

Feature

The Ray Stata Interview:

Entrepreneurship and Technology Leadership



Ray Stata is co-founder of Analog Devices, Inc., based in Norwood, Massachusetts. As of 2009, ADI serves over 60,000 customers, has 9,000 employees and a market capitalization of over \$6 billion. Mr. Stata received his bachelor's and master's degrees in electrical engineering from MIT. He served as ADI's CEO from 1971 to 1996 and is currently chairman of the board. We met with Mr. Stata in Norwood to explore his thoughts on bootstrapping a start-up, leadership in innovative companies, and the challenges and opportunities of globalization.

Kaizen: You were injured playing basketball in high school in Pennsylvania, and that led to your going to the Massachusetts Institute of Technology?

Stata: Right. It was quite fortuitous that I jammed myself in a wall and injured my neck. So I ended up in a hospital for several days—in traction. Next to me there was an elderly gentleman who had spent his career as an engineer. By that time, as a sophomore in high school, I already was thinking about engineering as a career. I didn't know much about engineering or anything about engineering schools. So I used this opportunity to quiz this guy. He told me a lot about what engineers do and about the best engineering schools.

What came out loud and clear was, "If you want to become an engineer and get an engineering education, there's really only one place to consider, the Massachusetts Institute of Technology." He said, "Just focus on MIT and go there; it's the best." I had never heard of MIT, but when I returned home, I

started reading up on MIT and set my sights on going there.

Kaizen: MIT is expensive, but you came from a family with limited means. How did you pay for your education?

Stata: Well, MIT has what they call a "need-blind admissions policy," which promises that if you are admitted and you don't have any money, you can still go. They have various means to help you through: loans, scholarships, and also back in those days they required you to work a fair amount—cleaning rooms, working in the libraries, whatever. You had to earn part of your keep. But nonetheless, you could go there without any financial resources, really. It's one of the many great things about MIT.

Kaizen: Your education was in electrical engineering—did anything in your formal education help prepare you for your career as an entrepreneur and business executive?

Stata: Yes. There were many things. For one thing, discipline and hard work are

essential to survive and succeed at MIT. It is a grinding experience. I learned to use my time wisely.

And, of course, problem-solving skills and analytical thinking are fundamental principles of an engineering education. And for me, electrical engineering was the technology base for my company, Analog Devices. Being well grounded in the technology gave me a bottom-up understanding of our products and how they were applied by our customers.

And besides that, MIT—only a few years before I went there—made a major shift by introducing humanities as an important component of undergraduate education. For me, the history of Western Civilization was totally captivating and fascinating. It introduced me to philosophy and to the great thinkers of the ages, and got me started on a lifelong process of learning more and more about our intellectual heritage and about the human side of the equation and of thinking more

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THIS
FROM THE EXECUTIVE DIRECTOR
CENTER EVENTS
ISSUE: CENTER NEWS

From the Executive Director



Walt Disney once said, "When you can't get a job, you start your own business."

Amid all the gloomy economic news, a recent report shows that those in the 16-25 age group have lost the most jobs. How should those hardest hit respond to the challenge?

For young people, Disney's advice especially applies: Explore entrepreneurship as an option. How can you develop your own ideas and leverage them into your own enterprises?

That is why the CEE is here at Rockford College—to cultivate our students' entrepreneurial spirit and skill set by sponsoring courses, hosting inspiring speakers, and other resources such as experience-rich interviews with highly successful entrepreneurs.

Our feature interview in this issue of *Kaizen* is with Ray Stata. Mr. Stata is Chairman of Analog Devices, a now-\$6 billion company Mr. Stata co-founded in his basement as a young man.

In this issue we also feature our recent High School Career Day, and congratulate five student prize winners: Hannah Mueller, Jennifer LaSarre, Jake Maliszewski, Lisa Voss, and Kelly King.

As always, when you're on campus, please feel welcome to visit us on the second floor of Burpee—or online at www.EthicsandEntrepreneurship.org.

Stephen Hicks, Ph.D.

ROCKFORD
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STATA, CONTINUED

deeply about principles, values and the purpose of life.

The other thing about MIT is for a long time it has been a hotbed for entrepreneurship. So it's like—monkey see, monkey do. If you see others start companies and become successful, you say, "If they can do it, so can I." Whereas, if you don't see that up close and personal, there's a fear and a mystery about how to do it. Can I do it? The entrepreneurial spirit at MIT gives you confidence. If you want to start a company, just do it.

