

**"New Frontiers, New Traditions - a National Conference for the Advancement of  
Women in Engineering, Science and Technology"  
CCWEST (Canadian Coalition for Women in Engineering, Science and Technology)  
July 7, 2000  
St. John's, Newfoundland  
Plenary - Gloria Montano**

Good morning!

I am honored to be here at "New Frontiers, New Traditions", your 8th national conference. The conference theme is so appropriate because we are on the threshold of a New World; one in which I strongly believe women will play a significant role, particularly in areas involving technology.

I've been asked to speak about the Institute for Women and Technology, and I am very happy to comply.

The Institute for Women and Technology, also known as IWT, is the brainchild of Dr. Anita Borg. Anita was to have been your speaker today. She very much wanted to be here; however, health reasons kept her away. She sends her best regards and best wishes for a successful conference.

Before I speak about IWT, I'd like to first talk a little about my background. As the story unravels, perhaps you will see why Anita's vision is such an important component to the advancement of women as a significant force in technology.

About Gloria...

My involvement with women in engineering and technology dates back to 1973 when I was a looking through college catalogues. My father, who was a draftsman, had suggested that engineering would be a good profession. As a high school student I didn't know what a draftsman was, much less an engineer. But, there, right smack dab in the middle of the section on student organizations was the "Society of Women Engineers". With the wisdom of a teenager I distinctly remember thinking, "Gee, if there are enough women engineers to make an entire Society, then engineering must be an okay field for me."

I signed up for a course of study in electrical engineering only to find out like many of you, that I was the only woman in my introduction to engineering class. Fortunately for me, the Society of Women Engineers found me in my sophomore year.

50th Anniversary of SWE ...

The Society of Women Engineers is a non-profit educational and service organization founded in 1950 and dedicated to increasing the number of women in engineering and ensuring their continued success as engineers and leaders. SWE has a membership of over

14,000, predominantly in the United States. The SWE mission is to stimulate women to achieve full potential in careers as engineers and leaders, expand the image of the engineering profession as a positive force in improving the quality of life, and demonstrate the value of diversity.

My affiliation with SWE continued throughout my life. I've held various roles of increasing responsibility until I was elected to the office of President. Today I am officially known as Past President, a title I hold for life.

In the past 24 years I have seen and participated in a large number of programs aimed at increasing the number of women in engineering. When one is that close to the action, sometimes it takes an external influence to help one see the obvious.

For me, the external influence came in the form of a workshop called "Women Leading Change" lead by Rayona Sharpnack of the Women's Leadership Institute. To make a long story short, I realized that despite all the energy I poured in the various programs from SWE and other groups in 20 years, the percentage of women in engineering increased from 4% to only 8%. Frankly 8% just isn't good enough, especially if you compare to the gains made in other fields such as medicine and law.

From my perch in SWE, I had a good idea of what was already being done. I finally saw that something different was needed and I started to expand by horizon and look for other options.

While I was off in search of the holy grail, Anita Borg was tapped to work on the National Academy of Engineering steering committee for the "Celebration of Women in Engineering". Not too long after that, she was tapped to be President Clinton's appointee to the Congressionally mandated Commission on the Advancement of Women and Minorities in Science, Engineering, and Technology Development, CAWMSET. At a CAWMSET workshop to develop specific suggestions for the commission, was where we met and connected.

In April I joined the extended staff of IWT as Director of the Virtual Development Center. This is made possible through the generosity of Compaq Computers.

So what is IWT....

The Institute for Women and Technology, also known as IWT, is a research and advanced development, 501c3 charitable organization. IWT was founded by Dr. Anita Borg in 1997.

The mission of the Institute is to

- Increase the impact of women on technology,
- Increase the positive impact of technology on the lives of the world's women, and to
- Help communities, industry, education and governments benefit from these increases.

Specific objectives are to

- Become a world-class research and advanced development center that is a leader in the creation of technology that involves and serves women,
- Catalyze R&D initiatives throughout industry, academia, government and the non-profit sector that fully engage women in all phases of their work.
- Draw women around the world into active and equitable involvement in the definition, creation of information technologies.

Sponsors:

- Xerox Palo Alto Research Center
- Sun Microsystems
- Hewlett Packard
- Compaq Computer
- Lotus Corporation
- IBM

IWT is headquartered in Palo Alto, California, courtesy of the Xerox Palo Alto Research Center. The full-time team is small, but very dedicated and talented. Rounding out the team are technical and administrative personnel on part-time loan from Sun Microsystems, Hewlett Packard and Compaq Computers.

