INWES International Network of Women Engineers and Scientists

Issue 23 - October 2016

INWES Member Newsletter

President's Message

After the heat of the summer, we can feel the cool autumn breeze filling the air as it does every year, here in Korea. I hope all of you have had a happy and relaxing summer from which you have returned recharged and ready for the remaining days of the year.

The last few months have been full of activity. We had a successful and enjoyable 2016 meeting of the Asia and Pacific Nation Network (APNN - Chair, Kayoko Sugahara) on 18th to 19th August in Wellington, New Zealand. The 2016 APNN meeting was held in conjunction with the "Diversity in Action Summit", hosted by the Institution of Professional Engineers New Zealand (IPENZ) - a professional body for engineers, dedicated to building a strong and trusted engineering profession in New Zealand. The meeting and programmes were very well-organized and enjoyed by APNN participants from eight countries who actively contributed in presentations and discussions. We all learned a lot about New Zealand. Did you know that New Zealand was the first country to allow women to vote in 1893? It was also wonderful to experience New Zealand's beautiful natural environment and the influence of native Maori culture.

My heartfelt thanks to the President of IPENZ, Elena Trout; the Organizing Chair, Tracey Ayre; and all IPENZ members for organizing such a memorable event. It is inspiring to see how the ongoing activities of APNN, which is the first Regional Network of INWES, are establishing solid close links between members - providing members with the diverse perspectives we need to solve the problems our world faces, and facilitating collaborations within regional networks as well as between members worldwide. We are cultivating "collective wisdom" to meet the turbulence of the modern world, and improving our societies by extending our horizons to maximize diversity and openness. One of the speakers at the 2016 APNN meeting emphasized the place of wisdom in our modern complex society by saying, "Data is not information, information is not knowledge, and knowledge is not wisdom". We anticipate that this APNN journey to wisdom will continue on to Yokohama, Japan in July 2017 and beyond.

Meanwhile the African Regional Network (ARN) regional conference has been postponed, but is in planning to take place in Yaounde, Cameroon, in 2017, hosted by AFISC (Association Des Femmes Ingenieurs et Scientifiques au Cameroun). The theme of the conference will be "Expand horizons, overcome obstacles and take up the challenges of a Women's Digital Observatory (Veille Numerique Feminine) in Africa". Please stay tuned for further information. INWES hopes that the seed for women's solidarity in Africa will be cultivated through the activities of the African Women in Science and Engineering organisation in the meantime; and that the ARN meeting in 2017 will serve as a forum for meeting regional problems with the collective wisdom of our African members.

Please mark your calendars for the INWES Regional Conference which will be held from 4th to 6th November in Freising, Germany - hosted by the German Association of Women Engineers (DIB - Deutscher Ingenieurinnenbund). Freising is close to Munich, Germany, for those of you trying to make travel plans. Under the theme of "Science, Knowledge, Power," these meetings will be held in conjunction with the Annual Conference of DIB, which celebrates its 30th anniversary this year. We are delighted to share that this meeting has been patronized by the United Nations Educational, Scientific and Cultural Organisation (UNESCO), who will be supporting travel awards for participants from Africa. We appreciate Sylvia Kegel of DIB for all her efforts in preparing the UNESCO application, as well as in organizing the Regional Conference; and INWES members, including Monique Moutaud, for supporting this UNESCO application. The new regional network, INWES Europe, will be chartered at this regional conference. Members of INWES Europe have had several meetings in Geneva, London, and Krakow for developing the underlying framework and realizing INWES Europe. We look forward to seeing the many activities INWES Europe will undertake and I am sure they will take the lead in networking among women scientists and engineers in Europe.

I hope that you are already making travel plans to India for next year's ICWES17. Please look out for more information in the coming months. INWES has circulated a call for proposals on hosting ICWES18 for the year 2020. Since 1964, many different organizations from various parts of the world have successfully hosted the triennial event. By hosting ICWES, your organization would benefit from a great opportunity to gain international and national recognition, and build competence through the exchange of ideas and the shared passions of the participants who will be travelling to your country from around the world. Please visit our INWES website (www.inwes.org) for more information.

The current INWES board has reached the beginning of its third year already. The board has been working hard to promote committee activities, which include Conference, Membership & Recruitment, Communications, Advocacy, and Regional Networks. We thank those of you who have volunteered and joined in our endeavor. If you have not had an opportunity to take part in these activities, it is not too late to start now. If your company is not a member yet, why not try to join in as

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INWES ARN Meeting
Postponed
ICWES 17
3 - 5 October 2017, New Delhi, India.

corporate members or sponsors of INWES.

I'd like to highlight that you may want to contact the UNESCO National Commission in your country and seek support for the activities of your organization as a member of INWES. You can use the INWES factsheet to advocate for your organization and INWES. It is good time to raise awareness of your activities as women in science and engineering, because the United Nations, UNESCO and the G7 have all expressed the importance of supporting girls and women in science, technology, engineering and mathematics (STEM); and are currently developing programmes and projects for women in STEM. Please share with us your ideas and any challenges you face in the process. We would love to see your progress and help support you along the way! As always, you can send your ideas and suggestions to info@inwes.org.

By collaborating with each other, sharing our experiences, and learning from one another, through INWES, we can expand our activities, pursue change more effectively, and make a global impact - building a better world for the next generation of women in STEM.

Kong-Joo Lee, Ph.D.
INWES President

INWES Member News

AWESC prepares for the African Regional Conference

Cameroon

The Association of Women Engineers and Scientists in Cameroon (AWESC) has been excited to collaborate with regional and international peers. It was elected to the INWES Board of Directors in Los Angeles, USA, in 2014 and was chosen by its African sister-associations to organize a regional conference. Although the decision has been made to postpone the meeting, due to unforseen circumstances, we wanted to share some of the planning activities that have already taken place.