Kaizen: After receiving your bachelor's and master's degrees from MIT in the late 1950s, you went to work for Hewlett-Packard, mostly in sales and marketing. What did you learn, good or bad, from your experience at HP?

Stata: I had decided early on, even in high school, that I wanted to start my own company someday, primarily because I had an aversion to authority and I wanted to be my own boss. Therefore, when I got out of MIT, I wanted to learn about business, so I picked what was clearly one of the premier corporations in America at that time, with great leadership. I took a job in sales, because I thought seeing business through the eyes of customers was the best way to get a perspective of what makes business tick.

Now it turned out, but I didn't know it at that time, that Hewlett-Packard was a pioneer in adopting the stakeholder model. That is, the purpose of business is not just about creating stockholder wealth. It's about meeting the needs of all the constituents—employees, customers and stockholders—in a scenario where everybody wins. HP was also one of the early companies that embraced [Douglas] McGregor's ideas about the human side of enterprise—Theory Y versus Theory X—a cultural belief about people, that they're innocent until proven guilty, that they want to do a good job if given the opportunity and resources, and that they are honest and ambitious,

that you don't have to beat them with a stick to get them to perform. Hewlett-Packard really embraced these principles.

So for me, HP was my mini MBA program, where I learned by watching and doing. The culture I established at Analog Devices and the way I ran the company were built on my observations and experiences at HP. It was a great company.

Kaizen: Did you have natural marketing and sales talent, or did you have to work at it?

Stata: Sales was certainly not a natural talent. I'm basically an introvert and a nerd at heart. Sales

My way of being trustful relationships honesty, sincerity

responsibility forced me to learn how to engage with people and to hold productive conversations, as opposed to "You don't bother me, I don't bother you," which is more the instinct of a nerd.

I also found that the particular style by which I engage with people worked remarkably well, although you would never consider me a typical salesman, particularly at that time. That is, I had a commitment to really understand the products, so that when I engaged with customers I brought value to the conversation. Also, I have a natural predilection toward listening and understanding customers' problems and what they are trying to accomplish. Based on my knowledge, I was able to help them objectively understand the alternatives and what I had to offer. I learned you really don't sell technology intensive products; you basically facilitate buying decisions.

Also, my way of being is to build trustful relationships through competence, honesty,

CEE Receives Templeton Freedom Award

CEE is pleased to announce that it received a 2009 Templeton Freedom Award. The Templeton Awards are the largest international awards program for think tanks and are decided and given by the Atlas Economic Research Foundation (AERF), a think tank based in Washington, D.C. CEE won in the category "Special Achievement by a University-based Center" for its course development and high school outreach. The award, which carries a \$10,000 prize, was presented to CEE at AERF's 2009 conference in Washington on November 9.



sincerity and reliability, which are all valued by customers. All those things taken together worked out to where I wasn't a bad salesman, although that wasn't my natural talent.

Kaizen: After three years at HP, in 1962 you co-founded Solid State Instruments with Matthew Lorber and Bill Linko, whom you knew from MIT?

Stata: Right. We met at the Instrumentation Labs at MIT, where we all worked together. The Instruments Labs were pioneers in inertial navigation systems. Among other things, they designed the Polaris submarine missile system. So we all had experience with instrumentation and control systems.

is to build through competence, and reliability.

We shared an urge to start a business, and so we said, "Hey, let's just do it." We didn't have a strategy of any kind, really. We didn't have any money. We just had an urge. We figured we'd find some way to exploit our common knowledge of instrumentation and control systems, in part by doing some consulting on the side and by focusing on gyro-test instrumentation.

Kaizen: At this point you were 26 years old. What was the most difficult thing about launching the company?

Stata: Well, first we didn't have any money. We survived on sweat capital with no salaries. My wife didn't know what she was getting into. I quit my job just as we were getting married and she supported me. But the biggest problem, which I didn't understand at the time I jumped into the pond, was that we were a partnership. There was no real boss; we were all our own bosses, so to speak. And since we didn't really have a clear

strategy and direction for the company, there was continuous debate about what to do and how to do it, which led to dissension and the lack of alignment amongst partners. So, with no money, it was a real struggle.

Kaizen: SSI was later acquired by Kollmorgen Corporation's Inland Controls Division. What about SSI was attractive to them? Was it that they wanted to have you three on board? Did they like your products?

