

**Speech delivered by Dr. Alice Gast, President of Lehigh University at the graduation of the inaugural class of ELATE at Drexel Fellows, March 16, 2013**

**LESSONS IN LEADERSHIP**

I'm pleased to be here today to help you celebrate the inaugural class of ELATE Fellows.

I feel a special kinship with all of you, Margaret, Monica, Terri, Justine, Gena, Amy, Linda, Keri, Jackie, Karen and Alyssa. We twelve share a common bond.

We are woman scientists, engineers, and mathematicians. We have experienced the joys, and the challenges, that come from taking the path less traveled.

And we share some of the same goals. We want the path we took to be more heavily traveled. We want to encourage talented women, and men, to study math, science and engineering. Not because we did. But because we know how important it is to the future of our country and our world.

We also, perhaps, share a feeling that we didn't really seek out leadership but we became leaders rather indirectly. We aimed to be the best scientists and engineers we could be, and, at some point, by doing that, by focusing on what we do well, we became leaders. Today I would like to talk about some things I have learned along this indirect path to leadership.

I speak from the perspective of a leader who focused first on my calling to be a scientist. I am inspired by many women scientists who came before me.

Women have distinguished themselves as scientists, engineers and mathematicians for well over a century. We have a noble and distinguished lineage.

Take for instance, **Ellen Swallow Richards** who was 26 when she entered Vassar in 1868. Two years later she graduated with a degree in chemistry. Wanting to continue her work, she applied to MIT, where she was accepted as a special student. She was an experiment of sorts. MIT wanted to determine whether women had abilities in the sciences. Fortunately, she was successful at MIT, but she remained conscious of the constraints on women in a world dominated by men. In a letter to a friend she wrote: "I hope that I am winning a way which others will keep open. Perhaps the fact that I am not a radical and that I do not scorn womanly duties, but deem it a privilege to clean up and supervise the room and sew things, etc., is winning me stronger allies than anything else... I am useful in a general way, and they can't say study spoils me for anything else."

In 1911 she addressed her fellow alumnae at Vassar: "We have won our standing, an acknowledged place. Now that we have influence how shall we use it? Woman's outlook will be different ten years from now. Is she still to be behind in the race? Or, from her new standpoint shall she lead? The question is not woman, but ability and women." Ellen Swallow Richards' optimism and positive outlook is remarkable to me when you realize the times she lived in. Her confidence is impressive when you stop to think that it took most of

those ten years she referred to for women to even gain the right to vote in the United States.

Nobel Laureate **Gerty Cori** was equally tenacious. She had trouble finding a research position at a university after she and her husband emigrated to the U.S. in 1922. She collaborated in medical research with her husband and he had little trouble finding universities who wanted to hire him. In 1931, she became a research associate at the Washington University School of Medicine. In 1943, she was made an associate professor of Research, in Biological Chemistry and Pharmacology. Finally, in 1947, months before she and her husband were awarded the Nobel Prize in Physiology or Medicine, Gerty Cori was made a full professor.

Finally, **Grace Murray Hopper**, earned a PhD in mathematics from Yale in 1934. In her long and distinguished career, she was an academic, a naval officer and a business executive. She moved seamlessly from one male-dominated culture to another, and she succeeded at each stop.

She was a beloved professor at Vassar for 15 years.

She left Vassar to join the US Naval Reserve as a WAVE during World War II, and she eventually became the first woman Admiral in the Navy.

After the war she joined Remington Rand was at the forefront of computing, developed the first compiler in 1952. She was involved in the development of computer languages including COBOL. She is credited with coining the term “debugging” after she fixed a computer that had actually a moth in it. She received numerous awards, one of the most ironic being the first ever Computer Science Man-of-the-Year Award in 1969.

Each of these women faced challenges. Their paths were not easy. But they persevered. They didn’t set out to become role models or leaders. They set out to become the best engineer, the best scientist, the best mathematician that they could be. They followed their passion, they used their brains, they worked hard, they overcame obstacles, and, they kept their focus.

There are many women to whom we owe so much. Some are famous, like Ellen Swallow Richards, Gerty Cori and Grace Murray Cooper. Others are just as important, but remembered in the hearts and minds of the students and colleagues they touched, rather than in history books.

We are the beneficiaries of their collective legacy.

As you return to your home institutions, celebrating your achievement as a Fellow of ELATE, it is important to reflect on the responsibilities we carry.

- It is our responsibility to build upon what we have been given by those who came before us.
- It is our responsibility to develop and nurture future generations of students interested in engineering and science.

- It is our responsibility to be the best we can be at our life's work – Martin Luther King Jr. exhorts us: "Whatever your life's work is, do it well."

Thus we need to be good researchers, good teachers and good administrators.

But we also need to be good leaders.