The first preparatory meeting took place on 22nd July 2016 with participants from the United Nations Educational, Scientific and Cultural Organisation (UNESCO), the Cameroon Ministry for the Empowerment of the Woman and the Family (MINPROFF), and the Prime Minister's Office, joining AWESC to start organising the necessary committees.

The Cameroonian government is currently trying to improve the participation of all social groups in nation building. One vital aspect of this overall strategy is the promotion of women's human resources in all sectors of development, with a particular emphasis on fields related to science, technology and mathematics (STEM) - so they were keen to work with AWESC to make the conference a success. MINPROFF in particular, is committed to gender mainstreaming, and they were happy to take responsibility for the general supervision of the committees.

The conference will be an opportunity to launch the Women's Digital Observatory - "Veille Numerique Feminine" - an exciting project which will use scientific and technological developments to highlight the actions and talented initiatives of women across the country and improve their regional and international visibility.

IEM Outstanding Women Engineers' Luncheon

Malaysia

The Institute of Engineers Malaysia Women Engineers (IEM-WE) Section organized an IEM Outstanding Women Engineers Luncheon on 28th May 2016. The luncheon was to appreciate, support, and celebrate the contributions of women in the engineering team. Both industry and academic collaborators were invited to deliver speeches at the luncheon, including Sharifah Azlina Raja Kamal, COO of HSS Engineering Sdn. Bhd; Immediate Past Chair of the Institute of Electrical and Electronics Engineers (IEEE), Dr Norliza Mohd Noor; and 2015 IEM Women Engineers Award Winner, Professor Hayati Abdullah.

The invited guests and delegates were impressed with the insight and experiences shared by the speakers. This Outstanding Women Engineers Luncheon helps raise the profile of women in engineering and focus attention on the amazing career opportunities available to girls in the industry. It was great to see the speakers coming together in the name of equality and diversity to celebrate the achievements of women engineers and encourage more girls and women to consider engineering as a career.

TWiST is active at home and abroad

Taiwan

Members of the Society of Taiwan Women in Science and Technology (TWiST) have been involved with a number of events in the last 6 months both in Taiwan and internationally. On 22nd April 2016 TWiST members organized a workshop on gendered innovations in different science research areas under the auspices of the Taiwanese Ministry of Science and Technology. We also took the opportunity to hold a board meeting together over tea and coffee in the southern city of Kaohsiung. In May, a small reading group

New Tunisian Women Engineers Association

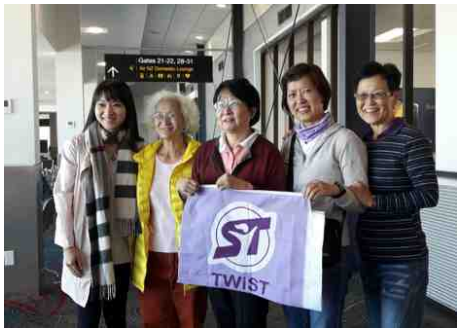
Tunisia

In June 2007, the World Federation of Engineering Organizations (WFEO), chaired by Kamel Ayadi (who is now Minister of Public Administration in Tunisia), held the International Colloquium on Empowering Women in Engineering and Technology - the first international training workshop by and for women engineers, under the patronage of the Tunisian Government. The objective of the workshop was to help participants from development regions acquire knowledge and share experiences on these topics, with an international perspective, and a strategic approach. It was attended by several members of INWES, and INWES showcased the different women engineers and scientists networks around the world.

As we all know, the Revolution radically changed the political landscape in December 2010, and five years later, an official Women Engineers association was born - the Association Tunisienne Femmes Ingénieures (AFTI). The first General Assembly was held in Tunis on 7 May 2016, chaired by Nadia Souissi, elected president of the association, and moderated by Amel Ben Farhat, a member of the committee. The Minister for Higher education and Research, and an official representing the Minister for Women and the Family, together with the CEO of Tunisair (a Tunisian civil aviation company), and representatives of WFEO and INWES attended. A number of other speakers were there to paint a full picture of the current situation of women and engineering in Tunisia.

Conclusions and recommendations reached at the end of the General Assembly included the decision to become an organizational member of the INWES, and try to raise funds for a delegation to come to the Munich conference in November 2016, as well as to the ICWES17 in Delhi in October 2017. Nadia Souissi also expressed a wish to apply and host ICWES18 in Tunis, seeing it as a fantastic opportunity to continue the work started by women engineers before the Revolution!

Yvette RAMOS, President of the Swissengineering Geneva chapter, Director INWES Europe West
Nadia Souissi, President of the ATFI, Association Tunisienne des Femmes Ingénieures.



was organised to share opinions on the book "Lean In" authored by Sheryl Sandberg, Chief Operating Officer of Facebook.

Last October, three members went to Kampala, Uganda for the African Regional Conference, and met an aboriginal Taiwanese girl called Yoshiku, who had been volunteering in a poor area of Uganda as a volunteer worker. Yoshiku returned to Taiwan in July to raise more funds and gave us a talk in Taichung on her experiences in Uganda.

In August, five TWiST members attended the Asia and Pacific Nations Network (APNN) Meeting and the following Gender Diversity Summit, sponsored by the Institution of Professional Engineers New Zealand (IPENZ), in Wellington, New Zealand. Along with three relatives and Dr. Wai-Yee Leung from Malaysia, we were also able to take part in a tour of South Island, which gave us a chance to appreciate the beautiful scenery and interesting history of New Zealand. It was a great end to a trip filled with friendship and interesting discussions.