Stata: We ended up developing a precision rate table for testing gyros, which used Kollmorgen's direct driven motors and precision tachometers. This product was one reason they were interested, but more importantly their goal was to build an electronic controls division to complement their motor division. They saw us as a way to create a technology foundation to implement the electronic control side of their business.

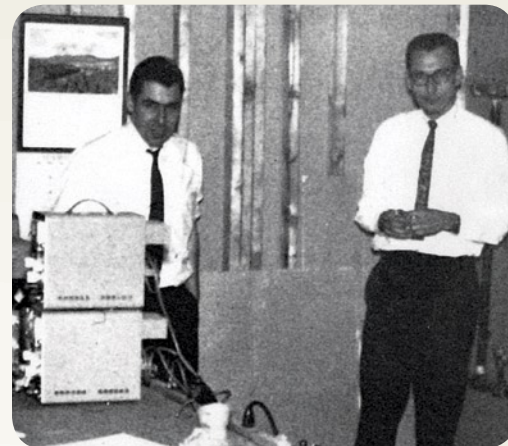
Kaizen: So they offered you \$50,000 each in stock, and you stayed on as Vice-President of Marketing?

Stata: Right. In 1963, \$50,000 was a fair amount. I continued my focus on figuring out what products to develop and how to sell them. Matt Lorber basically drove engineering and Bill Linko was the division head with responsibility for operations. But still there was no real boss.

We signed a two-year contract and worked hard. As a matter of fact, we were successful in delivering what they wanted, so it all worked out for us and for them. And we learned a lot about starting and growing a new business, so we were better prepared the next time.

Kaizen: In 1965, you co-founded Analog Devices, Inc. with Mr. Lorber?

Stata: That's right. Matt and I decided early on that we would do a good job in fulfilling our two-year employment contract, but beyond that we were going to look for an opportunity to start



Matt Lorber and Ray Stata in 1965

another company. Based on the dissension at Solid State Instruments we decided that three is a crowd, so we jettisoned one of our partners and brought it down to two.

Kaizen: How did the idea for the new company arise?

Stata: Matt and I spent nights and weekends talking about what to do next. At the time, as a company designing and manufacturing instruments, you had to build products from the ground up—that is, you had to design and manufacture all your circuits. One of the critical circuits in instrumentation is the operational amplifier, which amplifies and conditions analog-based signals. Operational amplifiers largely determine the performance of analog instruments and systems.

After a short time in business, new startups emerged that offered operational amplifiers as standard products, which we could buy versus design and make ourselves. We analyzed the economics of specialization and the economics of scale and concluded that as a small instrument company we would be much better off to focus our resources on instrument design and to buy

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2009 High School Career Day

On November 11, Rockford College held its second annual High School Career Day, hosted by the Economics, Business, and Accounting department and co-sponsored by CEE. The 250 area high school students who attended talked one-on-one with 40 guest speakers—including Rockford College alumni, professors, and MBA students, and a variety of local business professionals—about choosing their career paths, the importance of a college degree, the job-seeking process, and the speakers' own careers.



Guest speaker and MBA student Mike Gonzalez talks with students about management

STATA, CONTINUED

components like op-amps. So we switched from make to buy.

That's when the light went off. Wow, if we made that decision, why wouldn't a growing number of instrument companies come to the same conclusion? And besides, as customers for these products, we had good insights into strengths and weaknesses of our would-be competitors and believed we could beat them. So we decided to go into competition with our suppliers and design and manufacture operational amplifiers, which we already knew how to do.

Kaizen: You had some capital from the sale of your first business, SSI. Did you need to raise more?

Stata: We didn't, as a matter of fact. Once we decided that op-amps would be our next business, we hired a consultant even while working at Kollmorgen to develop a line of products, so that when we opened the doors, we would be ready to go. We helped on nights and weekends to give direction, but we were careful not to actually do the engineering work ourselves to avoid any conflict with our current employer.

With this head start, by the end of the first year Analog Devices was already profitable. Our nest egg from the sale of Solid State Instruments was sufficient to get us to break-even. In those days, venture capital was virtually an unknown idea. Banks served that purpose. So we worked out a deal with the First National Bank of Boston to fund our growth. For every dollar we earned, the bank would loan us a dollar, which is like a one-to-one debt-to-equity ratio, unheard-of these days. We essentially bootstrapped the company's growth with bank loans. The implication of this approach is that you have to kill to eat—every day you've got to earn those profits.

