



Guelph Engineering Society



Report on National Conference on Women in Engineering (NCWIE),
Marriott Downtown Toronto Eaton Centre Hotel,
November 27th-29th 2009.

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1. Purpose of Conference

The purpose of this annual, Canadian conference was to encourage, advance and explore the academic and social norms that stem from having women in engineering. The theme for 2009 was *Designing the World to Come*, so there was a focus on the role of women in engineering in the future. The conference organizers from the University of Toronto hoped to bring together men and women from engineering schools across the country to listen to motivational speakers and discuss issues and barriers faced by women in engineering today and how these could be alleviated in the future. The conference also provided some very interesting insight about the role of engineers in society and how engineers are perceived by those outside of the profession.

The key message that I took away from the conference was that engineers need to do a better job of promoting themselves and letting society know the important role that they play. Engineers should also be filling more leadership roles in society, as our skills and processes can be used to solve many complex problems and we shouldn't limit ourselves to purely technical work. Diversity is a good attribute in all professions, but there needs to be an understanding of what the profession is before we can attract a diverse range of people to the field.

2. Personal Goals for Conference

I will start my last semester as an undergraduate at Guelph in January, so my primary goal for the conference was to try and gain a better understanding of the opportunities and challenges that I might face post-graduation. I feel that the more aware we are of potential difficulties, the more we can be prepared for them. Until now being a woman in engineering hasn't been an issue I have ever needed to consider, but I know that over the next few years I will struggle with trying to balance career and family and my husband's career with my own, as well as potential challenges in the workplace. I was particularly interested to hear the personal experiences of women who have managed to achieve a balance in their own lives and I was glad that so many of the speakers did mention this and showed that it can be done.

I was also interested in the opportunity to network and understand better the engineering profession and the paths that people's careers take post-graduation. I feel that I was definitely able to do this and came away with a lot to think about and discuss with those around me.

1. Summary of Events

Keynote Speaker- Annette Bergeron

Annette is the current president and chair of OSPE. She talked a little about her own background in metallurgical engineering and working towards her MBA part time whilst on maternity leave. She also spoke extensively about the role of OSPE;

- Only Ontario and Quebec have separate licensing and advocacy bodies, but it is considered beneficial as it avoids the conflict of interest that arises when the same body both advocates for and disciplines engineers
- OSPE is involved in political lobbying on behalf of the profession and has advocated for;
 - Legislation that requires a professional engineer to oversee municipal drinking water facilities
 - Professional engineers to be exempt from needing to write a test before working on brownfield sites
 - The Green Energy Act
- OSPE encourages engineers to approach MPPs about issues and to get involved in public policy
- They are also working to eliminate low fee bidding

One of her key points with regards to women in engineering is that although women make up only a small percentage of engineers, they are very visible in leadership roles throughout the profession, which is encouraging.

Marta Ecsedi- Women in Engineering Advisory Committee (WEAC) History

Marta was the first chair of this committee which was formed in 1986 by Claudette MacKay, the first female president of the PEO. The committee was initially part of PEO but was transferred to OSPE in 2000. Marta's key point was that they don't want to be labeled as a women's group, as work that benefits women, benefits all.

Accomplishments of the committee include:

- Two surveys addressing the issues faced by women engineers in the workplace
- A video to encourage young girls to take math and science in school
- The Future Engineers Initiative, a fund for grassroots initiatives

- WeAct newsletter
- Awards for women
- Annual forums and conferences
- A video for professors about how the way they choose to present their classes may influence certain groups to stay in or leave the field
- The Engineers in Residence program, to provide women role models to school age children
- A girl guides engineering badge
- The Go Eng Girl event- for both girls and their parents

Some of her most interesting points include:

- Girls often don't go into engineering because they don't know what it is and prefer professions that they can visualize
- Alternatively they choose to study subjects they have studied and excelled at in high school
- Parental influences are very strong for girls, so parents need to be informed about options
- Only 10% of female engineering graduates become P.Eng, so work needs to be done not only to get women into the profession, but to keep them in it.

