metiers in Paris on November 13. Robert's wife, Roz '59BC, joined him for a "delightful several days exploring the cafes and patisseries and other attractions of this city which we know so well."

1958
55th Reunion

To take an active role in your Class Reunion activities, please contact Beth Manchester at em2702@columbia.edu or 212-854-4472.

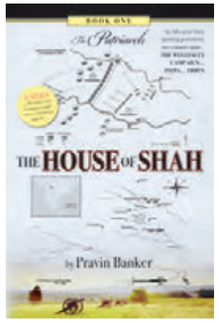
Robert Drucker writes, "Events for 2012 were a combination of history, some nostalgia, and the tragic consequences of Hurricane Sandy in the New York area. A visit to Honolulu earlier this year struck an emotional/patriotic chord at the USS *Arizona* and battleship *"Big Mo."* The U.S. Navy used the Classic Royal Hawaiian Hotel (aka the Pink Palace) for R&R in World War II. Its historical value is somewhat diminished now as its location is surrounded by shopping centers. On the European side of the world, we cruised from Venice into the Black Sea area, which brought us to the Greek Islands of Mykonos and Santorini, Olympia, Istanbul, Yalta, and Odessa, and returned via Athens. Istanbul brought back memories of two weeks working there on a U.S. government AID Project. We passed by the old office building as well as Topkapi Palace and major mosques often seen in tourist advertising for Turkey. Yalta was also of particular interest, as we had the opportunity to visit Livadia Palace where FDR, Churchill, and Stalin met in 1945. At the end of October, Hurricane Sandy brought many here days of no power and heat and/or loss of homes and basic communication. By December, signs of recovery appeared. The situation improvement allowed us to have personal family (and Columbia!) reunions with brother, Dr. Morris Drucker '67CC in Hilton Head Island, SC, son Dr. Michael Drucker BS'88 in Winston Salem, NC, and locally, daughters Ellen (Drucker) Albert '82BC and Dr. Beverly Drucker '94PS. Grandson Brian Albert BS'10 continues graduate work at MIT."

Laurence H. (Larry) Levin writes, "After 15 years in the field, I left aerospace, opened a real estate office (mostly small investment properties) in Santa Monica, CA. In 1990, I moved/semiretired to the north slope of San Gabriel mountains, 4,100 feet above sea level, in northern Los Angeles county. Location is about 25 miles due south of Edwards Air Force Base, so I get to see/hear lots of interesting aircraft.

"I serve (and have served) on several Los Angeles County boards/commissions. Most recently, I was appointed to—prepare yourself—the Alternative Technology Advisory Subcommittee of the Los Angeles County Solid Waste Management Committee/Integrated Waste Management Task Force. The length of the name is proportionate to the size of the waste disposal problem in Los Angeles County. I hope whatever remains of my Columbia Engineering (and subsequent RPI) experience will allow me to contribute to solving the problem.

"On the more personal side, I have three successful kids, seven grandkids, all living on the West Side of LA. The physicist (couldn't convince him to pursue engineering) is a Juno Project Scientist at JPL. Thirty-two of us attended the August 2011 launch at Canaveral.

"I married my second wife 15 years ago. We greatly enjoy our house, which is on 2½ rural acres in the high desert. We have great views, light snow a time or two per year, and plenty of areas for the dog to explore. My wife says that, during their morning walks, he often chases the coyotes. He's smarter than that behavior might indicate. Best to all!"



Pravin Banker's new novel will be published this spring.

1959

Class Correspondent:
Betsey Altman
bmeca@comcast.net

1960

At a recent event hosted by the Columbia University Club of Sarasota, attendees sang "Happy Birthday" to Robert Mendelson, who turned 80. He and his wife, Marion, drove from Venice to celebrate his birthday with fellow alumni. Other engineering alumni in the audience included Ed Fenton BS'48, MS'49, Milton Kruk BS'49, MS'50, George Ruhl BS'67, '70BUS, and local Club President Lee-En Chung BS'88, who emceed the luncheon.

1961

Luigi Giamundo has become a grandfather for the seventh time! Vittoria Maria was born November 29 and Luigi writes, "is a very pretty little girl with a lot of dark hair and blue eyes."

Nicolas Kariouk spent his professional career in the nuclear field designing nuclear submarines, nuclear power plants, etc. He writes, "Upon my retirement in 1995, I became frustrated on account of curtailed activity. As such, I enrolled as a full-time student at the Louisiana State University and earned a master's degree in anthropology, specializing in linguistics and cultural anthropology. At age 70, I was the oldest graduate on the LSU Commencement stage and accordingly, had my five minutes of fame on TV, newspapers, radio! An unexpected highlight resulted when one of my term papers evolved into a full book: *A Creole Lexicon, Architecture, Landscape, People*, published by LSU Press and available in most book stores."

1962

Class Correspondent:
Marshal (Mickey) Greenblatt
mg840@columbia.edu

Pravin Banker has completed a novel, *The House of Shah.* This story of his forefathers will be told in a series of three books, *The Patriarch, The Sinai Conspiracy,* and *The Money Trail,* and traces the roots of a family across generations. The first of the series will be available on Amazon in March. After graduating from Columbia, Pravin joined IBM where he spent almost two decades. During a stint as head of Treasury Operations for IBM World Trade, and as senior treasury consultant to the IBM treasurer, he had the chance to travel through all of Latin America and South East Asia. He writes, "While visiting Buenos Aires in 1976, I witnessed the Junta, led by Air Force General Jorge Videla, place Isabelita Perón on an Iberia flight to Madrid. The Argentina episode was chronicled in an article published in the *Harvard Business Review* in March of 1983." After leaving IBM, Pravin formed his own company, Pravin Banker Associates Ltd, gaining notoriety when it successfully sued Alberto Fujimori and the Republic of Peru in 1993, the success hinging on the support of then Deputy Treasury Secretary Dr. Lawrence Summers before the Second Circuit Court of Appeals. Pravin lives in Greenwich, CT, with his wife and they have two children. He has had numerous articles published at various times over the last 30 years, including in the *Harvard Business Review, The New York Times, The Wall Street Journal,* and *Financial Times of London.*

1963
50th Reunion

To take an active role in your Class Reunion activities, please contact Star Sawyer at ss3858@columbia.edu or 212-851-2402.

Class Correspondent:
Chuck Cole, ccole6250@att.net

1964

Class Correspondent:
Tom Magnani
tm421@columbia.edu

Larry Kuznetz MS'65 writes, "Other than a 10-year stint at UC Berkeley teaching Mars-related courses, I've been with NASA or its contractors since the Apollo era, when I was a wet-behind-the-ears member of the metabolic assessment team for the lunar surface EVAs. Some of my projects at the NASA Johnson, Kennedy and Ames Research Space Centers have included being part of the 'build team' that constructed space shuttle *Columbia;* designing talking, 'intelligent' spacesuits; investigating water and life on Mars; and education outreach programs for middle schools to universities. My publication list, though centered on human body heat transfer, also includes two peer-reviewed papers about water on Mars (including the first to show that liquid water could be stable on the surface); a novel and film treatment; *Mars for Dummies*; and a children's spacesuit book. I've also spent considerable time lecturing or appearing in public venues such as *The Tonight Show* and *Good Morning America.*

"In October 2010 I left the space agency to join public enrichment programs aboard cruise ships, where I now give lectures on a variety of topics related to space exploration that covers everything from ISS, to Mars, and beyond. Most recently I was involved in a last ditch attempt to save the space shuttle program, which is now under consideration for a documentary and film. I feel especially grateful and privileged to have participated in and been part of all of these exciting projects.

Larry Kuznetz tested spacesuits at NASA, Johnson Space Center.

"I've also been writing a novel, *CASI's Guess,* since 1989, when the story came to me in a vision following the return to flight of the shuttle program in the aftermath of the *Challenger* accident. While the first draft was completed rather quickly, it's taken all these intervening years to actually learn how to write and give the characters life. All I can say is, whew! It's now on Amazon, where it's getting good reviews. *CASI's Guess* is about the first human mission to Mars. There are of course, films and books galore about Mars, but *CASI's Guess* is not just another Mars novel. It's an environmental thriller combining the forewarning of *An Inconvenient Truth* with the aura of *2001: A Space Odyssey.* They are all packaged together in a good old-fashioned love story with a host of characters that includes a claustrophobic lesbian, a sexually repressed physician, a sultry mission navigator, a hard-drinking Russian commander, etc., in physical settings as diverse and spectacular as Mars, Antarctica, and Biosphere 2 in the Arizona desert. You can read more about it on Amazon. Whatever your vocation, inclination, or position in the space-time continuum, we all occupy a special spot in the universe. I hope *CASI's Guess* enhances that experience at a minimum. At a maximum, well I suppose the sky's the limit, no pun intended."

Neil Marmor MS'67, PhD'69 writes, "I stopped working full time for pay about six years ago. It was my choice. It took a year or so to get used to living [more frugally] off my accumulated capital. It also gave me the opportunity to decide what I wanted to do with what remains of my life. I quickly decided there wasn't enough time left to simply *spend* it. If I really wanted to do something, I would, instead, *invest* my time. Having been trained as an engineer several eons ago, I decided to develop a project plan. I knew I didn't want to wake up in a year's time and wonder where 12 months of my life had gone.

"The word retirement had connotations from my folks' generation: sit on the beach, read *The New York Times,* get sand in my shorts, and accumulate skin cancer. Not for me! Instead, I do some consulting for pay but invest more of my time doing pro bono work for arts and education organizations. Modern dance lessons in my 60s convinced me that a career in dance was not to be, at least in this lifetime. But I could apply my marketing and finance skills at the local ballet company, with an arts-in-education nonprofit, reading to kids, and teaching financial literacy to visually impaired teens as well as to adults living in shelters. My theory is that education can solve most of the problems in the world, and it's best to start with young kids.

"I also have had the good fortune to continue to enjoy theater and dance, the library, jogging, the company of several good friends, red wine, and occasional travel to places requiring a passport and inoculations to avoid dread diseases. I often thank my late parents for giving me a generous helping from the deep end of the gene pool. For a kid whose grandparents came over on the boat, in steerage, I've been incredibly fortunate. The education I received at Columbia was part of that good fortune. Life is good, and the beat goes on."

Joel R. Schiff reports that all is well. Joel and his wife are enjoying retirement in Williamsburg, VA. They spent a beautiful Thanksgiving with their daughter and her boyfriend and other friends. They plan to sell their existing home and downsize to a smaller townhome in the same city in James City County. Joel writes, "Wishing well for the New Year to all my classmates and their families!"

Michael Stamatelatos MS'65, EngScD'70 has been director of the Safety and Assurance Requirements Division in the Office of Safety and Mission Assurance at NASA Headquarters since October 2003. Michael is a recognized expert in risk and reliability assessment. He joined NASA in 2000 as manager of risk assessment in the Office of Safety and Mission Assurance. In that position, he was responsible for the development and application of probabilistic risk assessment (PRA) policy as well as for coordinating, overseeing, and integrating PRA programs and activities across the agency. He has developed, organized, and taught courses on quantitative risk assessment and risk-informed decision for managers and practitioners. He has lectured throughout NASA and to universities and government and industrial organizations. Michael is author or coauthor of more than 100 technical papers and reports. He is coauthor of: "NASA Procedures Guide for Probabilistic Risk Assessment," "NASA Fault Tree Handbook," "NASA Risk Management Handbook," and "NASA Accident Precursor Analysis Handbook." He is also coauthor of two book chapters on probabilistic risk assessment.