We were growing 80-90% a year and making good money, because it was a virgin market and we had

superior products and better sales and marketing. We went public in late '68, just four years after starting the company. The primary reason for the IPO was not to raise money, but to facilitate the exit of my partner from the company.

Kaizen: There were some difficulties that led to Mr. Lorber's wanting to leave in 1968 or 1969? What happened?

Stata: We had a pretty clear strategy; we knew what we wanted to do and we were being very successful at doing it. The major problem was that as soon as we got to the point where the company was worth anything, Matt wanted to sell but I wanted to continue to build the company. That was the fundamental problem.

And besides, it was still a partnership. We called it a two-headed monster since neither accepted the other as the boss. As a myriad of little problems arose along the way, there was no authority to resolve them, so we spent a lot of time hassling over little things. It worked and we were friends, but it was hard. Successful partnerships are rare.

The problem was resolved by Matt selling half his stock at the IPO and leaving. It is unusual for a founder to sell shares at an IPO and leave, but there was a hot IPO market at that time.

Kaizen: After Mr. Lorber left, you wanted to concentrate on development and marketing, so you hired a president to run the company. Why didn't that work out?

Stata: Neither Matt nor I had a very clear idea of what the CEO of a public company was supposed to do. We both felt we needed a more experienced executive. We thought that the important stuff was deciding what products to make, getting them designed, getting them manufactured, and selling them—for us, that's what business was all about. My view was that the CEO was like a super clerk, an administrator that took care of assigning the parking spaces and raising money, you know,

administration. That is how naïve I was.

So we hired what we thought was a competent executive, but he was not technical, and didn't really understand our business. And as we got into it, surprise, surprise to me, he began to assert himself in areas where I had ownership, and where he didn't really have any understanding. This led to conflict and again to questions about who had the authority to decide what. But in this case, the CEO had a clear idea about who had the authority.

This forced me to do some soul searching. My motivation in starting a company in the first place was that, as I said, I have a significant aversion to authority and I don't like being told what to do—

The board was saying, "We can't do their conclusion. would be to do

I want the freedom to control my own destiny. It's built into my DNA and personality. So I realized that if I wanted to avoid the hassles with partners and now with the CEO, I had better figure out what a CEO is supposed to do and learn how to do it. So I went to the board of what was now a public company and convinced them I could provide better leadership than the person we had, especially since his deficiencies were beginning to show.

Even though I didn't have any experience as the CEO of a public company, the board gambled and put me in charge.

The first thing I did was to stand up in front of all the employees and say, "For all these reasons we're going to change leadership. I don't have a clue

CEE Essay Contest Winners

In Act II of *Hamlet*, Shakespeare wrote: "This above all: to thine own self be true / And it must follow, as the night the day, thou canst not then be false to any man." In the first half of this semester's Introduction to Philosophy course, students read Plato's *Apology* and *Crito*, Ayn Rand's *The Fountainhead*, and René Descartes' *Meditations*. Students were asked to write about the truth or falsity of Shakespeare's line in relation to one or more of the course books.

The essays were judged on their accuracy and depth of interpretation and their independence of thought. Congratulations to our five winners!

First Prize (Co-Winner)



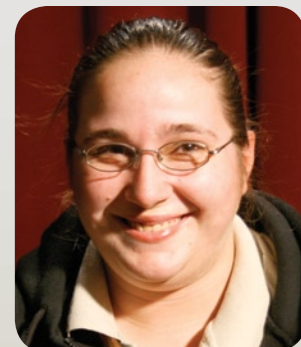
Jennifer LaSarre

First Prize (Co-Winner)



Hannah Mueller

Runner-up



Kelly King

about how to be a president, but I'm going to take the next twelve months to learn. And if at the end of that twelve months you guys collectively decide, or if the board decides, that I'm not the person who can provide leadership, I'll step down. But in the meantime, while I'm learning, you've got to help me." So everybody dug in, and there was then no way I could fail. Over the next twelve months I learned how to be a president and that process has continued for four decades.

Kaizen: Concurrently, ADI then shifted from assembling components to manufacturing high-performance linear integrated circuits. What convinced you that that was an important move to make? What data and trends were you looking at?

unanimous in it." I couldn't accept The greater risk nothing.

Stata: Just two years after we started Analog Devices, the first monolithic integrated circuit (IC) operation amplifiers (op-amps) were introduced to the market.