MentorSet Energy Sector Mentoring Event

United Kingdom

MentorSET, the Women Engineering Society's (WES) mentoring scheme for women in STEM, held the first in a series of UK-wide events in London on 15th September. The event was aimed at women in the energy sector, to raise awareness of the benefits of mentoring in the sector - and was sponsored by Alex Chisholm, Permanent Secretary in the, Department for Business, Energy & Industrial Strategy (BEIS). To find out more about MentorSET, or if you think you have the skills and motivation to mentor, please do get in touch (http://www.mentorset.org.uk).

WISE members share their experience and knowledge

India

Women in Science and Engineering India (WISE India) is the brainchild of few like-minded individuals (both women and men) who envisaged that a platform must be created to inspire and promote the huge pool of women engineers and scientists available in India. WISE India strives to bring about change for Indian women, making them confident enough to choose science and engineering field. The scarcity of women in these fields is a matter of concern in most countries, but especially in India. This small number of women receiving degrees in the sciences and engineering translates to an even smaller percentage of women at top and middle levels of management.

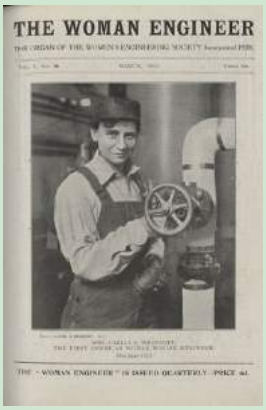
WISE India has shared its experiences at a number of seminars and conferences, including the Technical Education Quality Improvement Programme (TEQIP) seminar on 26th April 2016 at Delhi Technological University (DTU), New Delhi; and the Trends and Recent Advances in Civil Engineering (TRACE) 2016 Conference, on 11th and 12th August 2016, at AMITY University, Noida.

The Department of Humanities, at the

WES make visible women's historical contributions to engineering

United Kingdom

The WES project to digitise and make available past copies of "The Woman Engineer" journal, which has been running since 1919, is now complete. The journals contain a wealth of knowledge, not only of women in engineering but also of social history relating to employment, gender and innovation, amongst many other topics, in the UK since World War I. The early journals also contain technical papers by female engineers. The Institition of Engineering and Technology has made the digitised journals available online (http://www.theiet.org/resources/library/archives/exhibition/women/wes-journal.cfm).



This facility will be launched to the wider world on the 11th October, as part of a wikithon. The wikithon will take place in London, and is designed to make the histories of women engineers in the First World War more visible by putting them on Wikipedia. The one day collaborative project will look back at the role of women in engineering and technical disciplines during the First World War and beyond, and will start to bring out some of the stories documented in the newly digitised Women's Engineering Society archive.

WES was recently involved in a two-day animation of Waterloo Bridge from 22nd to 24th September to highlight and celebrate the women who worked to rebuild the bridge during the Second World War. Labour records show there were as many as 25,000 women working in construction during the Second World War. The aim of the event was to make visible the invisible and to encourage and inspire the much needed new generation of women engineers. At dusk, a collage of photographs and moving footage were projected in epic proportions filling one side of the National Theatre's Lyttelton Theatre fly tower. WES provided one of a series of short films which were screened near the bridge celebrating women's contributions.

Delhi Technological University (DTU) conducted the World Bank-funded seminar "TEQIP-II" on 26th April 2016. Sangeeta Wij - President of WISE India, Managing Partner of SD Engineering Consultants, and an alumna of the Delhi College of Engineering - was invited for this important seminar. She presented an inspiring lecture on her experience of becoming an entrepreneur. The seminar was attended by the students of DTU and WISE India members.

TRACE 2016 was an international conference hosted by the Department of Civil Engineering at the Amity School of Engineering & Technology, Amity University, in Noida, India on 11th and 12th August 2016. The conference was attended by researchers, practicing engineers, government officials, and corporate leaders of international repute. The conference sessions covered the entire spectrum of recent scientific research. Sangeeta Wij, chaired the session on "Ethics in Structural Design in the Indian Context". Kamini Gupta, a Board Member of WISE India also presented a lecture on "'A Study of Pedestrian Crossing Behaviour at Signalized Intersections'; 'Volatile Organic Compounds (VOC) Concentration in an Area with Heterogeneous Traffic: A Pilot Study'; and 'Lack of Coping Behaviour as Related to Crash Characteristics among Commercial Drivers in India'". Ishita Manjrekar, a member of WISE India, delivered a talk on "Corrosion Mitigation in RCC: much ado, some solution's"

INWES Member Awarded National Honour

United Kingdom

Sue Bird, former President of INWES, has been appointed as a Member of the British Empire (MBE) in the Queen's Birthday Honours List. Sue Bird has a Masters degree in Applied Acoustics, is a Chartered Engineer and is a Fellow of the Institute of Acoustics. The citation is for 'Services to engineering and to women into engineering both in the UK and abroad'. It will be presented to Sue in October by a member of the British Royal Family, possibly the Queen. Many countries have honours similar to this, although each country has a different slant on it, and you will see that it is still referring to the British Empire – which of course no longer exists!

After gaining a BSc in Applied Physics at Coventry Polytechnic, Sue Bird went to work at the British Aircraft Corporation as an acoustics engineer, where she worked on noise from planes such as the BAC 1-11 and Concorde. She then spent twelve years at the GLC Scientific Branch in their Noise and Pollution section. She later started Bird Acoustics with her husband (also an acoustics engineer) and worked mainly on environmental and architectural noise, as well as litigation work on noise-induced hearing loss.