1965

After graduating from Columbia, **George Libman** worked 3 years as an engineer for, but not in, the Army. He writes, "then I spent 8 years as a patent examiner (during which time I attended evening law school after work for 4 years—a drag but not as difficult as engineering school), and 28 years as a government/corporate patent attorney, mostly working with creative people at Sandia National Labs in Albuquerque, NM. In 2004, my wife and I retired to Tucson, AZ, where I do absolutely nothing with patent law, but I do play either saxophone or clarinet in four musical groups. I had played both instruments with the Columbia band, then did not play either for 15 years."

1966

Neil A. Smith '65CC, '69LAW has been appointed by the U.S. Patent and Trademark Office/Department of Commerce to serve as an administrative patent judge on the new Patent Trial and Appeal Board (PTAB), which will hold hearings and decide important patent validity and related issues. Neil writes, "This is a great opportunity for me to serve the profession. I clerked for a judge on the predecessor to the Federal Circuit Court of Appeals in my early years (Giles S. Rich, Columbia Law) and have wanted to do something like this for the profession. They are opening a new PTO San Jose office. With the new patent law, the America Invents Act, the new PTAB will have greatly expanded jurisdiction for trials on important patent validity issues."

Jerome Wasserman writes, "To anyone visiting the Fort Lauderdale area any time between November and May, please email me at wassjy@yahoo.com if you'd like to go for a day sail on my sailboat!"

Jerome Wasserman

1967

Bill Quirk was elected to the California State Assembly on November 6 and was sworn in on December 3. Bill hopes to use his science and engineering education to develop policy to make it easier to integrate renewable energy into the electrical grid. Additionally, Bill is concerned about better funding of education, support for police and firefighters, and making it easier to start, grow, and keep a business in California.

1968
45th Reunion

To take an active role in your Class Reunion activities, please contact Star Sawyer at ss3858@columbia.edu or 212-851-2402.

John P. White '71GSAS drove his coach and team of four horses to a second-place ribbon at the recent Royal Horse Show in Toronto. The horse show portion of the Royal Agricultural Winter Fair was attended by an audience of 6,500 fans. This was John's third time participating. John, who has a farm in Stillwater, NJ, competed in the show with his mixed team of gray Czech Kladrubers and Andalusians.

1969

Class Correspondent:
Ron Mangione
Ronaldm@archeng.com

Mankind Project New England, part of a global nonprofit that offers men's programs, has named **Ron Goldman** as its 2012 Ron Hering Mission of Service Award winner. Ron Goldman's mission is to create a more peaceful and loving world by raising awareness about the unrecognized pain and harm experienced by children due to specific American cultural beliefs and practices. Ron worked as a consulting engineer for various firms before starting his own consulting company. He also sings and plays guitar professionally. His interest in psychology came later, and he returned to school in order to pursue his mission. Ron is a researcher, speaker, writer, counselor, and founder of the Circumcision Resource Center, a nonprofit educational organization that raises awareness about the harm of circumcision and facilitates healing. He has a PhD in psychology and is the author of *Circumcision: The Hidden Trauma,* endorsed by dozens of professionals in mental health, medicine, and social science. His work is internationally known and published in newspapers, magazines, symposia proceedings, textbooks, and medical journals. Ron teaches that human problems often start at the beginning of life and can be connected to limiting cultural attitudes toward infants. He writes, "Consequently, 'normal' medical and childcare practices may cause unrecognized trauma. A serious result of early trauma is disruption of the mother-child bond, and this generally affects future social behavior. Avoiding early trauma is an essential part of creating a more peaceful and loving society. My ideas challenge us to question certain beliefs and rediscover what is natural, consistent with our instincts, and satisfies children's needs."

1970

Geoffrey Akers MS'70, MS'71 was accepted to a tier 1 law school in Chicago with a partial merit scholarship. He anticipates study this year for patent law.

Chester Lee '74BUS happily reports that his son, **Douglas Lee BS'06,** got married to Kiki Sung on November 17 in Jamaica. Several SEAS and Columbia alumni attended! Chester's oldest son, Michael (a Penn graduate) and wife Grace are parents to a baby boy born January 17, 2013.

1972

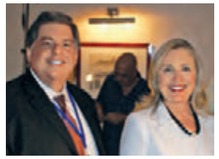
Dr. Slade Gellin is a professor of mechanical engineering at SUNY Buffalo State. He is married (for 36 years!) and has five children and six grandchildren. He met with Professor Mort Friedman last February and writes that it was "so good to see that he is active and doing well."

1973
40th Reunion

To take an active role in your Class Reunion activities, please contact Star Sawyer at ss3858@columbia.edu or 212-851-2402.

1974

Thomas M. Giusto '75JRN just completed 30 years working as a producer for ABC News in Washington, DC. He writes, "Last year was an exceptional year of foreign travel highlighted by two trips around the world covering former Secretary of State Hillary Rodham Clinton. In July we embarked on the most grueling trip even she has ever taken; 27,000 miles, 14 cities, and 12 countries all in 12 days: Paris, France; Kabul, Afghanistan; Tokyo, Japan; Ulaanbaatar, Mongolia; Hanoi, Vietnam; Vientiane, Laos; Phnom Penh and Siem Reap, Cambodia; Cairo and Alexandria, Egypt; and Jerusalem, Israel. Plus, refueling stops in Almaty, Kazakhstan; Abu Dhabi, United Arab Emirates; and Shannon, Ireland. Each day on



Thomas Giusto with then Secretary of State Clinton

average, we logged the equivalent of flying across the United States. The mornings were early, the evenings late, and sleep was the most precious commodity. The adventure was an unforgettable mix of cultures, countries, and time zones. There were moments that took your breath away, and moments when you wanted to take someone else's breath away. From planes to palaces we sped off in motorcades. We had to dodge flying fruit thrown by demonstrators in Alexandria, and we were saved by a pair of pajama bottoms that covered forbidden blue jeans in Mongolia. For the tireless Mrs. Clinton it was just another diplomatic jaunt. She never broke a sweat."

1975

Billie Tekel Elias writes, "My son is enjoying his freshman year at MIT. He is working on a research project at the Media Lab called CrowdCounsel: Crowd-Powered Emotion Regulation. I have been investigating my genealogical past and have learned of distant relatives who lived in Nagasaki and Shanghai, circa 1900."

1976

Robert J. Osterman writes, "I retired from Ford Motor Co. in 2007. I am currently living in warm, sunny Mississippi. You Yankees don't know what you're missing!"

1978
35th Reunion

To take an active role in your Class Reunion activities, please contact Star Sawyer at ss3858@columbia.edu or 212-851-2402.

Class Correspondents:
Larry Chung
lpc34@columbia.edu

Peter Luccarelli
peter.luccarelli@pliplaw.com

Al McGovern celebrated 30 years of happy marriage to Mary Jo (Moriarty) McGovern. He and his wife reside in Naperville, IL, and Al is the director of mechanical engineering for Shure Incorporated. Their son is engaged to be married this year in Cleveland, their middle daughter is a nurse in Denver, CO, and their youngest daughter will graduate this spring from the Fashion Institute of Technology in New York City.

Al McGovern and wife, Mary Jo

1979

Class Correspondent:
Stewart Levy, srlevy@att.net

1980

Jim DeFilippis MS'90 writes, "This has been a year of change. Working on the London Olympics as part of the host 3-D channel delivering more than 12 hours of live 3-D coverage, finishing up 15 years at the FOX Technology Group developing new technology for use by FOX Television, and in October, receiving the David Sarnoff Medal from the Society of Motion Picture and Television Engineers (SMPTE). Looking forward to consulting in the television and media sector. I'm the proud father of two children, Jacob, a sophomore at UC Santa Cruz studying physics, and Juliana, a junior in high school. My wife, Maggie, has been my steadfast companion over the last 20-plus years."

Bob Eisler MS'81 passed the Patent Bar Exam and will be a registered practitioner at the U.S. Patent and Trademark Office. He will represent third parties in preparing patent applications, prosecuting patents, performing due diligence, and using his MBA (UCLA), will perform patent valuations as well as negotiate license deals. Bob also was awarded his own U.S. patent (2011) as an inventor for a Traumatic Brain Injury (TBI) Biomarker Diagnostic field kit enabling combat medics to diagnose TBI on the battlefield.

William Bradley O'Connor has just published his first book, *Stealth Fighter: A Year in the Life of an F-117 Pilot* (Zenith Press). William, a Lt. Col., USAF (ret.), began his F-117 training in May 1998, and his book focuses on the following year of his life as he completes his training and enters combat when continuing turmoil in the former republics of Yugoslavia leads to a NATO bombing campaign. He recently completed a 26-year career as an aviator in the U.S. Air Force and completed tours of duty flying eight different types of jets, including assignments as an exchange officer to both the Egyptian Air Force and the U.S. Navy. He flew 79 combat sorties over Iraq during the "no fly-zone" years before being selected to join the cadre of F-117 Stealth Fighter pilots at Holloman AFB, NM. His final active-duty assignment was to Sheppard AFB, TX, where he was an instructor pilot and the U.S. senior national representative to the NATO fighter pilot training program for almost five years. William amassed 6,077 jet flight hours as a fighter, test, and instructor pilot before retiring. He currently lives in North Texas.

1981

Class Correspondent:
James F. Reda, jfreda@jfreda.com

Alan Crosswell MS'85 writes, "I'm still working at Columbia as I have been since I was an undergraduate. I recently joined the board of directors of the Armstrong Memorial Research Foundation, which serves to memorialize the genius of Edwin Howard Armstrong, whose bust is on the 13th floor of Mudd, right next to Michael I. Pupin's, and whose lab in Philosophy Hall is on

Lt. Col. William Bradley O'Connor

the National Register of Historic Places. I continue to be involved in the Columbia University Amateur Radio Club, which is now sporting some new antennas on the roof of Mudd."

James Reda sold his consulting firm to Arthur J. Gallagher (NYSE:AJG) in February 2011. He is still working on a three-year employment agreement and is based in Times Square in New York City. He invites classmates to come by and say hello!

1982

Class Correspondent:
Dan Libby, kdl26@columbia.edu

Bo L. Hung Tran MS'83 is the product manager in the Global Mining and Mineral Processing Unit of Nalco Company in Naperville, IL. He holds more than 20 patents and patent-pending inventions related to mining and mineral processing. Most of his inventions revolve around using green chemistry derived from renewable resources. He has several patented/patent-pending inventions related to mineral beneficiation. He writes, "The inventions enhance differences in hydrophobicity of the minerals, aiding in their separation and concentration. My inventions are applied at mines globally. Other patented inventions allow coal to be handled in freezing weather, utilizing crude glycerin, a green by-product from biodiesel production, to soften ice crystals. When applied onto coal, crude glycerin will prevent coal from clumping together in railcars in cold weather, as coal can contain about 10 percent moisture that will crystallize in freezing weather. The softened ice crystals will break, allowing the coal to be transferred in cold weather. My invention rapidly became the coal industry standard and is used ubiquitously about the Appalachian coal region of the United States. Crude glycerin also prevents dust generation from mining activities." Bo has more recent patents related to grinding clinkers (limestones and clay) in cement production. He writes, "Grinding operation at cement plants consume substantial energy. My invention reduces power consumption by improving clinker grinding efficiency and cement handling. A major multinational cement manufacturer is currently running tests employing my invention." Even in his spare time, Bo enjoys inventing. He recently filed a patent application on preventing gout attack using himself as the guinea pig. He remains an active alumnus, participating in activities in the Chicago area. Last summer, he welcomed the Class of 2016 (Engineering and College) from the Midwest. He was the alumnus speaker at the event, held at the Latin School (Chicago, IL). Bo is married to Joan Lynch, MD. They live with their two children, William and Siobhan, in an 1891 Chicago brownstone that he rehabbed. This year, Bo plans to apply for the Engineering School's Egleston Medal.