As I dug into it and learned more about IC's, I concluded that, while we would continue to do well for the foreseeable future, eventually IC technology, because of its dramatically lower cost, would take over. I was not sure when or exactly how, but for me the hand writing was on the wall; either we learned how to design and manufacture linear IC's, or we would have a short-lived history.

Kaizen: But it was hard to sell that idea inside the company. Why?

Stata: Nearly everyone in the company and on

the board disagreed. We were very successful, growing rapidly, and making high profits. It was a classical case of what [Clayton] Christensen at HBS later called the innovator's dilemma: Why would you want to re-direct resources to a riskier business, about which you know little, when your current business was so successful?

Another argument from our engineers was that IC technology would never perform well enough to meet our customers' needs. Others argued that large semiconductor companies already had a head start. How would we ever catch up? The financial types argued that we didn't have the financial resources to invest in expensive manufacturing equipment and compete with the giants. And finally, the clinching argument was that nobody in the company knew anything about how to design or manufacture IC's.

By then we were a public company. The board was unanimous in saying, "Ray, this is just too risky. We can't do it."

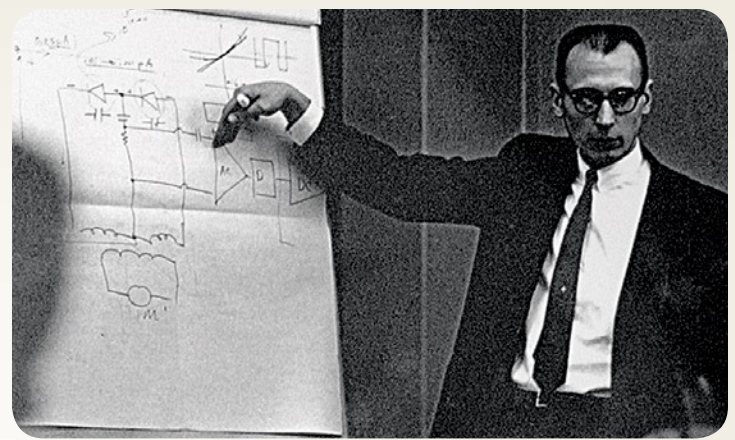
Kaizen: To make it happen, you set up a separate company, Nova Devices, with a can't-say-no offer to ADI?

Stata: Right. I couldn't accept their conclusion. The greater risk would be to do nothing. So I make an offer the board could not refuse. That is, I agree to pledge my Analog Devices stock to fund a group of engineers from a Boston company who I knew wanted to start a linear IC company. The deal was that the new company, Nova Devices, would design and manufacture the IC's and Analog would sell them. If Nova Devices succeeded, Analog Devices would have the option to buy at a fixed option price with no gain to me in order to avoid a conflict of interest. If the company failed, I would suffer the loss.

The board thought I was foolish, but they couldn't say no. Fortunately, it worked, since, as I believed, IC's did eventually completely obsolete our early manufacturing technology.

Kaizen: You became CEO in 1971. Was it an easy transition for you personally?

Stata: Not really. I remember very vividly thinking, "How do I learn



Stata presents operational amps to students in 1968

to become a president?" Fortunately, in digging around I found that the American Management Association had an organization called the President's Association. The AMA reserved this program for presidents only, and particularly for new presidents. The program was developed and delivered by presidents who had gone through this learning experience themselves. It was a one-week course given in Acapulco. My wife and I hadn't vacationed for a long while, so I figured what did we have to lose, although it didn't turn out to be much of a vacation.

It was a marvelous learning experience. My mental models got much clearer: What is my job? How do I go about doing it? What are the important challenges in leading a company? This was my MBA program crammed into a week.

By the end of the first year, with the benefit of that experience and with the growing success of the company, everyone at Analog Devices, including the directors, had confidence that I could do the job and so did I. Over the next thirty years I continued to learn as the company grew and faced new challenges.

Kaizen: You are now CEO, and your job includes high-level management. Earlier you mentioned learning a lot at HP, and you have also said that running a company "is nothing more or less than meeting the needs of the employees for self-actualization." What self-actualization needs do you mean here?

Stata: One of the most important constituents in the HP model are employees. In my view, if you satisfy ambitious employees, then in their own self-interest they will be motivated to meet the needs of customers and stockholders, particularly if you share the results of success.