Initiatives:

- Events -- Workshops and Conferences

Workshops bring together technical and non-technical women to brainstorm for the future. The Grace Hopper Celebration of Women in Computing is the only technical forum for women's ongoing contributions to the computing field.

- Virtual Development Center -- more detail later
- Research and Outreach

Measures of Success:

- Incubation of successful projects
- Self-supporting with reliable funding line
- Evidence that the VDC sites are incubating more engineers, providing a model for other universities

About the VDC...

The VDC is a geographically distributed, integrated and highly collaborative center for education, research and development. It provides a structure in which students and professionals realize the ideas generated through innovative events in prototypes and products. They bring women's ideas to concrete reality.

Earlier I mentioned that IWT had implemented many elements that were missing from the efforts of the Society of Women Engineers. I'd like to review those elements now.

First, the Innovation Workshops produce ideas for **products**.

Products are real. They are something that a human being can touch. Products give form to value. People need to buy stuff.

Second, the Thinking Environment creates an **inviting, level playing field**.

The Thinking Environment says we will behave differently so that everyone may contribute his or her very best.

Third, the guidelines for a Virtual Development Site require **greater context**.

Every Virtual Development Site must have a leadership team. The team must have non-technical as well as technical representation. This means that people like social scientists will have input to product development. (Segue to greening of engineering)

Fourth, the Virtual Collaboration Network will allow for **continued sharing of ideas**.

We all understand the power of collaboration. As the Virtual Development Center moves into its second year, we will focus on ensuring that the Virtual Development Sites are connected through a virtual collaboration network.

Let's go back to statistics...

In 1978, the percentage of women graduating in the US with a bachelor degree in engineering was 7%, Masters degree was 5% and doctorates 2%. By 1997, the percentages were 19%, 19% and 12% according to AAES/EWC. I find the Canadian numbers interesting. According to the CCWEST website, in 1987 the percentage of Canadian engineering students graduating with a bachelors degree who are women was 10% rising to 17.5% in 1995. For graduate degrees, the percentage in 1995 was 13.5%. This says that Canada was able to reach about the same levels as the US in less time. If any of you have any theories why you've been more successful, I'd love to hear from you.

Another dimension... if you break the numbers down by race and ethnicity, the numbers show that these women may be differently attracted to careers in engineering. 17% of the graduating engineers in 1994-95 were women. Of that group, 17% were white, 35% were black, 19% were Hispanic, 21% were Asian/Pacific Islander, and 20% were American Indian.

On the employed side, the percentages are more dismal. In 1995, the percentage of the engineering workforce in the US is 8.4% according to the Commission on Professionals in Science and Technology.

Last year, I had the opportunity to address a delegation of women from Western Asia on their visit to San Jose, California. They represented Arab nations such as Lebanon, Syria and Egypt. I was surprised to hear that the percentage of women engineers in their countries was in the 9-10% range.

We could get discouraged by the low percentages, but I prefer to stay on the optimistic side, so let's look at magnitude.

19% of the 1997 undergraduates is 65,091 women. Add in the graduate students and the number is 102,651 women. In 1995 there were 162,456 women employed as engineers. Extrapolate and blend the student numbers with the employed numbers and we are looking at somewhere around a quarter of a million women engineers, and that is just in the US. Any way you cut it, a quarter of a million women who are fearless in the face of technology is a force to be reckoned with.

Last week at the National Conference of the Society of Women Engineers, the keynote speaker, Judith Estrin former CTO at Cisco, stated that the press is now starting to say that next big wave to sweep through will be the influence of women on technology. This should come as no big surprise. Organizations like the Society of Women Engineers have focused the lion's share of their attention over the last 20 years on helping women develop their strengths, confidence, network and status.

With all that potential, it is now time to apply ourselves in a very big way.

That is why the IWT programs are so significant in my mind. IWT is focused on promoting development of **products** that are valued by half the population of the world. The IWT approach creates an **inviting, level playing field** for all to participate to their best while ensuring that **proper context** is maintained. And lastly, IWT methods seeks to ensure that we continue to build on successes by establishing active communication links and encouraging contact between sites.

In closing, I'd like to step back to 1989.

I had the honor of co-chairing a National Conference of the Society of Women Engineers. The committee struggled with the conference theme. Should it be "Strength through Diversity: Women and Technology" or "Power through Diversity: Women and Technology". In 1989, we selected "Strength through Diversity...". In 2000, I'm pretty confident the theme would be "Power through Diversity..." because power is what we have.

In the spirit of "New Frontiers, New Traditions", let's now use that power to evolve the world into one that embraces women for all they bring and where technology works for us rather than the other way around. Thank you.