1983
30th Reunion

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1984

James Pastoriza is the managing partner at TDF, a venture capital fund in Washington, DC, focused on the communications sector. Before TDF, James was a partner at JPMorgan Capital in San Francisco and a partner at AT&T Ventures. He started his career in operating jobs at AT&T after graduating from Columbia and after graduate school at MIT.

1985

Robert Petrelli MS'86 writes that he's a "proud father of Alexa Petrelli '12CC [who majored in biochemistry]. Anyone need a bright, hardworking biochemist?!"

1987

Stanley Chao has written a new book, *Selling to China: A Guide to Doing Business for Small- and Medium-Sized Companies,* published in November. The book is based on Chao's 20 years of experience working and living in China, and consulting on more than 100 China-related projects. Chao gives real-life, down-to-earth advice for business people on how to conduct business in China, containing many anecdotes and stories of his own business successes and failures. The book disproves many of the oversimplified and exaggerated conventional wisdoms about China and offers alternative solutions to or descriptions of what is really happening.

Stanley Chao's new book was published in November 2012.

In June of 2012, Chris Kalish completed the closeout of the General Electric edgelab, where he served as the director for close to 12 years. As a GE academic research facility, the lab served as a center of excellence for new product

Carolyn Wang-Yong and David Yong MS'97 with their two children

Michael Chung's daughter, Isabella

Nate Lesser and family

introductions, econometrics/ financial modeling, and data analytics. The lab toured close to 2,000 visitors per year, showcasing emerging technologies and modeling techniques to academics, industry partners, and technology enthusiasts. It even served as the host for the 2010 Connecticut gubernatorial technology debate. Currently a management consultant at TJX Companies, Chris chairs the Connecticut Technology Council and lives in Westchester County, New York, with his twin teenage children. Chris is still active with Columbia ARC (Alumni Representative Committee) and does interviews and college fairs for Columbia.

Chris Kalish and his twins in NYC

1988
25th Reunion

To take an active role in your Class Reunion activities, please contact Star Sawyer at ss3858@columbia .edu or 212-851-2402.

Class Correspondents:
Caryn Frick
carynfrick@gmail.com

Elaine Loumbas
ElaineZL@aol.com

David Shofi
dshofi@atmi.com

1989

Class Correspondent:
Shre Roy, Shre.roy@att.net

1990

Class Correspondent:
Laura Cordani Christopher
zchristophers@gmail.com

1991

Class Correspondent:
Radhi Majmudar
radhi@majmudar.org

Pavanjit Singh Dhingra writes, "Columbia is very close to my heart. I found the love of my life there—my wife, Alda '91CC. I rowed on the crew team, helped found the Cricket Club, and became the person I am. Alda and I are proud that our son Amar Singh Dhingra joined SEAS this year for the undergraduate Class of 2016. We had the opportunity to participate at the Convocation and it was amazing. The campus is revitalized, and Morningside Heights is so much better than what I remember. Alda and I run India's largest corporate insurance brokering company called Prudent. We are lucky that we get to work together and share that part of our life. It also allows us to travel together internationally on work, which is great. Our daughter, Sana Kaur Dhingra, 17, started 12th grade in January. She will be applying for college during the next year as well. We live in Gurgaon (part of the Delhi National Capital Region) in North India and greatly enjoy it here."

1992

Class Correspondent:
Janneth Ignacio Marcelo
jannethmarcelo@gmail.com

1993
20th Reunion

To take an active role in your Class Reunion activities, please contact Cliff Massey at cam2171@columbia .edu or 212-854-2317.

Class Correspondent:
Herbert Kreyszig
Hek7000@gmail.com

1996

Class Correspondent:
Enrico Marini Fichera
em75@columbia.edu

Frank A. Y. Wang MS'96 started Athena Capital Management in Taiwan in September 2012 focusing on undervalued, under-researched companies in Taiwan. Frank has continued to raise new funds and make new investments as he finds good opportunity. He looks to institutionalize an overlooked public equity market in Taiwan. He can be reached by former classmates at frankaywang@athenatw.com.

1997

Class Correspondent:
Kelly Lenz, kal23@columbia.edu

1998
15th Reunion

To take an active role in your Class Reunion activities, please contact Cliff Massey at cam2171@columbia .edu or 212-854-2317.

Class Correspondent:
Pak Li
pakping@yahoo.com

Ebony Love has recently authored two nonfiction books about quilting. One is called *The Big Little Book of Fabric Die Cutting Tips* (November 2012) and the other is *Notes & Doodles: A Die Cutting Sketchbook* (January 2013). Both books are available on Amazon, and according to Ebony, *Big Little Book* is regularly in the Top 100 in the Consumer Guides and Quilts & Quilting categories.

Ebony Love
Photo Credit: Rebecca Fons

SEAS alumni reunited for Steven Tommasini's wedding last July. Steven and his bride, Lynn, pictured in the center.

In 2008, Carolyn Wang-Yong MS'99 and husband, David Yong MS'97, moved to Singapore, where they are happily raising two wonderful kids, Maggie, age five, and Matias, age three.

2000

Class Correspondent:
Daisy Chow
daisy@caa.columbia.edu

Michael Chung and wife Audrey Lee '00BC welcomed their daughter, Isabella Lee Chung, on July 13, 2011. They reside on the Upper West Side in New York City and agree that life with baby could not be sweeter. In addition to celebrating their daughter's first birthday this past July, they also reached a very special milestone—their 10-year wedding anniversary!

Stephen Del Percio and wife, Allison, welcomed their first child, a daughter, Charlotte Del Percio, on September 5, 2012.

Nate Lesser MS'05 and Karen (Chani) Bloom '00CC and their two daughters (Aliza and Liana) welcomed a new baby boy (Eitan) last September. Everyone is happy and healthy living in the Shepherd Park neighborhood of Washington, DC. Chani is working as a trial attorney in the Civil Division at the Department of Justice. Nate is about to start a new job as the deputy director of the National Cybersecurity Center of Excellence (NCCoE). The NCCoE is a public-private collaboration for accelerating the widespread adoption of integrated cybersecurity tools and technologies.

Viktoriya Sokolova MS'03 and husband, Oleg, welcomed their firstborn, a son, Daniel H. Zeltser, on November 5, 2012. Viktoriya writes that they had Daniel "right in between the tail end of Hurricane Sandy and the snow storm. Since the NYU hospital, which we were assigned to, remained closed, I delivered at Lenox Hill. The baby is doing great, but the mother and father are somewhat sleep deprived!"

Steven Tommasini writes, "In July, I married Lynn Copes '05CC in Battery Park, New York City! Sharing in the celebration were several classmates and Columbians. We are currently living in New Haven, where Lynn is teaching anatomy to first-year medical students at Yale, and I am an assistant professor in orthopaedics at the Med School."

2002

Class Correspondent:
John Morris
jpm53@columbia.edu

2003
10th Reunion

To take an active role in your Class Reunion activities, please contact Cliff Massey at cam2171@columbia .edu or 212-854-2317.

Class Correspondent:
Amar Doshi
abd19@columbia.edu

Aylin Kim hopes to have her first medical device FDA approved and commercially available this year! She is also expecting the birth of her second child in May, so she'll miss the 10-Year Reunion, but she loves living in the Pacific Northwest and invites friends to come visit her and her family anytime!

Veru Narula writes, "It has been 10 years since my engineering undergraduate years, and I recently returned to Columbia to complete my Executive MBA. By day, I work at American Express as a marketing

Viktoriya Sokolova with baby Daniel and husband, Oleg

Sara Kim BS'02 and Stephen Muench BS'02 welcomed their baby boy, Aiden Liam Muench, on September 22, 2012.

Aylin Kim with her family

Veru Narula pictured with his family

Mark Backman and Mattie Ruth Kramer on their wedding day

Members of the Class of 2003 met up at Twin Peaks in San Francisco in November for an informal reunion. All four grew up in New Jersey and became best friends through their years at Columbia, and now all live on the West Coast. From left to right: Rasheq Zarif (Santa Clara, CA), John Sebastian (Salt Lake City), Dan Chern (Sacramento, CA), and Cheung Li (San Francisco).

director, combining my love of analytics with a passion for the customer and consumer trends. After graduation I always kept my hand in the arts, and I wrote and published my first novel, *The Vital Breath.* I also pursued the fine arts as a visual artist, and my paintings have been acquired by museums and reviewed in *The New York Times.* The joy of my last decade though is the time I spend with my rambunctious three-year-old daughter and amazing wife."

Gary Shu is a USAID Foreign Service Officer in Tbilisi, Georgia, working in the Office of Energy and Environment. This summer, he will arrive in the USAID Mission Afghanistan as a division chief in the Office of Economic Growth and Infrastructure.

2004

Class Correspondent:
Eric Rhee, eric.rhee@gmail.com

Howard Chu writes, "It has been six years since I moved back from New York to Hong Kong, and I have been with JPMorgan since. I have held various positions in the fixed income division, and most recently, I have been serving as the vice president on Asia Bond Syndicate, helping Asian companies to raise funds in the bond markets over the past three and a half years. In my free time, I continue to play golf, tennis, and basketball (with fellow Columbia alumni who live in HK now!), and I am very lucky to have traveled to more than 10 countries (Korea, Singapore, Taiwan, India, and more) just over the past two years! I would like to wish everyone a happy and healthy 2013!"

Eric Rhee writes, "Hello, Class of 2004! By the time you read this, we will be counting down the months to our 10-Year Class Reunion. Yup, 10. Year. Reunion. Feel old yet? We are starting to see many of our classmates starting their own families by adding kids. A big congratulations to **Shirley Cho Fulmer** and her husband, Ryan, who recently had their first child, Hannah. **John Park** is married to Rana Park and they live in Orangeburg, NY, with their two kids. And **Caleb Chu** is still living in New York with his wife, Diana Lo, and their daughter, Eliana Chu.

"**Sachin Nene** is now using his computer science skills at OPOWER and lives in Washington, DC. **Jieyoun Yang** recently joined the family pyrochemical business and travels back and forth between New York and Los Angeles. **JiWon Kim** is now a pediatrics resident at NewYork-Presbyterian Hospital. **Byron Gaing** is also married and is a doctor at North Shore University Hospital in Manhasset.

"Congratulations to **Nai Nan Ko,** who recently opened a brand new, state-of-the-art Toyota dealership this past October in Wellesley. In his free time, he races sports cars and is also a racing instructor. Until next time, start marking your calendars for the 10-Year Reunion, coming Summer 2014!"

2005

Class Correspondent:
Devang Doshi
devang.doshi@gmail.com

Devang Doshi writes, "Happy New Year Class of 2005! 2012 went out with a bang, as members of our class continue to make strides in their careers, and commitments to their significant others. Wedding season is in the air, and I would like to congratulate a few members of our class. Congratulations to **Girish Gupta,** who said his vows in July. Girish recently moved back to New York and currently works as a product manager at Amplify Learning, building new tablet-based products for the classroom.