The question is: What are the needs of employees and how do you address them? Maslow's Hierarchy of Needs is the best model. At the

Runner-up



Jake Maliszewski

Runner-up



Lisa Voss



Some applications of ADI technology

bottom of the hierarchy are basic needs for survival, food and shelter, money to pay the bills, and also a sense of security about your job is important. The need for socialization through affiliation with interesting, thoughtful and caring managers and co-workers ranks high, along with recognition and rewards for achievement.

But the last step of Maslow's hierarchy, self-actualization, is the most important, especially for ambitious, professional workers. People want to reach their full potential and become all that they can possibly become. They value a work environment where they are not limited in terms of their growth and development potential, but rather are encouraged and supported to achieve their personal goals. Employees' goals are best achieved in a company with a winning strategy that builds alignment and confidence in shared goals and objectives. Employees want a voice in deciding how to achieve their personal goals and the goals of the company.

Kaizen: One element you emphasize here is listening skills—what goes into being a good listener?

Stata: How the leader or leaders approach conversations can influence the listening skills of an organization. My approach, although I don't always practice what I preach, is to listen first and then speak. I often say that if God had intended us to speak more than listen, He would have given us two mouths and one ear.

It takes discipline and practice to become a good listener. You have to stay open to the possibility that other views, if you understand them, may be better than yours. Or you may discover common ground that is better than your views alone. Or you may gain perspective to be more effective in your advocacy. But it pays to listen.

Kaizen: The CEO is also the big-picture decider and has to be decisive—at the same time, you have said that you must be open to the fact that you could be wrong. How do you do that?

Stata: You have to establish a culture where making and admitting mistakes is acceptable. This has to start at the top. The leader has to lead by example: "We thought we had it right. But as it turns out, here are the reasons we didn't, and here is what we're going to do to correct the situation. Incidentally, I take full responsibility."

Kaizen: Leadership also means handling strategic challenges. For example, ADI had great growth until the mid-80s—25% per year on average and by 1985 ADI's stock was worth 35 times what it had been in 1975. But starting in 1984 sales suddenly went flat, and you had to re-strategize?

Stata: It was a crisis, because after consistent growth year after year, all of a sudden sales flattened, and our profits dropped. The Japanese were invading many of our customers markets. The dollar was strong, which impeded exports. Everything was going wrong, not just for us, but for the entire American semiconductor industry.

That was the bad news, but for Analog Devices the good news was that, for the first time, there were new markets that in the past had no interest in the performance we could deliver—they just wanted jellybeans at the lowest possible cost—that all of a sudden needed what we had.

Kaizen: So what changes did you as CEO decide the company had to make?

Stata: First we had to centralize manufacturing and learn how to manufacture in high volume with high quality. Previously, we had a highly decentralized structure, organized around technology. Every division had their own manufacturing facilities. Everybody did their own thing in their own way. But to achieve the cost required, we had to centralize manufacturing, introduce Total Quality Management techniques, and standardize our processes, which were seen as the antitheses of innovation, which had always driven our success. We had to accept the fact that innovation alone was not enough for continued success; we also had to excel in manufacturing.

The hard part of making changes of this magnitude is unlearning the things that have made you successful and changing your beliefs about what is important and what is possible. The changes required were so dramatic that we created a motto: "Creating the new Analog," which I used in meetings with employees around the world to explain what we were doing and why. It took years to pull it off, but we finally succeeded.

Kaizen: The transformation worked—by 1995 Analog Devices had 6,000 employees and sales of \$941 million.

Thirty years earlier the company had been two guys working out of their basement. When you look back on that spectacular growth, how do you feel about your role in making that happen?

Stata: I never imagined we would become a billion dollar company. We just took it one step at a time, solving problems and addressing the opportunities that would take us to the next step.

I have a deep sense of pride, shared by everyone in the company, that we not only continued to grow, but that we emerged as the undisputed leader in high performance linear integrated circuits worldwide.

You have to where making and is acceptable. at the

For me and many others, Analog has been a vehicle for personal growth and development. I was pushed by the company's success to learn in order to keep up with the requirements of my job. As a result, I grew, as did many others, well beyond what anyone could have imagined possible. It is very satisfying to have seen so many people develop to their full potential and become leaders in our industry.

Kaizen: You've also received many honors: You're a member of the American Academy of Arts and Sciences and the National Academy of Engineering, a recipient of the 2003 IEEE Founder's Medal and of the 2008 ACE Lifetime Achievement Award from the editorial board of *EE Times*. Do those add to your sense of accomplishment?