She has always felt that there are too few women in engineering, and that an increase would benefit women themselves, but also industry and society. She joined the Women's Engineering Society in the early 1970s, and has twice served as its President. In 2002 she was instrumental, as part of WES, is setting up the International Network of Women Engineers and Scientists (INWES). She served as President for INWES from 2008 to 2011. She has attended ICWES Conferences since 1999 and has made many valued friends through

International

UNESCO STEM and Gender Advancement Project

The United Nations Educational, Scientific, and Cultural Organisation (UNESCO) has recognised the importance of increasing the participation of women in science, technology, engineering and mathematics (STEM) and has established the Stem and Gender Advancement (SAGA) Project to address some of the issues. SAGA is a global UNESCO project supported by the Government of Sweden through the Swedish International Development Cooperation Agency (SIDA).

The general objective of SAGA is to contribute to reducing the gender gap in STEM fields in all countries at all levels of education and research - by determining, measuring and assessing sex-disaggregated data, as well as supporting the design and implementation of policy instruments that affect gender equality in STEM.

SAGA aims to analyse how policies affect the gender balance in STEM, undertake inventories of science, technology and innovation (STI) gender equality policies, develop new and better indicators to provide tools for evidence-based policy-making, build capacity in member states for data collection on gender in STEM, and prepare methodological documents to support the collection of statistics.
It is anticipated that improving the collection of policy-relevant indicators on all aspects of the role of women in STEM will indicate gaps and drive more effective policies that support the participation of women in STEM. SAGA has developed a SAGA Science, Technology and Innovation Gender Objectives List (STI GOL) and is currently developing a SAGA Toolkit. The SAGA Toolkit is designed to address areas where sex-disaggregated information is still lacking.

SAGA has stabilised an international advisory committee for support and advice. Dr. Marlene Kanga, Vice President of INWES, is a member of the committee. The SAGA Advisory Committee met in Montreal in 2015, and Montevideo in 2016. It is anticipated that the SAGA toolkit will be available for testing in 2016-17 and the final project outputs will be delivered in 2018.

INWES.

She has also been involved with the Institute of Acoustics where she was Chair of the CPD Committee; and with the Association of Noise Consultants, where she served as Chair and President over the years. She has been a Governor of Welbeck Defence Sixth Form College for over 20 years, and is now a local parish councillor.

IEM-WE help Dabong flood affected school

Malaysia

Following on from an earlier successful project in 2015 a team from the Razak School of Engineering and Advanced Technology at the Universiti Teknologi Malaysia, supported by IEM-WE, pursued a second social initiative - developing a Fun Learning Toy Library for pre-school students in a rural primary school, called Sekolah Kebangsaan Kuala Geris, in the town of Dabong in Kelantan. The region was badly affected by a flood in 2014 and the team was keen to help local people. The team was supported by a number of NGOs and groups of people, who contributed in cash and kind. IEM-WE fundraised among committee members to contribute to the initiative.

The development of the Fun Learning Toy Library is beneficial in many ways. It provides an environment for pre-school children to develop their curiosity and their understanding of basic concepts in science and technology from a very young age. It is hoped that with the facility in place, these young children will be encouraged to develop a lifelong interest in science, technology, engineering and mathematics (STEM) education.

Making learning fun, particularly in subjects perceived as difficult, like sciences and mathematics, is particularly important given the stressful effects of the natural disaster, and the impact that can have on learning. Many of these young children lost their homes and experience difficulty going to school, due to fears around being separated from their families. Having the toy library in the school helps these children feel more excited and motivated to attend school everyday.

The project has also helped strengthen networking and bonding between volunteers, partners, and the local community - particularly the school; teachers and students alike. The teachers are enthusiastic and committed to helping implement activities.

The team is planning its third visit to the school to monitor and follow-up with several other activities. IEM-WE will take part again, and plans to collaborate with future activities that reach out to and support rural society.

Dr. Ursula Martius Franklin (1921-2016)

Canada

Dr. Ursula Franklin passed away at 3pm on Friday, 22nd July 2016, at the age of 94, after a trailblazing career - as a philosopher, scientist, pacifist and educator - paving the way for women in STEM in Canada. Ursula Franklin was Professor Emeritus at the University of Toronto, a Companion of the Order of Canada, and Fellow of the Royal Society. Over the course of her life, she was awarded the Order of Ontario, the Pearson Peace Medal, the City of Toronto Award of Merit, and a number honorary degrees from Canadian universities and many other awards. On a personal level, she was my mentor and friend, and the woman I admired most in the entire world. She will be missed by many, but we have the consolation of what she left behind: books, speeches, wise words, and all her archives.

The first time she helped me was on 9th November 1989, I was at the airport in Toronto, waiting for my flight to Seattle. I had just been appointed to the Northern Telecom and Natural Sciences and Engineering Research Council of Canada (NSERC) Women in Engineering Chair at the University of New Brunswick. The mandate was to increase the participation of women in engineering education programmes and the profession, across Canada - no small task. So while waiting in the airport, I called Dr. Franklin at the University of Toronto to discuss the new position and ask for some advice.

She took my call even though she had never heard of me! I told her about my new position and she offered me a piece of advice: she said to be sure that, in the end, it was about more than just numbers. In other words, women were to be recruited for the perspectives and approaches they could bring as women engineers - not just to make up the numbers. This comment stayed with me for the entire trip, and to this day.

Our paths crossed again in Victoria in 1990, when we were both on a panel to speak about women in science and engineering; and again in May 1991, when Ursula was keynote speaker at a national conference, organized by the Canadian Committee on Women in Engineering (CCWE) I chaired (1990-1992) - set up after the tragic massacre of women (almost all engineering students) in Montreal.