Congratulations as well to **Mark Backman,** who married Mattie Ruth Kramer (Vanderbilt alum) in October. Mark and his wife both currently live in Los Angeles and work at Oblong Industries, a software technology start-up. 2013 will be another year decorated in '05 matrimony, as **Candace Park, Amil Mody,** and **Vivek Natarajan** are set to marry in September. For those who were premed in '05, 2012 is the start of the fellowship process. Congratulations to Dr. **Linnea Goodman,** for matching in OB/GYN at Cleveland Clinic, and Dr. **Praveen Rao,** for matching in cardiology at Washington University in St. Louis, MO. Last, in October I moved from New York to the DC-metro area, leaving my first and only job after graduation. For any alums that are in the area and would like to meet up, please reach out! Looking forward to your continued updates in the months to come and wish you all the best for 2013."

Shamafa Ali (Khan) and **Raihan Ali BS'98** got married on July 7, 2012. Shamafa writes, "Interestingly enough, we did not attend Columbia at the same time, but life has a funny way of working things out so that one Columbia engineer ends up finding another and then they end up getting hitched! We got married in northern New Jersey. Raihan actually proposed on College Walk. We currently live in New York City and both work in finance. We often reminisce about our college years and all the hours we spent in Mudd—Columbia definitely holds a special place in our hearts!"

Sean Kelly's company, HUMAN Healthy Vending, was recently listed on *Forbes*'s prestigious list of America's Most Promising Companies for the second consecutive year. The list touts 100 privately held, high-growth companies with bright futures. Sean, who is the CEO and cofounder of HUMAN Healthy Vending, also ranked on *Forbes*'s 30 under 30 list in 2012. Since its inception in 2009, HUMAN Healthy Vending has averaged more than 100 percent growth annually, and with a rapidly growing network of almost 1,500 healthy vending machines in the field, it is getting closer to reaching its vision: "to make healthy food more convenient than junk food." Based in Los Angeles, CA, the company provides high-tech, eco-friendly vending machines that only stock healthy foods and drinks, including fresh produce and locally sourced foods, in schools, hospitals, gyms, and businesses worldwide.

Arturo Pelaez met his wife while working in London for Citigroup. His wife, Frances Izzo, is a graduate of Boston College. They now reside

Arturo Pelaez ties the knot at Columbia's St. Paul's Chapel.

in New York City. Arturo and Frances wed on October 27, 2012, just before Hurricane Sandy hit New York. He writes, "We had surprisingly warm weather and even had a rainbow appear as we left St. Paul's Chapel to the waiting sounds of a mariachi walking band leading the way to the reception at Riverside Church. Father Dan O'Reilly of the campus ministry was the celebrant for our ceremony."

2006

Class Correspondent:
Nick Jennings
nfj2003@caa.columbia.edu

Douglas Lee married Kiki Sung on November 17 in Jamaica. Several SEAS and Columbia alumni attended!

2007

Class Correspondent:
Tamsin Davies
tamsin.davies@gmail.com

2008
5th Reunion

To take an active role in your Class Reunion activities, please contact Cliff Massey at cam2171@columbia.edu or 212-854-2317.

Class Correspondent:
Amy Lin
seas2008.engineeringnews@gmail.com

Stephen Robinson is living in New York City on the Upper East Side. He works as a quantitative analyst for Brevan Howard, one of the giants of hedge fund investing.

2009

Class Correspondent:
Ramya Pratiwadi
ramyap@gmail.com

Ramón Olmos Torres left investment banking more than a year ago to pursue a career in acting. So far, he reports that it's going well. He recently appeared on the hit show *Smash!* He is also a member of BAT, the resident acting company at the Flea Theater in New York. In November, he was in *The Water Children,* a comic drama that was reviewed by *The New York Times.* Separate from acting news, Ramón is currently working with another SEAS alum on a new app for actors that they hope to launch later this year. The app tracks information about an actor's financial and career developments in addition to providing data analytics. It will launch on several mobile platforms in order to facilitate use for actors who are always on the go.

2010

Class Correspondent:
Michelle Madejski
michelle.madejski@gmail.com

2011

Class Correspondent:
Justin Merced
jmm2238@columbia.edu

Dan Lee married **Axel Saenz** in California in 2012. They are happily waiting to adopt a baby from China or Mexico.

2012

Class Correspondents:
Rebecca Frauzem
rfrauzem@sbcglobal.net

Hannah Cui
hannah.cui@gmail.com

Rebecca Frauzem writes, "Happy New Year Class of 2012! I know we just graduated a couple of months ago, but time goes by so quickly! I hope those of you in New York had fun watching the ball drop and to everyone else, I hope you start the new year in style. Shout-outs to some of you who are doing great things at Google, on Wall Street, and all around the globe! Can't wait to hear more about the great things everyone is up to."

Kristina Chen and **Mike Fusella** are recently engaged. The two SEAS alumni have been dating for three years.

Juan Londono recently joined Barrick Gold Corporation as a junior metallurgical engineer at a gold mine in Elko, NV.

Doug Lee weds Kiki Sung.

Mike Fusella and Kristina Chen set to marry.

Juan Londono at his office

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engineering.mag@columbia.edu

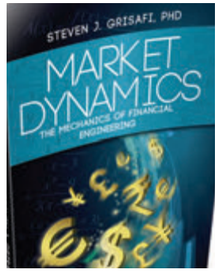
DEAN'S DAY
JUNE 1, 2013

REUNION WEEKEND
MAY 30–JUNE 2, 2013

Correction: In the fall 2012 edition of Class Notes, we mistakenly published Reunion Class Photos that did not include any Engineering alumni. Some of the photos published in Class Notes contained alumni from Columbia College only.

Program Notes

Graduate Alumni



Steven Grisafi's new books hit the shelves in December.

Stefano Angelini on a trip to Bordeaux

Seth Greenwald

BIOMEDICAL ENGINEERING

Anne Marie Suozzi MS'04 is currently on the CUNY faculty and a lecturer at several additional Catholic and private universities and colleges in the tristate area, including Seton Hall University, St. Francis College, and Kean University. Anne Marie is also the director and founder of Intelligential Professional Academic Support. In the fall of 2013, Anne plans to return to medical school to complete her MD. She also is engaged to Sir Robert Rivest with a wedding date set for June 29, 2013. Anne Marie writes, "We are very, very happy and strongly support the missionary spirit of the Roman Catholic Church. We anticipate one or two children by 2016 or so, to be raised according to our beloved Catholic faith."

CHEMICAL ENGINEERING

Steven J. Grisafi MS'79, PhD'86 has just released two books, *Market Dynamics* and *Price Dumbbells.* He writes, "The two books start my investigation into the field I call finance rheology. I am applying the principles and techniques that I have learned over the past 26 years since I earned my PhD at Columbia in the physical science of rheology to the economic science of finance. I'm essentially inventing the subject, developing it as I learn. Readers can expect more from me on this subject coming in 2013 as I develop my theory of market isosurfaces."

Mark Spector MS'79 is a self-employed patent attorney and a former U.S. patent examiner. Mark is married and living in Arlington, VA.

CIVIL ENGINEERING AND ENGINEERING MECHANICS

After graduation, **Marc Adwan MS'12** took three months off to return to his country, Lebanon. He is currently working in Riyadh, Kingdom of Saudi Arabia, at Al Arrab Construction Company as a section manager and assistant to the COO.

Stefano Angelini MS'11 returned to Bologna, Italy, after graduation. He spent the summer with friends and family, and in October of 2011, he started working for the Transportation Engineering Department at University of Bologna, where he conducted research on railway infrastructure maintenance. He writes, "I developed a research on link importance in road networks during this year, publishing two papers and presenting the results of my research in an international conference in Portorose (ICTS 2012), and I passed the Italian P.E. exam, becoming a chartered engineer in Italy." Stefano now works in Forli, Italy, as a transportation engineer at ATR, a mobility agency. He hopes to visit New York City soon to see friends and return to some of his favorite places, including the campus!

Seth Greenwald MS'62 is the developer and organizer of the Current Concepts in Joint Replacement (CCJR) educational meetings, focused on hip and knee arthroplasty. He is recognized as one of the leading figures in international orthopaedics and is also the head of the Orthopaedic Research Laboratories in Cleveland, OH. A CCJR meeting was just held in Beijing, China, in November in conjunction with the Seventh International Congress of the Chinese Orthopaedic Association. The goal was to bring CCJR's format of learning directly to a growing number of Chinese orthopaedic surgeons in a manner that facilitates comprehension in both Mandarin and English. The CCJR meetings are globally attended by more than 2,000 orthopaedic surgeons annually. Its next meeting is set for May in Las Vegas, NV.

Enrica Oliva MS'07, a senior engineer at Thornton Tomasetti, is currently working on the design of the Oilers Arena in Edmonton, as well as on the Wishard Pavilion in Indianapolis, the Lake Nona Life Sciences Building in Florida, and on a number of smaller projects in New York City. She writes, "The project that I've worked on for the longest time since I joined the firm, the Barclays Center Arena, finally opened, and my team went there for the Jay Z concert at the beginning of October. It felt great to walk around and step on the floor framing that I have designed, walk up and down stairs and escalators that I have designed, take the elevators that I worked so hard to coordinate and design. The Barclays Arena was a great opportunity to get involved in very complex modeling, as well as—later on in the game—meetings, coordination, presentations, and also business developing experiences." In personal news, Enrica turned 30 in September and says she has found love. Her boyfriend is a musician at the Teatro Alla Scala in Milan, as well as at the Mahler Chamber Orchestra in Germany. She recently traveled to Berlin, spent the holidays at home in Italy, and in Vienna for New Year's.

Andreas Rambalakos PhD'06 writes, "Since July of 2008, I have been working as an aerospace engineer/technical specialist for the New York Aircraft Certification Office of the Federal Aviation Administration (FAA). My technical specialty is in fatigue and damage tolerance of aircraft structures. Prior to coming to the FAA, I was the manager of the Structures Engineering Division of Service Engineering for Dassault Falcon Jet (DFJ) Corp. I managed a group of structures engineers who provided engineering support for the maintenance of the Dassault Falcon Jet fleet operating in the Western Hemisphere. Prior to working for DFJ, I worked as an aerospace engineer (Structures) for the Department of the Navy/Department of Defense (1994–1999) on the A-7 Corsair and F-14 Tomcat programs. While working full time at DFJ (from November 1999 to July 2008), I was a part-time doctoral student at the CEEM Department of SEAS at Columbia University (2001–2006). I obtained my PhD in May of 2006 and Professor Deodatis was my adviser along with Professor Betti. My doctoral dissertation got published with the following title: 'Monte Carlo Simulation Methodology for the Reliability of Aircraft Structures—Reliability of Aircraft Structures Under Damage Tolerance Requirements' (ISBN: 978-3-8364-7348-4). I am married to Anna Kapsalis-Rambalakos, MD, and we have a seven-year-old son, Yianne, who is in the second grade. Almost every year, we go to Greece to visit our family and friends and to enjoy the beauties and history of the birthplace of Western Civilization."