Roundtable Discussion- Factors contributing to professional and social inequalities

Some points made include:

- Stereotypes are an issue
- Media representation- girls don't want to be seen as a "nerd"
- Confidence levels- girls worry more about being able to cope with an engineering degree and feel they may not be clever enough
- Financial and other barriers- girls worry more about the expense of education and also about living in a new city

Milica Radisic- Women in Research and Teaching

This presentation focused on the issues for women who pursue academic careers. Dr. Radisic provided statistics that show that only 14% of science and engineering faculty in Canada are female. In particular Dr. Radisic discussed how few women receive tenure, as the process is not conducive with taking maternity leave. She herself has three children however and was able to offer some advice and encouraged us to consider a career in academia as it has many benefits. These include flexibility and the opportunity to be self-motivated and pursue personal interests and curiosities whilst receiving a regular salary. She also spoke about managing time, students and a lab environment.

Lisa Romkey- Women and Technology: Past, Present and Future Trends

This was a fascinating discussion. Lisa started with discussing how historically women were believed to have smaller brains than men or it was thought that if women used their brains it would interfere with their reproductive abilities. She spoke about how female enrolment in engineering schools was less than 1% until 1970 and then rose to 15-22% during the 1970s. Since then there has been little progress however and the numbers are the same today. Lisa spoke about women's omitted contributions to technology including early work in the electrical field that was branded as light manual or administrative work, but was actual very technical in nature. In addition women were used to calculate ballistics trajectories during WW2, which was highly mathematical work, but considered clerical. Some early scientific women mentioned included Elsie MacGill, Mabel Gardiner Hubbard, Rosalind Franklin and Marie Curie.

Lisa moved onto a discussion about the situation today, speaking about stereotyping, media representation and marketing to women. Her key points were:

- Mentors and role models are key because people don't know what engineers do and there is no engineering curriculum in schools
- We attach professions to genders from a very young age
- Girls and boys respond differently to authority figures from a young age and this should be considered when trying to appeal to them
- Young people tend to picture engineers and scientists as older men
- Young girls tend to think engineers work on computers in cubicles, work outdoors, on construction projects or with machines
- Many girls think there is more opportunity for them in other sciences, such as medicine
- Some girls are concerned that being in science and engineering will make them appear less feminine and attractive to the opposite sex, or that they will be seen as quirky or as social outliers
- Websites such as <http://www.nerdgirls.com/> are trying to break down stereotypes about girls in science and engineering

Keynote Speaker- Susan McCahan

The title of this address was *Designing your Future through Learning and Teaching*. Dr. McCahan spoke about the evolution of universities from a repository of knowledge to a place to create and explore ideas. She spoke of the need for us to have an emotional connection to what we learn and the importance of contextualizing concepts, so that we care about them. We have to make our learning experience ours and not just focus on passing exams. For an experience to be compelling to us it needs to be:

- Authentic
- Have an element of risk
- Have a reward

Dr. McCahan is an advocate for service learning courses which are becoming popular in engineering schools across North America, including the University of Toronto. She finished her address by speaking of the need for engineers to keep learning and to keep teaching, both to others and ourselves. This will enable us to constantly adapt as required during our careers. Her take home message was that we should always choose our learning experience and never just accept it.

Professional Development Session- The First Seven Seconds

This was an excellent workshop by Ann Marsh of the Calgary based company *Influence*. She spoke about the impression we make during the first seven seconds when we meet someone- whether that be in person, on the phone or in an email. She says that 55% of the first impression is visual, 35% is about presentation and attitude, 7% is about communication and 3% is out of our control. Here is a brief outline of her take on the first seven seconds:

