

“Women in Technology: Look How Far We Haven’t Come”

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I. Introduction

I am absolutely delighted that you invited me here today. The subject of girls in technology is near and dear to me. First, because I am the mother of an eight-year old daughter. And she is being educated in a world that still relegates girls to an inferior position when it comes to math, science, business and technology. Second, I have a vested interest in technology. As the only female CEO in the computer industry, I have a pretty clear view of how women in business are faring.

I applaud the action of this organization for taking on the challenge of changing the way girls view technology. And I commend those of you who are working so hard to give girls opportunities to excel in this area. But, we wouldn’t be here today if there wasn’t a lot left to do.

So, this morning I am going to talk about how far we haven’t come and why. I’ll tell you what corporations can and should do to help. And, finally, I’ll talk about the consequences we face if things don’t change.

II. How Far We Haven’t Come

Sometimes people view me as a symbol of how far women have come in business, and especially in technology. The reality is we haven’t come far enough. The fact is, the number of women in leadership positions in all industries is dismal.

Right now women only hold seven to nine percent of senior level management positions in America’s 1,000 largest companies—even though we hold 46 percent of the jobs in the United States. I’d say we have a problem in this country with women participating at this level. (Source: Federal Glass Ceiling Commission).

It’s especially true at the CEO level. There are only two female CEOs in the Fortune 500, and a total of five in the Fortune 1000. As I mentioned earlier, I am the only female CEO in the technology area.

Female CEOs are still so rare that some people simply don’t know how to deal with it. A few years ago my husband Bill and I attended a CEO alumni dinner at the University of Wisconsin. As we arrived, we all introduced ourselves to one another. Someone would shake my hand and say, “Hi, Carol,” and then turn their attention to Bill. They’d say, “And what do you do?” or “When did you graduate?” Even when he said he didn’t go to Wisconsin, they didn’t figure out that it was I who was the CEO. Bill, bless his heart, kept trying to direct the conversation back to me, but they simply ignored me. Later, as we sat down to eat, we saw a list of the CEOs and spouses at each person’s place. When people read, “Carol Bartz and spouse Bill,” suddenly they were saying, “Oh, you’re Carol Bartz. We’ll, I heard you speak at.... this event or another.” I thought that was extremely rude. One minute I

am nobody worth even being polite to, and the next minute it's completely different. My husband clearly saw what it meant to be discounted for being a woman.

These are smart people. If asked, they would never admit that they could do such a thing. But, they did. It happens because there is a built-in bias toward women that most people are not even aware of, or have just come to accept.

- Here's an example: In 1945, six women were hired by the U.S. Army to undertake the process of programming the giant Eniac computer at the University of Pennsylvania. Now this was very complex programming job. But, believe it or not, the Army considered it clerical work. Naturally, it was assigned to women. Even today, it is a little known fact that women were the first computer programmers. We helped to launch the computer era.
- Today women make up only 35% of the high tech workforce. Mostly it's in staff positions in areas like human resources and marketing. In other industries such as aerospace, automotive, engineering and construction, only about 5 percent of women are corporate officers. (Source: 1996 Catalyst Census of Women, Corporate Officers and Top Earners).
- There are a number of reasons why women are held back from leadership positions. A 1995 Roper Starch Opinion poll found that a high percentage of women believe it's because the good old boy network won't let them in. They think they are held to higher standards than men. Or, that it's because there are so few women in high corporate positions to inspire others. I believe all of the above is true.

But CEOs have a different perspective. In a recent study by Catalyst, CEOs said women were held back by a lack of significant management and line experience. And they just haven't been around long enough.

Well, that's a no brainer. Obviously we have to get more women into the feeder pool before we will see significant changes. The problem is women are not coming off the right track in education. That is why I am so discouraged when I read a survey that says 25% of young girls are not encouraged to aspire to careers as managers (Source: Roper Survey).

And it's a travesty that by the age of 12 or 13 girls are discouraged from pursuing math, science and technology. These subjects are going to lead to some of the most sought after and well-paid positions in the future and we have to make certain that young girls are ready and able to get into the feeder pool.

III. Why we are not further along

This gender gap begins in childhood. It happens because we teach girls—directly and indirectly—that the domain of math, science and technology belongs to boys. English, art and history are the domain of girls. And by doing so, we determine their future and limit their choices in life.

I'll give you another perspective. In Britain, kids take what's called the 11 Plus Test. The outcome of this test determines what track they will be on for the rest of their education. One track goes into the grammar school system and on to the university. The other track goes into the secondary system and on to vocational school. Well, I can tell you this...If my fate had been decided at age 11 I would probably be a secretary instead of a CEO.