COMPUTER ENGINEERING

Vinay Sharma MS'11 currently works for Intel as a graphics hardware validation engineer. Vinay writes, "It has been two years since I left Manhattan and I have found this to be an abrupt change having lived in bustling New York City and beautiful Bangalore (India) from where I come. Professionally, I am very content working for a giant like Intel and my professors at Columbia University trained me well to perform well at my job. On a personal front, I have been a painter since the age of five. Somewhere down the line I forgot that and was just focusing on being an engineer, which, I love being as much as I love being an artist. I think they are both very creative fields and that I have found a very good balance. I kick started my passion for art in 2012 and made a lot of abstract fusion pieces and did a lot of acrylic paintings and oil paintings. I continue to learn and create more art every chance I get. I firmly believe in a very famous quote by Coco Chanel: 'In order to be irreplaceable one must always be different.'" Vinay describes himself as an abstract fusion artist, and he is based in Sacramento, CA. He is excited to report that he has three art shows lined up this year in downtown Sacramento; in Palo Alto, CA; and on the Intel campus in Folsom, CA.

COMPUTER SCIENCE

Ivy Deliz MS'10 is a software developer in the Human-Computer Interaction Group at NASA Ames Research Center in Mountain View, CA. The group develops SPIFe (Scheduling and Planning Interface for Exploration), which are tools used for planning operations and modeling resources customized for several NASA missions. They support astronaut/crew members operations, power planning, and attitude control for the International Space Station, operations for LADEE (Lunar Atmosphere and Dust Environment Explorer) orbiter that will launch during 2013, and science operations for the Mars Science Laboratory, *Curiosity*, which landed August 2012. She completed her master's in computer vision and graphics at the Engineering School, where she worked under the mentorship of Sean White (PhD'09) and Computer Science Professor Steven Feiner in the Computer Graphics and User Interface Laboratory. During her last year at Columbia, she collaborated with Feiner, White, and Computer Science Professor Peter Belhumeur on Leafsnap, an electronic field guide on the iPhone and iPad that identifies tree species from photographs of their leaves.

Howard Zhu MS'02 currently works in Hong Kong as a client portfolio manager at ING Investment Management.

In 2012, **Nikolai Yakovenko MS'05** founded the Chadwick Project, an artificial intelligence start-up focusing on the automated coverage of live sports events through text updates for mobile devices. He writes, "We use language generation and language understanding to turn structured data (game facts) and unstructured data (what experts are saying on Twitter) into live coverage of your favorite NBA and NCAA basketball games, pushed to your mobile device." Nikolai used to work at Google as a search engineer.

EARTH AND ENVIRONMENTAL ENGINEERING

Ranjith Annepu MS'11 will publish a report, "Observations from India's Crisis" about the impending waste management crisis in India on Waste-to-Energy Research Technology Council's website (wtert.org) and Columbia's Earth Engineering Center, where he is currently a research associate. Ranjith writes, "I have been trying to bring more attention to solid waste management as a priority issue. This is another one of my attempts where the entire report was written with mainstream media in mind. I want to make sure the general public and decision makers understand the issue and see it as it is. Long-term sustainability in waste management cannot be achieved without such public awareness."

Andreas Rambalakos

Fusion artwork by Vinay Sharma

Ivy Deliz and colleagues at work at NASA Ames Research Center

Howard Zhu

Hope Connolly and her fiancé the day of their engagement in Princeton

Kun-Yi Lin and wife, Diane, at graduation

Udayana Ganepola and his wife, Malka

Hope Connolly MS'12 got engaged to Daniel Gadala-Maria, whom she met while they were both freshmen at Princeton University. They have been dating since 2006. After graduating from Columbia, Hope moved to Middletown, CT, to be closer to Daniel while he finishes his PhD in biology at Yale. She currently works at consulting firm Accenture in Hartford, CT.

Kun-Yi Lin PhD'11 did his postdoctoral research at University of Notre Dame. Effective February 1, 2013, Kun-Yu will join National Chung-Hsing University, located in central Taiwan, as assistant professor in the Department of Environmental Engineering.

Jeremy Wietrzykowski MS'11 is currently working in Silicon Valley as an innovation analyst in the smart grid area. He writes, "In this start-up rich environment, new technologies can help electric utilities achieve the deployment of their smart grid and enhance the overall efficiency and reliability of the electrical network."

Nathaniel Thayer Wight MS'12 is a public high school teacher at Bronx Design & Construction Academy (BDCA). His students recently collaborated with Columbia University to build a model Green Roof Integrated Photovoltaic Canopy (GRiPV-c) on the BDCA's green roof. Nathaniel writes, "Several of my high school students were vital in the construction of the model homes (built in our shop classes) and were deeply involved in the data collecting process." The team of students was chosen as finalists after submitting a proposal for a $100,000 grant through the Zayed Future Energy Prize to turn their GRiPV-c pilot study into a full-scale system on their school's rooftop. As finalists, the BDCA team traveled to Abu Dhabi in January and presented their GRiPV-c at the World Future Energy Summit during Abu Dhabi Sustainability Week. They won second place for all of the Americas!

ELECTRICAL ENGINEERING

Udayana (Dyan) Ganepola MS'77 works as a director in the technology department at MTA Bridges and Tunnels in New York City. As a hobby, he experiments and tweaks household systems such as the home theater and other entertainment systems. These experiments have led Udayana to some innovative ideas, especially in an experiment that helped his family get through the Hurricane Sandy disaster of 2012. He writes, "In the wake of previous storms I have been experimenting to devise a cost-effective emergency backup system for my house that is both safe and environmentally friendly. The saying 'Necessity is the mother of invention' rang true when I used the Sandy disaster to turn my experiments and research into practical use. My instinct was to use car batteries to do the job. Since natural gas was still coming to the house, the boiler could still work if I could get it to start. Inspired by how a car uses the battery, I had an interesting thought. I could do the same thing using an inverter to start and drive the circulation system inside the boiler. This cool idea helped to keep my family warm during the hurricane. I could even light a few LEDs inside the house instead of candles!"

Nathaniel Wight's high school students are winners in an international competition for their green roof model.

Richard Gitlin MS'65, EngScD'69 was named a 2012 Charter Fellow by the National Academy of Inventors (NAI). Richard is one of 98 innovators elected by the NAI and representing 54 prestigious research universities and nonprofit research institutes. Together, the new class of fellows holds more than 3,200 U.S. patents. The NAI Charter Fellows will be inducted by U.S. Commissioner for Patents Margaret A. Focarino during NAI's Second Annual Conference, February 22, in Tampa, FL. Fellows will be presented with a special trophy and a rosette pin.

Richard is currently a State of Florida 21st Century World Class Scholar and the Agere Systems Chair Distiguished Professor of Electrical Engineering at the University of South Florida (USF). Since joining USF in 2008, he has focused on the intersection of communications with medicine and created an interdisciplinary team focused on wireless networking in vivo miniature wirelessly controlled devices to advance minimally invasive surgery and other cyber-physical health care systems.

Ashish Sharma MS'06 writes, "Along with an intellectual and passionate team of fellow Columbia Engineering classmates, I've started a company called IWeTree Inc., which provides mobile payments solutions to commercial banking institutions around the world. We have a presence in India, Africa, and the United States and are continually expanding. I have worked in the wireless industry for seven years, while my partners have complementary experiences in finance and security (technology), which I believe can go a long way in bringing about a big change in both corporate and social sectors."

Ashish Sharma

Kiyo Tomiyasu MS'41 writes, "Since receiving my MS in 1941, 71 years have gone by. Now I'm living in a life-care community in Pomona, CA. There is at least one more person living here with a Columbia degree. I'm now interested in earthquakes—what else in California?" Kiyo's wife, Eiko, also has a master's degree from Columbia, which she earned in Library Services in 1955.

FINANCIAL ENGINEERING

Krystle Ang MS'05 and Sean Palmer were married August 18, 2012, at Waveny House in New Canaan, CT.

INDUSTRIAL ENGINEERING AND OPERATIONS RESEARCH

Vincent M. Altamuro MS'58 writes, "I actually left Columbia Engineering twice. The first was when I graduated in 1958 with an MS in IE degree from what was then named the Graduate School of the Department of Industrial Engineering, and the second was when I ended 9 or 10 years as an adjunct associate professor in the Graduate School in what was the renamed Department of Industrial Engineering and Operations Research. My first experience at Columbia was in 1955 when I was discharged from the U.S. Navy after the Korean War and armed with a bachelor's degree from CUNY and the G.I. Bill. I remember Professor Sebastian Littauer teaching a new course in statistical quality control. After the term ended, he went to Israel to teach at Technion. He called in his grades for the course and said to give Altamuro an A and the rest Bs. Also in that class was Bill Hugli, a pioneer who had started an Operations Research (OR) Lab at Stevens Institute of Technology and who hired me to help with a study he was retained to do of the NYC Transit System's train schedules. So the movement toward having OR be a part of Industrial Engineering had started. My other grades were also As and I was singled out at graduation for 'Outstanding Scholastic Achievement.'"

After graduation, Vincent built a successful career in OR—as president of Management Research Consultants for more than 55 years, as president of Robotics Research, and president/chief executive officer of VMA Inc. He served as a consultant, advised or taught the managements and employees of hundreds of corporations, including many of the world's largest companies such as AT&T, Bell Labs, General Dynamics, Xerox, and Philip Morris. Among some major accomplishments, Vincent was one of the original staff members of Stevens Institute of Technology's Operations Research Laboratory and was internationally recognized as a leading authority on industrial management. Concurrent with his consulting practice, Vincent taught at various institutions, including Columbia, NYU's Graduate School of Engineering, and Manhattan College's School of Engineering. Vincent's goal is to complete his latest book, tentatively titled "Strategic Product Design."

Michael Horodniceanu MS'73 writes, "It was another year of progress for the Second Avenue Subway, East Side Access, No. 7 Extension, and the Fulton Center hub. Construction is well under way on each of the projects. Second Avenue Subway has one more contract left for procurement, and all of its other contracts are in active construction. Tunneling for all of the mega projects was completed this year." Michael, who is currently president of MTA Capital Construction, has also recently received the ORT America Engineering & Construction Industry Chapter Award for Community Achievement. He led the redesign of the community outreach program for the Second Avenue Subway project. On the personal front, Michael's granddaughter, Emma, was born on October 24, 2012. He also has two other grandchildren, Matias and Adi.

Anatole Konstantin MS'67 wrote a book, *A Red Boyhood: Growing Up under Stalin,* which was published in 2008 by the Missouri University Press. For the past four years, Anatole has been teaching a course on the Rise and Fall of the Soviet Empire at the Life Time Learners Institute, Norwalk Community College.

After graduation, **Sunder Singh Thakur MS'63, EngScD'67** had a job offer from IBM but decided to stay around campus a bit longer as a research associate for one of his professors, Professor Shinozuka, who convinced him to stay to finish his postgraduate studies with full tuition paid. Later, Sunder went on to build a longstanding career at IBM, first by joining the Management Science Department as an internal consultant to senior corporate management, and then throughout the years in various management roles in different departments at IBM. His last work assignment was in Bangladore, India, where after spending six years, he decided to retire. But before returning to the United States, Sunder established Research, Education, and Development (REaD) Foundation to promote education, health care, equality, and social justice for the underprivileged in India. It was also intended to support the high school he started in his ancestral village in North India in the mid-1970s. Since his retirement in 2003, Sunder continues to serve on Indian student committees in New York and on the Management Committee for the school in India—the school continued to grow and became a Girls Inter College in the late 1990s. He and his wife, Pulomja, spend four to five months during winter in India, including several weeks near the

Michael Horodniceanu with Denise Richards, the head of the General Contractor's Association

Sunder Singh Thakur with daughters Sanskriti (left) and Akanksha

The stainless steel sculpture *Pi Phi Parallel* was engineered by Erich Blohm and installed in Shanghai.