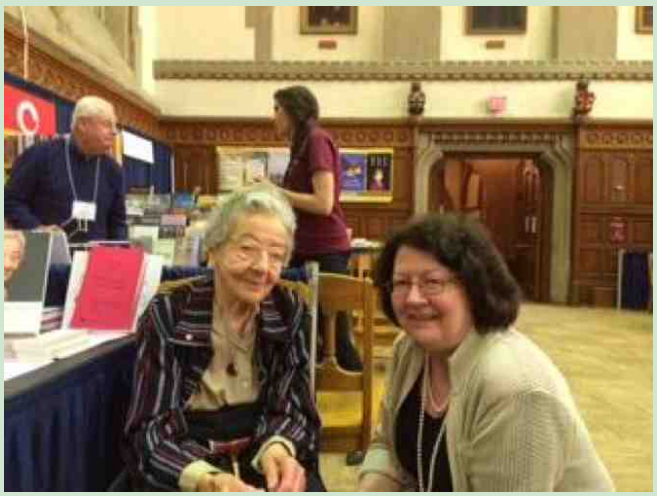
The conference title was "Women in Engineering: More than just numbers". You can guess how we came to that title. In her banquet speech - "Overcoming the Obstacles vs. Removing the Obstacles," - Dr. Ursula Franklin advocated firmly for the latter option and gave us plenty of food for thought - as she would at all our subsequent meetings over the years.

In May 1995, at that year's CCWE conference, she gave a memorable closing speech - "Looking Forward, Looking Back" - with the key message, that engineering must be made fit for women, rather than women fit for engineering. She wanted to avoid the situation where women in engineering classes have to adapt to a "masculine" culture and become "one of the guys" to get by. Dr. Franklin was right in thinking that this happened all too frequently. She and I had witnessed women enacting a sexist work culture out of desperate need to belong and fit in. Her speech was a road map for what needed to be accomplished over the next decade - real changes to make engineering a friendlier place for women. Ursula wanted women to be able to fully participate in and contribute to the engineering field - able to bring and develop all their strengths as human beings, rather than forced to conform to a narrow traditionally "masculine" model:

"Women must have the education and technical literacy that will allow them access to decision-making and to meaningful work in the continually evolving technological society. But women will also have to survive as human beings, as creative, spontaneous, and cheerful persons." (Dr. Ursula Martius Franklin, O.C. 1984)

Over the years, she has been quick to offer her support to others in the field, whether in a formal or informal capacity. I remember her readiness, when I was working on my first book "The Bold and the Brave", with Nadine Faulkner, to sit down over coffee with us and discuss our research so far. Support like that can be invaluable.

As a teacher for four decades, she supported and inspired many - leaving a lasting legacy. Ursula was a German-born Holocaust survivor, a Quaker, and a committed pacifist; and throughout her life was committed to contributing to peace. Her discovery of radioactive substances in Canadian children's baby teeth - using research carried out on her son's teeth - helped turn world opinion against nuclear weapons testing during the Cold War.



Another INWES member, Claire Deschênes, fondly remembers meeting Dr Franklin during the Berkshire Conference on the History of Women in May 2014 - where Ursula presented her new book: Ursula Franklin Speaks, Thoughts and Afterthoughts. It contained twenty-two of Dr. Franklin's speeches and five interviews between 1986 and 2012, sharing her insights into the social and political impacts of science and technology.

Ursula was a proponent of "the earthworm theory"- the idea that little acts prepare the soil and nurture the seedlings so that bigger actions can follow and flourish. Her life richly illustrated the truth of that theory. Both professionally and personally she was an inspiration to many.

Monique Frize

What is deep learning all about?

In 2016 deep learning started to get more attention outside of the the computer science field, with programmes like DeepDream capturing the public imagination. So unsurprisingly, there is a growing curiosity about deep learning. People are wondering what exactly deep learning is, and why is it one of the most hyped developments in the branch of machine learning.

Deep learning is in essence, it a sophisticated machine learning technique, and a trending development in the field of artificial intelligence (AI) - a thriving field with many practical applications and active research topics. We look to intelligent software to automate routine labor, understand speech or images, make diagnoses in medicine and support basic scientific research. In layman's terms deep learning is the ability of a machine - like intelligent software - to learn how to become more accurate; to get better, for example, at identifying appropriate objects or sounds. For recognizing objects, understanding concepts, spam detection, street view detection, or comprehending speech appropriately we need a process called feature extraction. For complex problems like handwriting recognition feature extraction poses a huge challenge.

Deep learning is one of the only methods by which we can work around this challenge of feature extraction. This is because deep learning models are capable of learning to focus on the right features by themselves, requiring little guidance from the programmer - making it an extremely powerful tool for modern machine learning.
Deep learning is a form of machine learning that uses a model of computing that's loosely inspired by the structure of the brain. The basic foundational unit is a neuron and the model is known as a neural network. A neural network has a number of neurons which have particular weights and basically compute answers from inputs that are provided to them. Now finding out those weights is the hard part of the problem and is termed "training".

During training, we show the network a large number of predefined results and iteratively modify the weights so as to minimize the errors. Simply put we make the neural network learn through examples. That sound's pretty straightforward but even for a simple problem we need a lot of 'layers' of neurons to accurately find solutions. For this we need to train the network with large amounts of examples - which means we need data. In fact, we require a lot of data. That's why when you use Gmail they are almost certainly using your emails as a corpus to train the neural networks of various machine learning algorithms how to better do things like suggest replies or correct spellings. No wonder Gmail provide so much free storage!