1. First we have to be one time, whether that is for a meeting, or with a phone call or email. That means being realistic with our commitments. We need to respect our and others time.
2. Appearance. We need to carefully choose a personal and corporate image. A dress policy is an important part of a corporate brand and we should give as much thought to our personal brand. The appearance of our workspace and emails are also important.
3. Attitude. Our body communicates without speaking; often we are unaware of this. Leave your personal worries at the door. If you hate your job leave it. We need to be passionate. Walk through doors with confidence. Don't stand behind podiums or tables when presenting, it creates a barrier. Always stand up when speaking.
4. Language. Introduce yourself, don't wait to be introduced. Answer the phone enthusiastically. Thank people for calling on your voicemail message. Always put a greeting and subject line on emails.
5. The Handshake. Make sure you are face to face, have eye contact and always extend your hand. Make sure your hands are web to web and pump 2-3 times. The handshake should be firm. Wear your name tag on the right hand side so that it is visible during the hand shake.
6. Preparation. The amount of time that you allow yourself to become prepared to exceed expectations is a direct result of the amount of self-respect you have as well as the degree of respect you have for those in front of you. Preparation leads to calmness and calmness leads to confidence.
7. Consistency. Make a lasting, authentic impression. In all of the other six steps, try to always be consistent. That means figuring out who you are.

Remembrance Ceremony

There was a short candle-lighting ceremony to remember the Montreal Massacre, which was 20 years ago on December 6th this year.

Keynote Speaker- Donald Wallace

Dr. Wallace is the executive director for the Ontario Centre for Engineering and Public Policy. He believes engineering is an evolving profession in Canada. He believes engineers should be more conscious of engineering impacts on society, the environment and the economy. Creativity is essential. He believes engineers should be societal, environmental and political leaders and that the engineers of 2020 will be part of interdisciplinary teams. He says that the scientific method can be brought to life in many different settings. Dr. Wallace believes women are particularly suited to these shifting roles because of the way we tend to think. He also believes there is a business case for diversity, as it provides access to new markets and a wider labour pool.

Like others, Dr. Wallace addressed the problem of the female minority in engineering. Canada is reportedly lagging behind other countries in terms of female post-secondary graduates in science and engineering. In addition, math and science professions such as auditing, accounting and medicine now have an equal male to female ratio, or even a majority female ratio, whilst engineering disciplines are again lagging behind. He suggests that there is a mentality that in order to encourage more females into the workplace, standards will have to be lowered, when in fact what is needed is a better recruiting strategy that will reach a wider and more diverse audience. He also recommends hybrid university programs and minors, as these may appeal to women. Dr Wallace believes job shadowing for university and high school students is important, as even upper year engineering students can't picture their future careers. He believes that a broader, more interdisciplinary education would also be beneficial.

His take home message: Engineers need to promote their profession to the public, in the same way that physicians do.

Discussion about the conference

The final session was a discussion about the conference and what could be improved. Some key points are discussed below.

4. Evaluation

i) Conference Organizers

I really enjoyed the conference and was glad I attended. Overall the conference was very well organized and executed. The presentations and discussions that I attended

were very interesting and covered a wide variety of topics. There was lots of time for discussion and interaction.

There are three aspects of the conference that I feel could have been improved slightly.

1. The sessions on Saturday took longer than expected and dinner was late. The subsequent activities were therefore changed at the last minute, leaving many confused. An earlier dinner would have left more time for socializing and it would have been good if a range of social activities were offered which would have appealed to a broader range of attendees.
2. It would have been nice to receive the conference handbook ahead of the conference so that we could read about the sessions and decide which ones to attend in advance.
3. It would have been good if the networking event/career fair had involved vendors from a wider range of disciplines. The event was small and apparently had not been well advertised to industry. As such it was not very useful to any of the Guelph delegates.

Delegate

I unfortunately could not attend the conference on the Friday, so I missed a keynote speaker, breakout session and the formal dinner. However the events that I attended on the Saturday and Sunday seemed to more than make up for that and I feel that I got a lot from the conference. I listened intently to the presentations and took part in several roundtable discussions. I felt I was able to offer a different perspective to some of the delegates from other schools, both because of the discipline of engineering that I study, the school that I attend and the fact that I am a coop student, but also because of my background.

I have definitely come away from the conference more aware of some of the issues faced by women in engineering and some of the factors contributing to why women are still a minority in the field. I was inspired by the women present who have succeeded in this field and was interested to hear how well represented women are in the leadership of the profession. I feel that I met my goals for the conference and

will go into my last semester with lots to consider regarding my future career. I have already shared some of what was discussed at the conference with my engineering friends and colleagues and will continue to do so over the coming months. If I attended the conference again, I would definitely try to attend for the full duration. It would have been good to take part in the full event.