In her down time, Wendy Weill enjoys ballroom dancing.

Kyriacos Athanasiou

Anand Das

Yi Zheng

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rural school campus to oversee activities there. Sunder hopes to add science/technical courses and vocational training programs to the curriculum and try to promote higher education among rural students by mentoring them and offering scholarships. Sunder would like to hear from fellow alumni who can help in these efforts (contact@readfdn.org).

Wendy Weill MS'77 is currently working at Tekmark Global Solutions as a program manager. Wendy provides IT clients with management support along with a team of others. She joined Tekmark after serving as a director for Lucent. Before then, she worked as a director at Empire Blue Cross Blue Shield. For fun, Wendy enjoys ballroom dancing and has been performing for years. She is currently branching out into ballroom competitions. She also swims and runs and last year completed the Goofy Challenge (half marathon on a Saturday, full marathon on a Sunday).

MECHANICAL ENGINEERING

On November 27, 2012, the president of the Republic of Cyprus presented **Kyriacos Athanasiou MS'85, PhD'89** with the Nemitsas Prize, the highest honor a Cypriot scientist can receive, and one of the most prestigious awards in the European Union. It is often called the "Nobel Prize" of Cyprus. The winner receives a certificate, a solid gold medal, and a monetary award of €50,000. Kyriacos is currently the Child Family Endowed Chair in Engineering and Distinguished Professor of Biomedical Engineering and Orthopaedic Surgery at University of California at Davis. He received the award to honor his numerous achievements in the field of biomedical engineering and tissue engineering. A device he co-invented, the EZ-IO kit, saved countless lives in the cholera epidemic that swept Haiti after an earthquake devastated the country in 2010. The kit is a drill that helps health care personnel insert IV lines directly into the bones of people whose veins are inaccessible due to severe dehydration or shock. He also invented and marketed a device that prevents diabetic ulcer-related amputations. In addition to these, Kyriacos founded Osteobiologics to market, for the first time anywhere, an implant his group developed that uses acellular scaffolds for the treatment of focal cartilage lesions.

Erich Blohm MS'84 had an interesting year, traveling to China twice for the production of four sculptures and to Rio de Janeiro, Brazil, to complete another sculpture. He is presently working on a glass labyrinth to be installed at the Nelson-Atkins Museum of Art in Kansas City, MO. He works closely with artists on conception, design, and engineering.

Anand M. Das MS'89 has joined the Federal Government Solutions Group at Xerox as chief technology officer, effective in November. He leads the technology planning and innovation activities for the group and drives the development of new and enhanced technologies necessary to win new business and earn contract renewals. Anand was previously a principal at CSC, where he was responsible for leading large, multi-disciplined teams and integrating products and services required to meet the needs of federal agencies. Prior to CSC, he served as CEO and CTO of Commerce Events Corporation, where he led a team of technology experts to create the first successful radio-frequency identification (RFID) and sensor network software company. Clients included Amtrak, the U.S. Army, and the U.S. Navy.

Greg Hort MS'07 worked in consulting in NYC for a few years after graduation and then went back to school for an MBA at Harvard Business School. Greg has been working in the renewable energy space (at a power company in New Jersey) since finishing his MBA in May 2011. He has recently been involved with several large power investments, the most notable of which are two utility scale solar farms in Arizona and Delaware. He writes, "I am constantly exploring possible renewable energy entrepreneurial ventures with the hope of starting something at some point in the near future."

Last April, **Sandro Tombesi MS'84** retired from ConocoPhillips and immediately joined Burns & McDonnell, a full-service engineering firm based in Kansas City, MO. He writes, "After a few months there I just moved to our Chicago office. As a project manager in the energy group, I will be focusing on natural gas–fired power plant projects in the United States and around the world. My family will join me here in Chicago at the end of this school year. My wife and I left New York City 16 years ago for our current home in Houston, TX, and we are excited to be coming back to a bustling northern city, although we had forgotten how cold it can get! We have a son who is 15 and a daughter who is almost 12, and they are also eager to start their next school year at one of the excellent public schools in this area. My son was born in New York six weeks before we moved to Houston, so he is boasting that the cold will be no problem for him, as like his mother, he is a New Yorker."

Yi Zheng MS'11 continues to pursue his PhD at Columbia. He is currently a third-year doctoral candidate in micro/nanoscale energy conversion and near-field thermal effects, supervised by Professor Arvind Narayanaswamy in the Department of Mechanical Engineering. He is a teacher's assistant for five engineering courses at SEAS and appreciates the T.A. program at the School. His long-term goal is to become a university professor and continue his research. Yi has published more than 10 journal papers, has given five conference presentations, and holds three patents as an inventor or co-inventor. In December, he was elected president of Columbia's Renewable Energy Society. On the personal front, Yi got married last summer; his wife is also an alumna of the University, having received her MA in statistics in 2011.

In Memoriam

Nicholas J. Turro

FACULTY

Nicholas J. Turro, professor and former cochair of Chemical Engineering and a devoted scholar, mentor, and teacher, died November 24, 2012, following a courageous battle with cancer. He was 74.

Nick was the William P. Schweitzer Professor of Chemistry, a professor of chemical engineering, and professor of earth and environmental engineering. In addition to cochairing the Department of Chemical Engineering from 1997 to 2000, Nick also served as the chair of the Department of Chemistry from 1981 to 1983.

"Nick Turro was a great and dedicated teacher, a warm and cherished colleague, and an imaginative scholar," Columbia University President Lee C. Bollinger said at the time of his death. "I miss him deeply, and I'm sure everyone in his department and field feels the loss even more."

Nick was revered as a very active and extraordinary researcher in the field of organic photochemistry. In fact, George Flynn, Higgins Professor of Chemistry (who cochaired the Chemical Engineering Department with Nick), said that, as of last year, Nick had 900 published papers and had just written an update to his classic textbook, *Molecular Photochemistry.*

"In the last few months before he died, Nick was scheduled to teach a graduate course in organic chemistry," said Flynn. "Even after suffering a relapse of his cancer that left him bedridden, Nick was ready to teach his class via Skype!"

As cochairs, Nick and Flynn were influential in reinvigorating the Department of Chemical Engineering and were responsible for hiring Professors Jeffrey Koberstein and Jingyue Ju—two major players in chemical engineering and genomics science, respectively, who each collaborated with Nick on various research projects.

Born in Middletown, CT, in 1938, Nick attended Wesleyan University. He received his BA in chemistry summa cum laude in 1960. He then traveled to the West Coast to complete his graduate studies at Caltech, where he studied under the late George S. Hammond and received his PhD at essentially the start of the organic photochemistry field. In 1964, Nick joined Columbia after doing postdoctoral work at Harvard. He taught at Columbia for the next 48 years.

In the early days of his career, Nick centered his research on organic photochemistry with a focus on carbonyl compounds and dioxetaines. In the late 1970s, he pioneered the field of supramolecular photochemistry with the studies of photoreactions of ketones in micelles, which later extended to zeolites, dendrimers, cyclodextrins, and other cavitands. Over the years, Nick's research covered a wide range of topics, including supramolecular photochemistry, DNA luminescence probes, and photochemistry involving polymers and fullerenes.

At the age of 43, Nick was elected to the National Academy of Sciences and the American Academy of Arts and Sciences. In recent years, he received the 2011 Arthur C. Cope Award in Organic Chemistry and the 2000 Willard Gibbs Award, both given to eminent chemists for outstanding achievements. The Inter-American Photochemical Society honored him posthumously earlier this year with the inaugural George S. Hammond Award.

Nick was not only a leader in his field but also a loyal friend and great colleague. Edward Leonard, professor of chemical engineering, called him "the most positive of men."

"He could never say anything negative about a person," Leonard said. "Even defeats and setbacks were only opportunities to him to get it right. And yet he was no Pollyanna. He was practical, tough, and effective. We felt the loss of him during his long, bravely fought illness, and now of course to the fullest."

Nick will also be remembered greatly as an inspiring mentor to the many students he has trained. Sandy, his wife of 52 years, whom he met in kindergarten, says her husband loved teaching and research equally. In 2003, Nick was awarded the University's Presidential Award for Excellence in Teaching and the year prior, the National Science Foundation's Distinguished Scholar Research Award.

"Nick was a beautiful person. He was kind, gentle, supportive, and generous, professionally and personally," said Sandy. "He reached out to the young faculty, having lunches with them and nominating and supporting them for awards. He mentored his graduate students and postdocs in the same manner. Many of his former students said after his death that they had lost a father as well as a professor."

In addition to his beloved wife, Nick is survived by two daughters and five grandchildren, ranging from ages 11 to 17. Said Sandy, "They were the joy of his life."

Howard W. Vreeland BS'46, MS'49, professor emeritus of graphics and former associate dean of Columbia Engineering, died December 22, 2012, in Litchfield, CT. He was 91.

By his own account, he arrived on the Morningside campus in July 1943, "a salty but naïve electrician's mate, hash mark on sleeve and seabag on shoulder, walking up 114th Street searching for the SS Hartley and the very beginning of the V-12 Program." From that moment on, Columbia Engineering became his second home. Following his graduation three years later, he was discharged from the Navy, married his childhood sweetheart Margaret Von Braunsberg, returned to Columbia for graduate work in electrical engineering, and concurrently, began his teaching career here.

Howard W. Vreeland

Howard first taught as an instructor for the drafting course that all entering Engineering School students were required to take. Anna Kazanjian Longobardo '49, MS'52, who was in the first Joint Barnard-Columbia Pre-Engineering Program, recalled being in this class. "Most of the students in our large entering class were World War II veterans," she said, "some even with wives and children, and some almost twice as old as our young instructor. He was a thoughtful and highly skilled teacher for beginners and was particularly kind to those few of us still in our teens entering from Columbia College and Barnard College (three of us)."

In 1959, Howard accepted the part-time position of associate dean of the School, a post he held in addition to his professorial rank until his retirement in 1986. The development of computers and an emphasis on mathematics fundamentally changed the nature of engineering education, said Morton B. Friedman, professor of civil engineering and engineering mechanics and of applied physics and applied mathematics, who is also senior vice dean emeritus at the School. "Howard saw that mechanical drafting was no longer central to engineering disciplines," Friedman said, "and so, when the Department of Graphics was absorbed into Civil Engineering, Howard had already adapted and embraced the new technologies."

Howard's duties as associate dean expanded, and in 1966 he also became director of Camp Columbia in Lakeville, CT. Columbia started the summer field camp in 1891 to teach surveying to entering engineering students. Even after the camp requirement was eliminated, the University continued to use the property for other educational purposes, including a precollege training program in composition and research, preseason football practice, a summer science program for high school students, and a regional earthquake monitoring station.

In a serendipitous turn of events, Howard was contacted by a psychologist who was working with a gifted draftsman who had suddenly gone blind. He recognized the challenge and that was the beginning of his work with the visually impaired; his vocation and his avocation had fused. By 1979, he had created a course of instruction for teaching visually impaired children to "read" graphic designs.