Beyond mastering games like 'Go' (a game even more complex than chess), deep learning has led to massive improvements in the field of image, speech and text recognition. In 2012, it was used to recognize a million images with a 16% error rate, which has now dropped to a mere 5.5% - pretty impressive! This continuously evolving nature is what makes deep learning such a fascinating subject - its applications grow with time making it able to continuously break new boundaries and allowing machines do things we never even imagined possible.

Anushree Shivani Patnaik
B.Tech (Electric and Electronic Engineer)
DELL India Ltd.
A Member of WISE India

The APNN Conference

On 18th August 2016, the INWES Asia Pacific Nation Network (APNN) held its annual meeting at the Institution of Professional Engineers (IPENZ) in Wellington, New Zealand.

Twenty-five women from eight countries attended the meeting. After a traditional M! ori welcome, attendees heard speeches from the meeting's chairperson Tracey Ayre, IPENZ President Elena Trout, INWES President Kong-Joo Lee and APNN Chairperson Kayoko Sugahara.

Country reports were presented for nine APNN countries. Attendees discussed opportunities to increase gender diversity in science, technology and engineering; as well as the challenges faced. They heard from three invited speakers: New Zealand's Minister for Women, the Honourable Louise Upston; Cynthia Brophy, Chief Executive of the Human Rights Commission; and Gail Mattson, INWES Vice President.

The INWES APNN was established in 2011 as the first sub-network of INWES. The APNN has met annually since 2011 to promote the sharing of information unique to the region among women scientists and engineers in Asia and the Pacific Nations.

Following the APNN meeting, IPENZ hosted an extremely successful "Diversity in Action" summit. More than eighty-five people attended the summit, which was designed to present tangible ideas to help businesses increase diversity and inclusion. During the summit, Australia's APNN delegate, Marlene Kanga, presented a strategic framework for inclusiveness, wellbeing and diversity; and Malaysia's APNN delegate, Wai Yie Leong, participated in a panel discussion focused on practical examples.

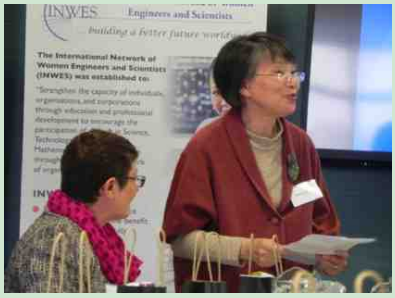
Members of the INWES APNN left the meeting energised and excited about continuing to advance gender diversity in their respective countries. We anticipate a busy year ahead and look forward to meeting again at the 2017 APNN meeting, which will be held on 14th and 15th July 2017 in Yokohama, Japan.

Nepal participates in APNN

Nepal

Representing Women in Science and Engineering Nepal (WISE-Nepal), a national network in Nepal that promotes women in Science, Technology, Engineering and Mathematics (STEM), I participated in the annual meeting of Asia Pacific Nations Network (APNN) held in the office of the Institute of Professional Engineers New Zealand (IPENZ) in Wellington, on 18th August 2016. I was so impressed by the commitment of the Honorable Minister for Women, Louise Upston, who welcomed the participants and highlighted the importance of the APNN, in working together to reduce discrimination against women in STEM in the region.

A keynote speech by the Chief Executive Officer of the New Zealand Human Rights Commission was very insightful. She talked about how New Zealand has moved forward in providing equal opportunities, reducing discrimination, and tackling the gender pay gap. She mentioned that in New Zealand, 43% of women are employed in the public sector, which struck me as quite significant. It was also interesting to note that the gender pay gap in New Zealand is the lowest among the Organisation for Economic Co-operation and Development (OECD) member countries.



The meeting was successful with the participation of delegates from eight member countries. Although it was pretty far for some to fly to participate - it took me two days of travel to reach New Zealand - it was definitely worth it. The sharing of member countries' experiences was really meaningful and allowed us to learn more about good practice in promoting gender equality in STEM. There were discussions on strengthening regional networks, and increasing membership drives for national networks with small seed grant supports from INWES; and information sharing on the next APNN 2017 meeting, ICWES 2017, and other regional networking opportunities.

Making Herstory

" Herstory" - Women's experiences in engineering: An interview with Monique Frize

What is your name?
Monique (Aubry) Frize

Where were you born?
In Montreal, Canada

Where did you grow up?
In Ottawa, Canada

Where have you lived?
In Montreal and Ottawa in Canada; then London in the UK; and then back in Canada - in Moncton, Fredericton, and Vancouver; and now in Ottawa again.

What college did you attend?
The University of Ottawa, Canada (BScA in Electrical Engineering); Imperial College of Science and Technology, London, UK, (M.Phil. and DIC); Université de Moncton in New Brunswick, Canada (MBA); Erasmus Universiteit, in Rotterdam, Netherlands, (Doctorate).

Was there a moment when you decided you wanted to be an engineer/scientist? What was it?
In the second year of a science degree, I decided I wanted to study electrical engineering.

Did anyone influence you to enter the science or engineering field?
Yes - a student called Philippe Arvisais, who was studying electrical engineering, encouraged me to study for the same degree.

What was your professional career and background in STEM?
I spent one year as an engineer in the communications industry after my undergraduate degree. Eighteen years as a biomedical engineer (clinical engineer) in hospitals, eight in Montreal and ten as head of a regional department serving seven hospitals in south-east New Brunswick. After earning my doctorate, I spent twenty years in academia (six and a half years at University New Brunswick (UNB), and thirteen and a half at the Carleton University and the University of Ottawa).

What do you do for a living now/ what other careers have you had?
I was Chairholder of the first Chair for Women in Engineering (Canada-wide) between 1989 and 1996 at UNB; and Ontario Chair for Women in Science and Engineering between 1997 and 2002.