Each of you was selected for ELATE because you are leaders. You entered the program because you wanted to be even better leaders.

I would like to share with you some leadership lessons that have served me well over the years.

These lessons have come from a range of people and places, lessons from mentors, from students, and from role models in other fields.

I have had some wonderful mentors over the years. Two of the most important are Chuck Vest and Bob Brown.

Chuck was president of MIT and Bob Brown was provost in 2001 when they hired me as vice president for research and associate provost. I knew of Chuck's reputation as a leader before I arrived at MIT because of something that had happened a few years before.

During the mid-90s Nancy Hopkins, a distinguished professor of biology, complained that she and other women faculty and researchers were victims of systematic, institutionalized discrimination. Chuck didn't become defensive. He demonstrated leadership. He formed a committee, with Nancy as the chair, to investigate the issue of gender inequality at MIT. Chuck endorsed the committee's findings and led MIT to assess and address gender equality across the institute. By doing so, they led a nation-wide dialog on the issue.

I saw Chuck's leadership qualities first-hand, time and again. I watched him in meetings where he let everyone have their say, but always ended the meeting with a summary of what steps were to be taken and who had the responsibility for implementing those steps.

Some of those meetings started out as contentious. But Chuck always kept the dialogue open, and he always looked and listened for the common ground. Chuck liked to say that as an engineer he was trained to solve problems. That is true. But what is also true about Chuck is that he has a strong sense of right and a strong sense of fairness.

Bob Brown, the president of Boston University, and a fellow chemical engineer has taught me much. Bob starts by listening intently. He excels at distilling problems and issues down to their essence and then finding the right path forward. Bob evaluates and understands the perspectives of the people grappling with any particular problem. He works to understand the viewpoints of others and he uses those perspectives to find common ground and to develop solutions.

Listen, understand the perspectives of others, find the common ground. These are valuable lessons in leadership.

Since arriving at Lehigh University, I have also found important insights into leadership from students. At Lehigh we have a program called Leadership Lehigh. It is a rigorous four-year extra-curricular program attracting students who spend a great deal of time and effort on top of their regular course load. They are very perceptive and have provided valuable lessons for me.

I had lunch with a group of seniors about to complete their Leadership Lehigh program. Interestingly, the women turned out for the lunch so we had a chance to talk about leadership without any of their male counterparts present. They talked about how they realize that you don't have to be at the head of the table or hold a special title to be a leader. Leadership, they say, is exercised in many ways, in class discussion, among groups of friends and in organizations. Leadership opportunities can be seized in a wide variety of places and sometimes in unexpected circumstances.

One student told me that she was an introvert, and that she never thought she would be able to be a leader. But she learned that she could work behind the scenes, she learned that subtlety rather than assertiveness served her better as a leader.

They learned that leadership is manifest in direct actions and in being a model for others.

Howard Gardner says that great leaders provide leadership in two principal ways: through the stories they tell, and through the kind of lives they lead. I think about the leaders I look up to and how their examples serve as a guide. I also think about how, sometimes, you find out you have served as a guide or role model when you least expected it.

Finally, I am a lover of jazz and like to listen to Louis Armstrong, Miles Davis, Pat Metheny and John Coltrane. A while ago, I was sent an article by John Edward Hasse, the Curator of Music at the Smithsonian Museum of American History. Hasse also writes and speaks on leadership, and his piece on "Leadership Lessons from the Jazz Masters" is something I refer back to often and I thought I would share with you today.

Hasse identifies a number of leadership lessons from jazz masters like Duke Ellington, Miles Davis, and Benny Goodman. As you think about the dynamics of a jazz ensemble, you realize that leadership is subtle and multifaceted. The lessons resonate with what I have just been describing:

**1. Listen closely.** By doing this you show respect, get important feedback and get direction.

**2. Find your own sound.** This is similar to what I learned from my students. Be a leader, but always be yourself.

**3. Take risks, improvise.** As a leader you have to take risks, you have to be willing to fail. Great things don't happen without risk taking.

**4. Collaborate Creatively.** Being a leader doesn't mean having all the answers. As Hasse says, it means knowing that "None of us is as smart as all of us."

**5. Find and Nurture Great Talent.** Hasse mentions Duke Ellington. He says, "Duke Ellington knew that each of us has been given different gifts. And that we all need to find a way to highlight each person's gifts, downplay their weaknesses, enhance their strengths, and bring out their best." Duke Ellington was a great leader.

As you return to your universities, I hope that you will continue to strive to be great leaders.

I hope that you will continue to find ways of creating excitement and interest in science, technology, engineering and math.

I hope that, one day, you will look back on your career and say to yourself: I made a difference, I left my mark, I touched lives, I helped others to journey on the path less taken.

Thank you.