At age 16 they take an exam called the General Certificate of Secondary Education. They are put on tracks to pursue medicine, language, and science, whatever. The track they select depends on how they do on their exams and on their interests. But this track is the one they follow into the university when they pass their “A” level exams at age 18. Of course, there are exceptions. Teacher assessment and parent involvement play a role. But, in general, few escape the system.

If we tried to transplant this system to the U.S. there would be a public outcry. After all, this is the land of equal opportunity. But, in reality, the future of American girls also is being decided at about the same age. It is done by discouraging them from pursuing the track that leads to careers in science, math and technology.

And there is no public outcry. The girls are cut out like at the sheep farm. Reach the first gate and they are divided Hit the first vector point and went down the wrong path.

Girls are cut out like sheep. They reach the first gate and are divided before they even have a chance to know what happened. They are allowed to go down the wrong path and they can't rejoin the crowd without tremendous effort.

If they could just stay with the crowd and vector off later, that would be fine. Not everyone's going to be an engineer or a mathematician. Some will be artists, writers, teachers. Or, God forbid, even fashion models like Cindy Crawford, who, by the way, has a degree in chemical engineering.

The point is girls deserve to have a choice. And choice comes from having knowledge and skills. They may get to college and think math or computer science sounds interesting. But their path has been set. If they never figured out how to do multiplication; they will never do calculus. If they don't get the fundamentals in primary and secondary schools, they are not going to be a science or math major in college. If they don't get the basics of technology, they are not going to write software.

Technology is like learning a foreign language. You learn a few nouns and verbs. You learn sentence construction. And finally, you write a complex sentence. It's an additive process that takes time. If girls aren't grounded in the fundamentals in elementary school and high school, they will be cut out of a career in technology.

They won't have the skills and it's very difficult to catch up at that point.

When I started college in 1966, women had limited choices when it came to careers. It was pretty much nursing and teaching. I didn't have the patience to be a teacher, and I don't look good in white. My favorite subject was math. The closest thing to math was computer science. So that's what I picked. Computer science was completely foreign to me, but it had intriguing potential. I'm proud to say I'm a first generation computer nerd. But if I had not been well grounded in the fundamentals, I would never have been able to make that choice.

The only real difference between Britain's system and ours is that Britain tracks by test scores and it's part of an official, rigid class system that's almost impossible to change. The U.S. tracks by gender. It's not part of the official system. And we can change it.

IV. Making Changes

We can change perception. We can change attitudes. And even if we can't do away with gender biases completely, we can equip girls with the skills they need to fight and overcome them.

When my daughter was in first grade she came home one day and said, "Mama, why are boys smarter than girls? I was flabbergasted. I said, "Why would you ever think that?" She said, "They always get to answer the questions in class."

In second grade, she informed me she wasn't good at math. Once again I asked her why she would think that. She said, "I'm just not." There is a common belief that girls aren't good at math and it's reinforced all the time. I'll give you an example.

Not too long ago I was standing outside the classroom with my daughter, one of her school friends and the friend's mother. The mother said to me, "Can you believe the math homework? When my daughter asks me to help her, I tell her 'I just can't.' I've just never have able to figure it out. Go ask your father." I wanted to cover my daughter's ears with my hands and say, "Don't listen to this."

The attitude that boys can do it and girls can't is instilled at an early age. Some of us hold that perception throughout our lifetimes. And we pass it on to the next generation of girls.

I believe that one of the solutions to breaking this perception is by going to an all girls school. But that's not possible for everyone. The next best thing is to put boys and girls into separate math and science classes around fourth or fifth grade. This is about the time when many girls just give up. We can't let girls sit in the classroom and internalize that they are not in the flow.

I'm often asked what skills I think are important for girls to have. I can boil it down to one word: logic. The most important thing we can teach is the concept of "if" and "then."

- If I do this, then this will happen.
- If I study I may get an A on the test; if I don't, then I won't.
- If I practice the clarinet, I will learn to play; if I don't then I can't be in the school band.

If they understand "if" and "then," they can apply it to everything from personal responsibility to scientific process. If they understand logic and consequences, then they will have the tools to excel to the best of their abilities. There are many, many smart people out there who go nowhere because they don't understand the consequences of their actions. If we can arm girls with this skill, they may be able to overcome gender biases and other obstacles and go on to meet their full potential.

V. What Autodesk Is Doing

I don't feel for a single minute that it is the sole responsibility of teachers or parents to make these changes. Business leaders and corporations can and should play a role in changing this environment.

I'm on the National Employer Leadership Council, a group of leading businesses in America that set policy on work-based learning for high school students. We are developing standards for work place learning and how to assess it.

On the corporate side, Autodesk has a nonprofit organization called the Autodesk Foundation. Its sole mission is to work in partnership with schools, teachers, administrators and school boards. We want to help educators understand how technology and project-based learning can empower kids to take the initiative with their own learning. We want to show them how to use technology to help kids

communicate, collaborate and synthesize information. And we want to help them apply these skills to solving real world problems. That's what will be expected of these children when they enter the work force.