I have been on many committees at the international, national, provincial, and local level since 1965. I am currently on the Administrative Council of the International Federation of Medical & Biological Engineering (IFMBE) and responsible for communicating with the more than sixty societies in the IFMBE. I am also on the Admin Council of the International Union of Physical and Engineering Sciences in Medicine (IUPESM).

I am one of the three founders of INWES in 2002 and of the INWES Education and Research Institute (INWES ERI) in 2007; and I was president of INWES from 2002 to 2008, and of INWES ERI since 2007.

What was is like to be an engineer or scientist when you started out?
Since I was the only woman student in my degree in electrical engineering and the only woman in my first workplace as an engineer, I did not notice much difference. It was lonely as the only woman in my class or in my work department, and feeling different from the men around - although my peers at school and at work were friendly for the most part. Later, I worked in hospitals where there were many strong women (nurses, doctors, etc.) so the environment was quite different for me than for a woman in a mine or a plant.

How have you seen the impact of women in engineering change and develop?
In the years since my graduation, I've seen many more women enter engineering study programmes and in the workplace; but there are still several obstacles, and some bias, discrimination, and harassment in certain workplaces. The culture in engineering schools is still male-centred and macho at times. But there has been progress, no doubt, in the past two decades.

Were there any historical events that dramatically impacted women in engineering and sciences?
Yes - in my lifetime, the massacre in Montreal. The massacre at the Ecole Polytechnique killed thirteen women engineering students and a secretary on 6th December 1989. Shortly after, the Canadian Committee on Women in Engineering (CCWE) was created and I was asked to Chair it. Our report is published on the INWES-ERI web site. We followed it up twenty years later with a workshop (CCWE+20) organized by the INWES ERI; the new report is also on our ERI website. (www.inwes-eri.org). The ERI Officers are: Monique Frize, President; Claire Deschênes, Treasurer; and Gail Mattson. Anna Szemik-Hojniak has been Secretary General since 2015.

Is there something you wish you had access to when you started out that women today have access to?
Yes - I had some wonderful male mentors but it would have been nice to have some women as mentors, role models, and professors. Also, I would have liked to have access to some of the outreach activities for girls (summer camps in science and engineering, classroom presentations made by role models and students in the field) that are available now.

Was there a specific event or events that motivated you to start ICWES/INWES? How did you become involved in ICWES/INWES?
After attending ICWES9, 10, and 11, I thought we had to create INWES to provide more structure and stability for the ICWES conference series, so I organized a founding meeting in 2001 and created INWES at ICWES12 in 2002 with Claire Deschênes and Gail Mattson. The three of us were officers for eight years (me as President, Claire as Secretary General, and Gail as Treasurer).

What was the process involved in creating ICWES/INWES?
The three founding members applied for a Letters Patent at Industry Canada and incorporated INWES as a Canadian Corporation. We later applied for Charity Status but this was denied, as INWES receives member fees and has some advocacy programmes, so we created INWES Education and Research Institute in 2007, which does not, and so can have charity status in Canada - on condition it remains separated legally from INWES.

What are the major milestones, in your opinion, of the past 50 years of ICWES/INWES?
ICWES has been an amazing series of conferences, but the women organizing them were getting quite old and we had to insure continuation in the decades ahead, which is why INWES was created. Both have had a profound influence on uniting women in science and engineering around the world!

What were the major challenges that had to be overcome to create ICWES/INWES?
The most challenging point was financing the operations of INWES, but with income from the ICWES conferences and the donations received, we managed to operate INWES and ICWES successfully for six years. During this time, we managed to become a partner of UNESCO and of WFEO. I hope INWES continues to develop and unite women from all continents in future years.

INWES is a collection of societies - were you involved in any others before become involved in INWES?
Yes - I was in WISE and CCWEST in Canada and Chairholder of Women in Engineering for all of Canada (1989-1997) and for Ontario (1997-2002).

How did the networking done by INWES impact your career?
I've acted as mentor to many women and students over the past twenty years.

How do you want to see INWES grow in the next fifty years?
I think it is very important that organizations which are members of INWES remain loyal to INWES, and not create competing events or duplicate INWES' international role. The ICWES conferences are key to the future of INWES. They bring women together from all over the world to share best practices and their experiences, which is very enriching.

What piece of advice would you give to young women engineers and scientists today?
It is important to seek mentors prior to making important career decisions and to support other women in these fields. Nominate deserving women for governing positions in mainstream associations, for prizes and awards, and to be keynote speakers and play visible roles at conferences. Believe in yourself and follow your goals.

Upcoming Events

DIB Annual Conference & INWES Regional Conference Europe

The dib 30th Anniversary Conference and the INWES Regional Conference Europe 2016

4- 6 November 2016

The dib 30th Anniversary Conference and the INWES Regional Conference Europe 2016 will be held in Freising, near Munich, from 4th to 6th November 2016.

The 2016 INWES Board Meeting will be held before the event on 2nd and 3rd November, and the Constitutional Meeting INWES Regional Network Europe will take place on the morning of 4th November.
The patroness of the conference will be Ilse Aigner - the Bavarian Minister of Economic Affairs and Media, Energy, and Technology. UNESCO patronage for the conference was also granted by the UNESCO Secretariat on 29th August 2016.

The conference schedule will include five keynotes; twenty-two speeches; six workshops; and five open space discussions or roundtables, in three different languages.

The round tables cover the following themes:
a) Experiences and views on the european project and ways to enhance collaboration and realisation of future projects.
b) A panel discussion on "Young Leadership" - the future of careers for women in technology and the future of our associations.
c) Insights on the various aspects of "Big Data" – the risks and opportunities.
d) Exploring possibilities for academic careers in Europe.
e) The situation of women in technology in Tunisia after the Jasmine Revolution.