When Howard retired in 1986, he declared his intention to continue working on a curriculum for blind children. He volunteered for many years as a graphicist at Connecticut's Board of Education and Services for the Blind. There, working with the raised line technology of the time, he produced countless illustrations for Braille editions of storybooks and textbooks through high school level. Later developments in capsule paper allowed a new way of producing raised line drawings of much better quality so, by the early 2000s, he was able to successfully test an abbreviated version of his curriculum.

His second declared intention in retirement was to work on a history of Camp Columbia. "Howie's contributions to Camp Columbia when it was a functioning academic unit are well known, but many of us appreciated his efforts to keep the camp going after the last class of chemical engineers left in 1968," said Guy Longobardo '49, MS'50, EngScD'62. "He was a promoter of Camp Columbia, always in motion, with talks, exhibits on campus and in Morris, Connecticut. His talks at reunions on campus in later years were always packed. He really brought us together again. We understood the role it played in making us a cohesive group of students, and providing a bond between all the 80-odd classes of engineers who started their engineering education there. For the later classes, that was Howard's gift to us."

After Camp Columbia was sold to the State of Connecticut in 2000, several alumni leaders, including Longobardo, arranged two special reunions there. In addition, the group has received initial permission from officials in the Connecticut Department of Energy and Environmental Protection to install a commemorative plaque on the water tower that still stands on the site. Longobardo is proposing that the plaque contain a dedication to Dean James Kip Finch, Dean Wesley J. Hennesey, and Dean Howard Vreeland. Those who knew Howard Vreeland will agree that would be a fitting tribute.

Howard is survived by a son, William Howard Vreeland; a daughter, Barbara Diane Burns and her husband, Leonard, and their children, Amanda and Ryan.

ALUMNI

1935

George R. Furman EngScD'37, passed away on November 12, 2012. He was 99. Born in Newtown, Queens, NY, George married Martha Bush in 1947. She predeceased him in 1998. After graduating from Newtown High School, he attended Columbia Engineering, where he received his master's in mechanical engineering. George worked at Texaco Research Center in Glenham, NY, as a technologist from 1937 until his retirement in 1978. He had many hobbies, including sailing with his family as a child on the Long Island Sound. During World War II, George worked on special projects for the military at Texaco. After retirement, he obtained his private pilot's license and owned, with his friend, Harry Calhoun, a small airplane that he flew all across the country. He built his own home, and he loved to tinker in his workshop. In the 1950s, George was the photographer for the Cecilwood Theatre in Fishkill, NY. In the mid-1960s he was a member of the Glenham School Board of Education and was a set designer for the Dutchess County Ballet Company and a member of the East Bank Artists.

In addition to his wife, George was predeceased by his daughter, Judith Furman Villandre, and a brother, Warren Furman. He is survived by his sons, David and Peter Furman. He is also survived by several grandchildren and two great-grandchildren.

1937

Julius Dolgos passed away on August 22, 2012, at the age of 102. He was born in New York City and later resided in Baton Rouge, LA. Julius was a retired professional engineer and a member of Our Lady of Mercy Catholic Church. He was an avid swimmer who participated in the Senior Olympics until he was 85 years old. Julius was preceded in death by his wife, Margaret B. Dolgos, and four of his siblings. He is survived by his sister Rose Dolgos, children Mary Janicke, AnnMarie Sherlock, Rosemary Samsel and her husband Edward G. Samsel, Sheila Rodrigue, Elizabeth Dolgos, Joseph Dolgos, and several grandchildren.

1940

Weldon S. Booth '38CC, a leader in foundation construction and a dedicated public servant and alumnus of Columbia Engineering, died December 29, 2011, at the age of 95. (Columbia Engineering just learned of his passing in late 2012.)

"Bobby," as he was known to his friends, was born in Montclair, NJ, on June 10, 1916, came from a family of public servants, and was himself dedicated to community service. He served as a volunteer fireman, worked with Boy Scouts of America, and chaired many local committees. His father, Charles Brandon Booth, traveled frequently as the national field secretary for the Big Brother and Big Sister organization and had a career as commander in chief of the Volunteers of America, an organization founded by Bobby's grandparents. His great-grandfather, William Booth, founded the Salvation Army.

Indeed, volunteerism remained a mainstay throughout his life. As a student at Columbia, Bobby was actively involved in campus politics, various student committees, the Columbia chapter of Theta Tau and the American Society of Civil Engineers, intramural and varsity sports, and music—he played the cornet. During World War II, he was a design engineer for the Manhattan Project in Oak Ridge, TN. After the war, he cofounded the construction firm Coakley & Booth Inc. with business partner Louis Coakley. They specialized in difficult substructure construction. Bobby was also a principal and founder of W.S. Booth & Co. and served as a key consultant on many major rapid transit systems in Baltimore, Boston, New York, and San Francisco.

Bobby was an active alumnus, having served as chair of the Alumni Relations Committee as the alumni representative to the University Senate, as president of the Columbia Engineering Alumni Association, on the Advisory Council of the Faculty of Engineering and Applied Science, and on the board of governors of the Columbia University Club. He helped form Columbia's first committee on interfaith activities in 1946. In 1989, the School honored Bobby with the Egleston Medal for distinguished engineering achievement, recognizing his innovative work in revolutionizing the foundation construction field.

Bobby's wife, Tod (Ruth Todhunter), is also deceased. They were married in 1941 and have two children and several grandchildren.

1945

Howard Schwartz, 87, passed away on August 13, 2012. Howard was born on August 26, 1924, in the Bronx. After graduating from Columbia Engineering, he attended Pennsylvania State University, where he earned a master's in engineering. After graduation, he served as an officer in the U.S. Navy during World War II. Following his discharge, Howard worked as a nuclear engineer and later was an entrepreneur in the biomedical field. He is survived by one son and daughter-in-law, Jan '71CC and Elaine Schwartz; two daughters and sons-in-law, Julie and David Schnapf, and Lisa Schwartz Powell and Doug Powell; eight grandchildren; and two great-grandchildren. In addition to his parents, he was preceded in death by his beloved soul mate in 2009, the former Harriet G. Adler.

1947

George W. Webb (MS, Electrical Engineering), longtime professor at Tulane University and widower of Dorothy Maness Webb, passed away peacefully at his home in Houston, TX, on October 14, 2012. He was 89.

George was born in July 1923 and raised in Uniontown, AL. He earned his BS in electrical engineering in 1943 at the University of Alabama, where he served in Army ROTC and was inducted into Tau Beta Pi engineering honor society, Eta Kappa Nu electrical engineering honor society, and Phi Delta Theta fraternity.

George served in the U.S. Army in World War II. After completing Engineer Officer Candidate School at Fort Belvoir, VA, and specialist training at Aberdeen Proving Ground, MD, George served as a lieutenant in the 3061st Engineer Company, first at Fort Lewis, WA, then in France and Belgium in the Rhineland Campaign, and finally in Luzon in the Philippines. His wartime decorations include the European-African-Middle Eastern Campaign Medal with bronze service star, Asiatic-Pacific Campaign Medal with bronze service star, American Campaign Medal, World War II Victory Medal, and Philippine Liberation Ribbon. After the war, George earned his MS at Columbia Engineering and upon graduation, he joined the electrical engineering faculty at Alabama, where he taught from 1947 to 1951. He has worked as chief of the Electric Power Laboratory at the U.S. Army Engineer Research & Development Laboratory (ERDL) and as a design engineer in the Power Transformer Department of General Electric.

In 1956, George began a 37-year career at Tulane University in New Orleans as a professor of electrical engineering. A respected and popular teacher, he was known for teaching practical courses, especially the electric machinery lab; for his bow ties (since neckties would be dangerous around rotating machinery); and for his many jokes. George was appointed professor emeritus in 1988.

Demetre N. Petsiavas BS'50, MS'51

George married Dorothy Ann Maness Jones in 1964. They raised two children; both settled in Houston as adults. George retired from Tulane in 1993 and moved with Dorothy to Houston in 1995. He served for several years as a volunteer with the Retired Activities Office for military retirees.

George was predeceased by his siblings, his son-in-law, and his beloved wife Dorothy. He is survived by his daughter Ann Elizabeth Webb, granddaughter Elizabeth Grace Crist, son George Walton Webb III, and daughter-in-law Susannah Koontz, and by his nephews, grandnephews, and grandnieces.

1948

Bernard I. Belasco '50BUS passed away on January 4, 2013. He was 87. Born on November 3, 1925, Bernard was the first in his immediate family to graduate from college, earning a BS at Columbia Engineering in mechanical engineering. He later went on to receive an MBA from Columbia Business School and earned a doctoral degree in anthropology from the New School for Social Research.

Bernard served in the Navy during World War II aboard a minesweeper in the Pacific. After many years as an engineer, management consultant, and an entrepreneur in men's fashions, he became a professor of business at Baruch College of CUNY, where he served as deputy chair of the marketing department. As a patron of the arts, Bernard supported many performing arts organizations that include Roundabout Theatre, the Manhattan Theatre Club, Second Stage Theatre, Opera Index, Teatro Grattacielo, the Orpheus Chamber Orchestra, and the Orchestra of St. Luke's. He is survived by numerous relatives and friends.

1950

Demetre N. Petsiavas MS'51, 87, died peacefully at home in Athens, Greece, on September 13, 2012. Born in Athens, he graduated from the Athens College High School and then moved to the United States, where he received his BS and MS in chemical engineering from Columbia. For his research work with the late Professor Elmer Gaden, he was elected a member of the society of the Sigma Xi. After his graduation in 1951, Demetre joined Merck & Company in Rahway, NJ, where he worked in the research department for seven years. In 1951, he married Anna Theodoridis, a Vassar graduate.

In 1958, Demetre returned to Greece and joined the family business, N. Petsiavas S.A., where he was responsible for the introduction and establishment in Greece of several U.S. companies, including Dow Chemical Company, Parke Davis, Smith, Kline & French, Allergan, Norwich Eaton, and Ecusta Paper. Business for Dow developed so successfully that Dow ultimately established its first European manufacturing plant in Greece and assigned the sales of this unit to Petsiavas's company in a joint effort that lasted more than 40 years.

Under Demetre's management, N. Petsiavas S.A. diversified its activities and is presently marketing pharmaceuticals, some of which are produced in the company's factory in Athens, such as pharmacy products; surgical, medical, and hospital supplies; and chemicals and plastic raw materials for the textile and plastic industries. Demetre remained active in the business until 2010. N. Petsiavas S.A. continues to realize impressive growth in sales and profitability, and is now managed by the third generation of the Petsiavas family.

Demetre served as president of the Hellenic American Chamber of Commerce for 23 consecutive years, from 1975 until 1998. With his vision and integrity he helped to organize and upgrade the chamber, making it the major bilateral chamber in Greece, with the main goal of facilitating entrepreneurship and promoting economic ties between the two countries.

He was very proud of being a member of the Columbia alumni and had the fondest memories of the years he studied and worked in the United States. He will be remembered for his love and dedication to his family and friends, his integrity and vision, and his straightforward and modest personality.

He is survived by Anna, his wife of 61 years, two daughters, and three grandchildren.

Leonard Harrison Wurzel passed away August 21, 2012. Leonard was a veteran of World War II and was in an executive position throughout his career with several companies, including his position of president of Mallory Valley Water District for many years. He was also a 32nd degree mason, achieving 50 years of service, and volunteered as a SCORE counselor. He enjoyed reading, bird watching, and was a master tinkerer who could fix anything. Leonard is survived by his wife of 66 years, Lillian R. Wurzel; son Stephen Harrison Wurzel and wife Janice; and grandsons Benjamin Harrison Wurzel and Michael Anthony Wurzel.