Stata: Well, I certainly appreciate these honors, but what's more important is my own inner sense of self-esteem for what I accomplished.

Having said that, I can't deny that recognition is a basic human need. If we get recognition from people and organizations we respect, it reinforces how we feel about ourselves.

Kaizen: One bigger-picture survival issue is whether the United States will remain the world's innovation leader. Around the world, where are the new rising centers of technological innovation? China? India? Brazil? Ireland?

Stata: The two that come up most often are India and China, and what role they will play in the world of innovation in the future. There's no doubt that the United States has been and is still today the technology leader—we're still way, way ahead.

Kaizen: Yet you worry that we are producing too few engineers. Why do you think this is so? Is that a problem at the university level or at the K-12 level?

Stata: The biggest problem is our K-12 education system. Our research universities are by far the best in the world. But forty percent of students who begin engineering studies drop out due to inadequate preparation in mathematics. If we don't get that fixed, there is no way America can sustain leadership in technology-based industries.

establish a culture admitting mistakes This has to start top.

Moreover, for a lot of complicated reasons, engineering as a profession is not held in high esteem in the same way as medicine, law and finance. As a result, not enough of our best and brightest are motivated or prepared to study engineering. And you have to be motivated, since engineering students generally have to work harder.

Thus we find ourselves as a nation dependent on immigrants to staff our technical workforce, especially at the graduate level. Sixty to seventy percent of our engineering graduate students are foreign-born. As economies of developing countries improve, the best and brightest will stay home to study and work. That is a frightening prospect.

Kaizen: So we need more engineers, but we also

need engineers with a broader range of knowledge and skills—what you call “Renaissance Men” engineers?

Stata: Right. We're finding that it is very, very challenging to be at the top of your game as an engineer. First, the technical knowledge required is both deep and broad, often cutting across multiple disciplines. And products are so complex that it often takes large teams of engineers with different specialties working across international borders. That requires human skills and communication skills to encourage collaboration and manage teams with quite varied backgrounds and experiences. And engineers must understand the financial implications of manufacturing and product development cost, as well as customer requirements and where products should be positioned in the market with respect to competition. The most successful engineers truly are “Renaissance Men” and not just technical specialists.

Kaizen: In addition to all of the above, you have served on the federal Executive Committee of the Council on Competitiveness, you gave major funding for the Ray and Maria Stata Center complex at MIT, and you are currently mentoring and funding several entrepreneurial startups. Where does all of your energy come from?

Stata: Well, we don't exactly know from where our motivations arise. They just happen to us. I can say I developed the capacity and discipline for hard work from an early age. No doubt this was influenced by the fact that I was raised in farm country where people work extremely hard and are very self-reliant. And I do have good health and stamina. But then there is the motivation to accomplish something in life that came from sources, which at least for me, I don't understand.

Kaizen: Is it habit-driven or passion-driven that leads you to want to work hard?

Stata: I think it's both. On the one hand, we do

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ADI's Growth

- 1965 - 46 employees, \$574,000 in sales
- 1966 - sales growth 140% to \$1.4 Million
- 1969 - sales exceeded \$8.7 Million; offices in 18 countries
- 1979 - sales \$100 Million
- 1984 - sales \$300 Million
- 1991 - sales \$538 Million
- 1996 - sales \$1.194 Billion
- 2000 - sales \$2.578 Billion
- 2005 - more than 8,000 employees; since 1965, cumulative sales of \$26 Billion
- 2006 - sales \$2.57 Billion



On Technology



“The computer was born to solve problems that did not exist before.”

— Bill Gates, Microsoft



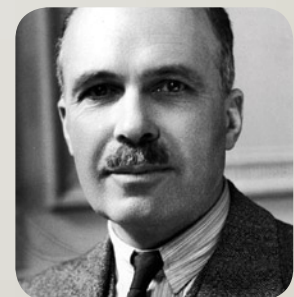
“A fundamental rule in technology says that whatever can be done will be done.”

— Andrew Grove, Intel



“[Information technology] empowers people to do what they want to do. It lets people be creative. It lets people be productive. It lets people learn things they didn't think they could learn before ... it is all about potential.”

— Steve Ballmer, Microsoft



“The most important thing in science is not so much to obtain new facts as to discover new ways of thinking about them.”