All details on sessions can be found at: http://muc.inwes.net/

Friday 4th November 2016

9.00 - 12.00 Constitutional Meeting INWES Europe
14.00 Guided tours and excursions around Freising and Munich
17.30 Conference opening in Kardinal-Döpfner-Haus, Freising
20.00 Networking

Saturday 5th November 2016

9.00 - 18.00 Keynotes, workshops and presentations
19.00 Networking

Sunday 6th November 2016

9.00 General Assembly dib
Along with workshops, presentations, and excursions for international guests and student groups
13.00 Official conference end
from 14.00 Excursions
(available for participants with a late departure)

The Venue:

Events will take place at the Kardinal-Döpfner-Haus - the educational centre for the archdiocese Munich and Freising. It has a a long and rich history, and is beautifully situated on the Domberg hill, from which you have a great view over Freising.

Address - Bildungszentrum Kardinal-Döpfner-Haus, Domberg 27, 85354 Freising, Germany

Accommodation:

Please note that rooms at the Kardinal-Döpfner-Haus can be booked for board members and conference guests via our website. Alternatively, we have also made reservations at two further hotels for 4th to 6th November. Please refer to the keyword "Jahrestagung dib" when booking and contact them by 1st November.

Registration, aswell as bookings for the board meeting, conference, and accomodation at the venue can be made here: http://muc.inwes.net/book/.

Prices:

Accommodation at the Venue

Price is per person and per night incl. tax. Breakfast included.
Members of INWES or dib - 65€
Conference Guests Non-Members - 75€
Children up to 5 years - free
Children 6-11 years (full board) - 29€

Conference Fee

Members of INWES or dib - € 85.00*
Non-members - € 120.00*
Student Fee, dib or INWES - € 25.00*
Student Fee, non-members - € 49.00*
Accompanying person, meals per day Sat/Sun - € 29.00*
Dinner on Saturday - € 25.00*

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* Dinner Friday, coffee breaks, lunch Sat./Sun. are included. Drinks paid individually. Dinner on Sat. not included - to be booked separately

Kid's Programme

Saturday 9:00-18:00 - €12.00
Sunday 9:00-12:00 - € 6.00
Robotics kit to take home after the workshop - € 75.00

Payments for the conference fee, programme, and accommodation at the Venue can be done "offline", via electronic transfer or paypal.

Directions:

By "S-Bahn" or train

In Freising there is railway station for the "S-Bahn" (urban transportation system), Line S1, and for trains.
From the Munich main train station (Hauptbahnhof) trains to Freising take approximately 20 minutes.
It will take 10 minutes to walk from the railway station to Kardinal-Döpfner-Haus. There are also taxis available.
From Munich Airport Franz Josef Strauß (4 km to Freising)
Take bus line 635 from the Airport bus station. In 15 minutes you will arrive at Freising railway station. It will take 10 minutes to walk from the railway station to Kardinal-Döpfner-Haus. There are also taxis available.

By car

Freising is near the highway from Munich to Nuremberg (A9) and the highway from Munich to Deggendorf (A92). Coming from the South it would be best to take the exit "Freising Süd"; from the North, the exit "Allershausen".

ICWES 2017 in New Delhi, India

Women in Science and Engineering India (WISE India) aims to create career opportunities for women by increasing awareness, providing support, enhancing capacity-building, and by influencing policies for promoting women in the field of science and engineering. WISE India is proud to be an organizational member of INWES.

The International Conference for Women Engineers and Scientists 2017 (ICWES 2017) will be organized by WISE India and INWES.

Dates: 3rd to 5th October 2017

Venue: India Habitat Center

The Focus of ICWES 2017 :

- Role of Women in Engineering
- Smart Cities
- Sustainable and Green Infrastructure
- Alternative Renewable Sources of Energy
- Role of Information and Communication Technology in Infrastructure Development

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About INWES

I.Executive Officers:

President: Kong-Joo Lee (South Korea)
President elect: Liette Vasseur (AFFESTIM - Canada)
Treasurer: Joan Graf (USA)
Secretary General: Margaret Ajibode (WES - UK)
Vice President: Gail G. Mattson (AAAS - USA)
Vice President: Marlene Kanga (Engineers Australia - Australia)
Vice President: Roseni Dearden (UK)

II. Other Board Members:

Durdana Habib (WESTIP - Pakistan, Central Asia)
Rufina Dabo Sarr (AFSTech/Sénégal - Senegal, French Speaking Africa)
Claudia Bergbauer (DIB - Germany, Western Europe)
Caroline Thoruwa (AWSE - Kenya, English Speaking Africa)
Ewa Okon-Horodynska (Individual - Poland, Eastern Europe)
Seong Ok Han (KWSE - South Korea, Far East Asia)
Kayoko Sugahara (INWES Japan - Japan, Far East Asia)
Aude Abena (AFISC - Cameroon, French Speaking Africa)
Sangeeta Wij (WISE-India - India, South East Asia)
Chia-Li Wu (TWiST - Taiwan, Far East Asia)
Yvette Ramos (Swiss Engineering - Switzerland, Western Europe)

Honorary members:

Dormer Ellis (Canada)
Joanna Maduka (Nigeria)
Kathleen Harer (USA)
Mahin Rahmani (Iran)
Monique Frize (Canada)
Nicole Becarud (France)
Renata Siemiens (Poland)
Issié Yvonne Gueye (Ivory Coast)
Claire Deschenes (Canada)

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Consultative status with UNESCO

INWES Member Newsletter

Deadline for Issue No. 23: 1st January

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