- Each year the Foundation holds a conference for teachers on project-based learning and we invite the best teachers from across the nation to present.
- We offer teachers a free online newsletter that points them to web sites, conferences and grants for project-based learning.
- We provide technical assistance for coaching. We help with grant writing and curriculum preparation. And we connect schools to other partners in the community who can support the work of teachers.
- I'm especially proud of our internship program. We bring in high school students and give them hands-on experience in technical areas. Over the last 3-4 years we've had more than 110 students. In the beginning, we had very few girls. But that's changing. Girls now make up nearly one-half of the program. And we are actively reaching out to girls in middle schools to get them thinking about an internship with Autodesk later on. This program has exposed girls to technology and demystified it. And they are such champions that we have them out talking to other girls in the community.
- We also have a volunteer policy that lets employees volunteer in schools four hours a month on Autodesk time. One woman has even adopted a classroom. She helped them put a Web page together. She trained them in the Internet language of html. And she trained the teacher. When she travels she sends postcards and brings souvenirs back to her adopted classroom.

There's another piece of Autodesk's educational effort that is geared specifically toward girls. It's called "Design Your Future: Math, Science and Technology for Girls." This is a new task force made up of female managers at Autodesk who come from a broad range of departments. These volunteers are developing programs and opportunities that let young girls explore and pursue math, science and technology-based careers.

Let me tell you about some of the things we're working on:

- First, we're putting together strategic alliances with other organizations whose work can we leverage. We think it's important to mobilize people in our organization in ways that can benefit another.
- We're also working on the Autodesk resource exchange. This is going to be an Internet-based resource to help families identify books, conferences and organizations that are trying to eliminate the gender gap.
- And we're developing the Women of Autodesk, an online resource with biographies and job descriptions of women who are willing to be speakers, teacher mentors, classroom visitors or email mentors.

One event that really excites me is NASA's Virtual Take Your Daughter to Work Day. The Women of NASA sponsored this on April 24 and the vice president of the Autodesk Foundation helped with the planning. This event was the first of its kind to use sophisticated networking technology so that students, parents and schools could talk with 10 successful female leaders from around the U.S. They did it using the World Wide Web. I was fortunate to participate along with Mae Jemison, a NASA astronaut, Donna Shurley, head of the Mars exploration at NASA, Judy Woodruff from CNN, and Susan Love, a very prominent doctor in the field of breast cancer education and research.

I was very taken by the kinds of questions that the girls asked us. Essentially, they wanted to know, “How did you do it?” And, “What can I do?”

Next the Women of NASA are launching Women of the World. These will be quarterly online chats with the nation’s most successful females in a wide range of professions. Tipper Gore has signed up, along with Senator Dianne Feinstein and Ruth Simmons, the president of Smith College.

These are just a few examples of how we can be active participants in change within our own communities and in collaboration with other organizations.

IV. Consequences

It’s going to take a collaborative effort to conquer the gender gap, and it’s important that we all do our bit. If we don’t we may face dire consequences.

President John F. Kennedy once said: “When written in Chinese, the word ‘crisis’ is composed of two characters. One represents danger and the other represents opportunity.”

This country is backsliding toward crisis. In early civilization men and women were separated by sheer strength. This continued through colonization. Then came the Industrial Age and it began to look like women might have more opportunities. At last, machines could do the heavy work. Now it seems we are vectoring back almost to the beginning. Girls are being culled out not because of a lack of physical strength, but because of a lack of knowledge strength.

Knowledge strength is going to be the foundation for learning and working in the future. Technology will be required to gainfully participate in society. It will be required to get basic information. The educational issues that girls face today are going to become job and leadership issues for women tomorrow.

By the year 2000, 60 percent of the jobs available are going to require computer and technology skills. These will be the higher paying jobs, as well. By the year 2000, women will make up more than half of the work force. We cannot afford to be cut out of the majority of the highest paying jobs available. We should not only be concerned about what this means to the economy, but what it means to equality.

VI. Conclusion

I want to share a story with you. I had just finished my online chat session at the NASA Take Your Daughter to Work Day when an Autodesk employee... who is in a non-technical position...came up to me and said:

“Carol, I am so energized by what you are saying, but I’m also so sad. If I had only heard this stuff when I was young, my life would be so different. I’m as smart as these women around here who are on the technical side, I just didn’t get the background. And now there’s no turning back. It’s too late.”

We have to make sure it’s not too late.

“There’s an ancient Chinese saying that goes, “A one thousand mile journey begins with the land under your feet.” I’d like to add a twist to it.

“If we don’t give girls solid ground to stand on, they may never gain the footing they need to make the journey at all.”