— Sir William Bragg, Nobel-winning physicist

STATA, CONTINUED

develop habits and/or inherit habits that take on a life of their own. A place like MIT, as I mentioned, forces you to be disciplined and work hard, or you don't survive.

On the other hand, they say that some people work to live while others live to work. I find purpose, satisfaction and fulfillment in my work. So in that sense work is not work, it is something I want to do.

To return to Maslow's hierarchy of needs and self-actualization, through work, I continue to learn and to develop in many different ways, I find ways to have an impact on the world around me and I'm able to enrich the experience and lives of those I care for. I can't imagine life without work.

Kaizen: You also have a family, friends, and other interests, but each day has only so many hours. How do you approach achieving your career goals with achieving your other life goals?

Stata: That's a continuing challenge. The most important thing I did to help with that dilemma was to have married a woman who has supported and encouraged me to do what I do. She took on a lot of the responsibility of raising our children and for looking after the necessities of life. She's given me degrees of freedom that I truly appreciate and honor. Our success has been a true partnership.

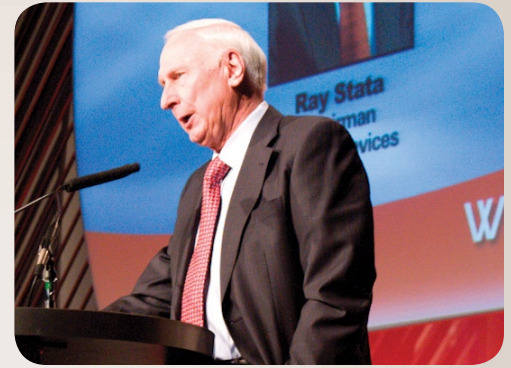
Without that support and without good health, it would not have been possible to keep up the pace of work.

What I've observed is that most of the successful people I see around the planet don't have balanced work lives; they have a passion for work that dominates their lives. That's not to say that family, children, grandchildren, hobbies, sports, vacations, travel are not important too. But when it comes down to it, most of their time is centered around their career and their work, because it's so satisfying.

Kaizen: In closing, for younger people starting out, what is the most important thing they should know?

Stata: Well, maybe I can pick a couple. First, one way or other you've got to be good at something, even though that something will no doubt change over time. As you enter your career, strive to achieve excellence at whatever you do.

Back to some of the things we talked about, you soon find out that you don't get very much accomplished in life on your own. Now there are exceptions, like musicians, artists and writers who can go off on their own and accomplish remarkable things. But most of us find that we accomplish more by working in concert with others to leverage our combined skills and competencies.



Stata accepting ACE award, 2008

I've found that one of the most important factors in being a leader, or more generally in engaging with people, is to build trustful relationships. What does that mean? Trust is built on honesty, integrity, reliability, sincerity, competence. Conduct yourself so that people can depend on what you say and what you do, on the fact that you're more often right than wrong, on the fact that you meet your commitments, on the fact that you are straight with people and tell it how it is. If people trust you and you trust them, you can get a lot more out of relationships and out of life.

This interview was conducted for Kaizen by Stephen Hicks. To learn more about Ray Stata, please visit www.analog.com. Kaizen's full interview with Mr. Stata will be posted soon on the Center's website at www.EthicsandEntrepreneurship.org.

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MORE INFORMATION ABOUT CEE AND ROCKFORD COLLEGE

Kaizen is published by the Center for Ethics and Entrepreneurship at Rockford College. Founded in 1847, Rockford College is a four-year, independent, coeducational institution offering undergraduate and graduate degrees in traditional liberal arts and professional fields. One of 81 colleges nationwide designated as a "College with a Conscience" by the *Princeton Review*, Rockford College is also among 76 U.S. colleges and universities selected by the Carnegie Foundation for the Advancement of Teaching for inclusion in a "Community Engagement" college classification. Rockford College is one of 11 colleges in Illinois and 276 in the country with a Phi Beta Kappa chapter, the oldest and most prestigious academic honors society, and in 2007 was named a "College of Distinction."

In the Next Issue: Judy Estrin on Entrepreneurship and Innovation



Kaizen (改善) is a Japanese term meaning "change for the better" or "continuous improvement." Kaizen has been applied worldwide as a method for improving the efficiency of all aspects of a business continuously through a cyclical process of standardizing operations, measuring their efficacy, evaluating the data, and innovating to improve performance. Kaizen is also used to eliminate wasteful effort and to humanize relationships within the workplace.