1951

Harold L. Tapley, MD '50CC died August 19, 2012, in Bakersfield, CA. A native of Peekskill, NY, he was educated at Columbia with an engineering degree and earned a medical degree from Howard University. After working as an anesthesiologist at San Joaquin Hospital, Harold trained in psychiatry at University of California, Davis. He served as medical director at the Kern County Department of Mental Health Services for 10 years and later worked at various county mental health centers. Known as "Tap" to his many friends, Harold viewed the world with both an admiring and critical eye. Along with his wife Phyllis, Tap enjoyed travel with friends and Broadway shows, and was an avid supporter of local theater. A unique presence who appreciated life to the fullest, he was both an idealist and a realist. He is survived by his wife Phyllis, son Harold Tapley Jr., daughter Susanne Davis, four grandchildren, niece Allison Thompson and her daughter.

1952

Emanuel (Manny) S. Diamant MS'53 of San Francisco, CA, died on October 11, 2012. Born in Giugiu, Romania, Emanuel immigrated first to Havana, Cuba, in 1948, and then to the United States in 1950. After earning his master's degree, he served in the Army and moved to southern California, where he enjoyed a 32-year career with TRW. He earned a PhD in applied mechanics from University of California, Los Angeles, in 1965. While at TRW he made significant contributions to the development of cork insulation for ballistic missiles, creep and buckling analysis of pressure vessels, high-speed ground transportation systems, including the Metroliner, and spacecraft structural and thermal design and analysis. He also worked for DeLeuw Cather and Parsons on many transportation systems, including the engineering of the second level roadway at LAX. In his free time, Emanuel taught mathematics, physics, and engineering at UCLA and several local colleges. He is survived by two daughters and four grandchildren.

1953

Robert Dean "Bob" Wanselow MS'55, '53CC, 82, of Bryan, TX, passed away peacefully August 6, 2012, at St. Joseph's Manor after a brief struggle with melanoma cancer. Bob was born June 21, 1930, in Mineola, NY, and was the only child of the late Frednand and Lilly Wanselow. He was very involved in sports, especially football, as a high school student and played as a quarterback. As a student at Columbia, he continued playing football and majored in electrical engineering.

Bob worked at TRW (now Northrop Grumman) in Torrance, CA, where he worked with the space program and was the recipient of four US patents. He retired in 1984 and enjoyed retirement to the fullest. He married Clara Johanna Murski, a model with Patricia Stevens Models of Dallas, on June 6, 1953. He is survived by his loving and devoted wife of 59 years, Clara, and his nieces, nephews, great-nephew, great-niece, and cousins.

1955

Rene F. Kress '54CC, age 79, passed away September 12, 2012, at Lima Estates Medical Center. Born in New York City, Rene was raised in Bellerose, NY, and lived in Media, PA, for 43 years before moving to Lima Estates eight years ago. He earned a dual degree from Columbia University in both chemical engineering and chemistry. He was employed by Sun Oil Co. for 35 years. At his retirement in 1988, he was the director of engineering at Sun Oil. Rene was an active member of Reformation Lutheran Church in Upper Providence Township. He served as a trustee on the church council. He enjoyed time at his summer home in the Adirondacks in Big Moose, NY, and was also active in their local chapel as a trustee and adviser. He enjoyed woodworking, reading, hiking, sailing, and will be missed by the family dachshund named Maxi. Rene was deeply loved by his wife, and respected and admired by his children. He is survived by wife Margrit Karin Kress and three children, Michele Morris, Stephen Kress, and Michael Kress. He is also survived by six grandchildren.

1956

Ihor Koszman '55CC passed away August 9, 2012, at the age of 77. A longtime resident of Montgomery, TX, Ihor was born in the Ukraine on April 6, 1935. He emigrated to the United States in 1949 and entered Columbia University at the young age of just 16. He graduated from Johns Hopkins University with a doctorate of engineering. Ihor spent most of his career at ExxonMobil as a chemical engineer. He loved the outdoors, hiking, and gardening. He was especially proud of his tomatoes and cucumbers. Ihor was married to Maria Koszman and had two sons, Victor and Alexander.

1961

Michael John O'Connell passed away August 11, 2012, at his home in Fairfield Harbour, NC. He was 73. Born in the Bronx, Michael attended Columbia on a Navy scholarship, graduating with a degree in chemical engineering. He traveled extensively during his tenure with the Navy and then began his engineering career with Drave in Pittsburgh, PA. Michael was an avid sailor, a woodworker, and acted in numerous local theater productions. He also sang in several choruses. Before moving to North Carolina he owned a boat building and repair business. In addition to sailing, Michael was involved in rowing and competed in both team and single races. He is survived by his wife, BeBe; sister, Katherine Dunne and her husband, Gordon; son, Michael and his wife, Jacinta and their three children; son, Patrick and his wife, Amy and their two children; son, Brian; daughter, Maureen and her husband, Jeff and their four children; daughter, Elizabeth and her husband, Rob and two children; the mother of his children, Pat O'Connell; and numerous cousins, nieces, and nephews.

1995

Peter Van Deusen Bliss (MS, Civil Engineering and Engineering Mechanics), son of Mimi Bliss and the late Charles Bliss, died at Memorial Sloan-Kettering Cancer Center in New York City on August 12, 2012. He was 58.

Peter was a senior supervising engineer with Parsons Brinckerhoff, where he worked for 22 years on bridge and tunnel projects with the Structures Department and since 2008, on the East Side Access project. Peter was a graduate of Marcellus High School and Pratt Institute, and earned a master's degree from Columbia Engineering. He is survived by his wife, Gail Sims Bliss, with whom he lived in Brooklyn for the past 31 years. He is also survived by his brothers, Charles, and Daniel Bliss and wife Lee and their children, Emma and Simon; his sisters, Bradley, and Louise Bliss and husband Brian Beers; also his mother-in-law, Janet Sims; brother-in-law, Neil Sims and wife Aino and their children, Raakkel, Viktoria, and Mikko.

OTHER DEATHS REPORTED

We also have learned of the passing of the following alumni, faculty, and friends of the School:

George R. Furman BS'35, EngScD'37
Thomas F. Maher BS'43
Manuel A. Pietrantoni BS'43, '42CC
Alan Schanes BS'44, MS'45
Joseph N. Leff BS'45, '44CC
Howard Scwartz BS'45
Henry C. Vogel MS'47
Alfred M. Czikk BS'48
Douglas D. Donald MS'48
Howard A. Golle BS'48, MS'49
Harold L. Herz BS'48
Edwin R. Knox Jr. MS'48
Robert A. Prochazka BS'48, MS'50
John E. Scott MS'48
John W. Fuller BS'49
Edwin R. Hunt BS'49
Harry G. Klender BS'49
Allan D. Kraus MS'49
Chester V. Zabielski BS'49
Yves Biry BS'50
Arnold Blum BS'50
William Gebrian BS'50
Harold Schiff BS'50
Frank D. Rosenthal BS'51
Gim H. Eng MS'52
Alfred A. Hendrickson MS'54
Gunther P. Eschenbrenner MS'55
Gene F. Franklin EngScD'55
Theodore E. Bourque BS'56
Albert B. Grundy BS'56
Irwin Weitman BS'58
Thomas H. Naylor BS'59
Arthur F. Veinott Jr. EngScD'60
Lester Spielvogel MS'62
Ildo E. Pensa MA'63
James H. Eaton MS'66
Lambros Lois EngScD'66
Leonard Stier MS'66
Edward W. Dowdall MS'67
Wayne H. Stayton BS'70
M. Sadek Eid PhD'73
Philip E. Rees MS'74
James J. Rongoe Jr. MS'74

Colette P. Schulz '81GS, friend

COLUMBIA | ENGINEERING 150 YEARS
The Fu Foundation School of Engineering and Applied Science

The first home of Columbia's School of Mines (left) and the new Northwest Corner Building (right) at Morningside

For Columbia Engineering, a home isn't just a home, but it's also an incubator for ideas and innovation. From the development of the New York City subway system and invention of the FM radio to the design of lab-on-chip devices for disease diagnosis and breakthrough research in smart cities, the School has always made it a point to equip its students with the latest technology, tools, and facilities needed to solve some of modern society's most pressing engineering problems.

When the School was established in 1864, students were primarily trained in mining, mineralogy, and engineering from its first home in a building (top left) that was once a brick factory. Throughout its nearly 150-year history, the School's physical location, research labs, and facilities have played an essential role in educating the best and the brightest future engineers and scientists.

Fast forward to the fall of 2010: the University opens the new Northwest Corner Building for interdisciplinary science and engineering research (top right), designed and built specifically to facilitate the flow of ideas among science and engineering disciplines. Today's SEAS students have even more opportunity to get involved in the most cutting-edge research collaborations.

To celebrate the School's upcoming 150th anniversary, *Columbia Engineering* magazine will publish a series of questions—on our website, our Facebook page, or via our Twitter feed—to test your knowledge of the School's history. We'll be digging up fun facts from 1864 to present day that will indeed show just how far we've come.

Here is the first question!

Q: The commercial building that was the first home to Columbia's School of Mines was a structure that was constructed as a factory and had been used for many purposes, including a sash-and-blinds shop and a broom factory. Where was this building located?

We hope you'll keep playing as we countdown to our 150th.
The answer can be found below.

A: 49th Street and Park Avenue in midtown Manhattan

GIVING BACK

INSPIRING THE CREATIVE SPIRIT AT ENGINEERING

BERNARD JAFFE (1916–2009) graduated from Columbia Engineering with a BS in 1938 and received an MS in mechanical engineering in 1939.

During the Second World War, Jaffe was responsible for classified research projects, developing a number of important patents. This work was carried out for the Panelyte division of the St. Regis Paper Company, where he was a design director. Remarkably, one of the designs for the company of a large propeller was later used as the poster picture for the Museum of Modern Art's exhibit "Art of the Forties." After the war, he opened his own engineering firm and used his training in a number of mining business ventures. His consulting work took him throughout the world, where he became involved in international development projects. He never retired, working until he passed away in 2009 at the age of 93.

Jaffe's other great interests in life were music, art, and travel. He had a particular interest in how the creative mind can use music as a catalyst for wide-ranging intellectual endeavors. (As part of his travels in Latin America, Jaffe became a significant collector of Pre-Columbian musical instruments, which the family donated to the American Museum of Natural History in New York in his honor.) He hoped that as part of his legacy he could continue to foster creativity in both music and engineering. His family has aimed to fulfill his wish with an endowed gift to The Fu Foundation School of Engineering and Applied Science.

In 2010, Jaffe's wife Fern and son Dan established a prize in his memory at the Juilliard School that alternates between flutists and composers; and in 2011, they created the Bernard Jaffe Prize for the encouragement of inventiveness in engineering at Columbia Engineering. Awarded by the faculty, the Jaffe Prize goes to students who exhibit exceptional qualities of curiosity toward engineering and a predisposition toward inventiveness and novel problem solving. The Jaffe Prize serves as a permanent legacy at Columbia Engineering to inspire future generations of students to think, not just "outside the box" but indeed beyond the traditional boundaries of engineering. The goal is to encourage students, like Jaffe himself, to make the most of a Columbia Engineering education to solve problems through creative, lateral thinking.

COLUMBIA | ENGINEERING
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