

The 40th General Conference of UNESCO

As President of the Canadian Commission for UNESCO, I had the opportunity to be part of the Canadian delegation at the 40th General Conference of UNESCO with several staff of the commission in November. The delegation was led by our Ambassador Elaine Ayotte. My first experience being one of the representatives for Canada was quite interesting. It certainly demonstrates the complexity of the international dialogue and challenges to deal with such a large and diverse agenda. I was asked to seat for Canada in the Natural Sciences Commission and was named Vice-president for the meeting (more protocol than really action!). Topics that were discussed and moved for recommendations included the development of the principles of Open Science as a follow-up from the 2017 Recommendation on Science and Researchers, the consideration and adoption of the Draft Programme and Budget for 2020-2021 for the Commission, as well as the International Oceanographic Commission and the International Hydrological Program. There were also important presentations, such as one on the UN Decade on Ocean Science for Sustainable Development. One of the highlights during my time at UNESCO was the donation of the first Atlas on Indigenous Peoples of Canada to the UNESCO Library by Grand Chief Littlechild. This is a great addition and especially important as Canada was the most involved in the International Year on Indigenous Languages. The great news is that that the UN Decade on Indigenous Languages 2022-2032 was approved in December.



At the UNESCO Headquarters for the 40th General Conference

New collaboration of the Chair: Becoming a member of the Posthumanism Research Institute

In the past year or so, I have been discussing the challenges of bringing actions regarding sustainability in communities with Dr. Christine Daigle, the Director of the Posthumanism Research Institute at Brock University. This has led us to work together on two publications. The first published in *Sustainability* is entitled "Is It Time to Shift Our Environmental Thinking? A Perspective on Barriers and Opportunities to Change." It is a reflection and perspective of how society is not really attentive to the planet crisis and the need for faster actions. The second publication came with the call from UNESCO on The Futures of Education. It is entitled: "Rebuilding our connection to nature is key for building citizens of the earth" and is chapter 8 in the book entitled "Humanist Futures - Perspectives from UNESCO Chairs and UNITWIN Networks on the futures of education." This fall, I also became a member of the Posthumanism Research Institute. We are working on other projects for the coming year. As expected, I also asked Christine to join my core group. More to come.

Blurbs for the general public

Knowledge mobilization is critical when we look at community sustainability. However, for most people, many of the terms that we are using are complex and difficult to understand. In our MEOPAR project on climate change adaptation in the Town of Lincoln, we discovered rapidly through our interviews that people wanted to have more information, but they wanted it in a way they could understand, not the long scientific publications that are often sent to them. To help enhance this understanding, the research team started writing short blurbs in lay language to be published one topic at the time. These blurbs are posted on my UNESCO website, but they are also published by several of the local/regional newspapers. This has led to an increased awareness level in the Niagara region and, certainly, more email messages and phone calls from citizens who are now aware of the issues and are contacting us for help and dialogue. This effort (which is quite demanding for the team) is critical in explaining the importance of issues such as climate change, sustainable development and resilience.

Acting for Equity, Diversity, and Inclusion in Canadian Science and Research



This symposium organized by the Canadian Science Policy Centre was held in November 2019 in Ottawa during the annual Canadian Science Policy Conference. I participated in the first panel which was entitled “How Can Multiple Layers of Society Collaborate to Dismantle Barriers to Gender Equity in STEM?” Two other panels, “Minority integration into the Canadian STEM Workforce” and “Better Together: Promoting Equity, Diversity, and Inclusion Dialogue Among Scientists, Social Scientists, and Policymakers,” completed this half-day symposium. There were many takeaway messages. Among them, some really resonated with me. The first one is that we still need to push for more mentors to support all women from different ages, races and abilities to come to STEM programs and remain in these professions. The support for clear policies that can support women at different stages of their lives was also promoted, including issues of childcare, for example. A holistic approach was certainly important as people from different background spoke of their challenges during the symposium. It was even suggested that we add Accessibility to Equity, Diversity and Inclusion as for some this is where the barrier stands. Changing the EDI for IDEA? This may become a possibility.

Developing a welcoming lab

Since I became a UNESCO Chair, I have discovered that many students from across the world are interested in being part of my lab. With the growth of my research program, I have been able to add several students. What has been wonderful is to see that the students are not only coming from the Niagara, but also from different countries and cultures. From undergraduate and graduate students to postdoctoral fellows and visiting scholars, they are representing the world in diversity. This is an important component of my Chair as I truly believe in what we now called Equity, Diversity and Inclusion. Equity, because I have been able to attract several women in my lab, in a field that often tends to be more male-dominated. Diversity, as my lab includes more than 24 people from more than eight countries. Inclusion is also important, and I am ensuring that all of the members of the lab can help each other. Everyone can learn from others and they should all feel welcome. With increasing mobility and international collaboration, such as approach is becoming essential. It is clear that everyone can contribute. It was the same with the field course that I gave this summer: lots of diversity of people and culture, all learning about biological diversity and its importance for sustainable development.



Group photo of this summer's field course.

What's the connection? Participation in the symposium organized by the UNESCO Chair on Diversity of Cultural Expression

Natural and cultural resources are intricately part of our lives, but often, the need to protect them are forgotten. While many international conventions and laws have been developed to support their protection, many challenges exist. In September, the UNESCO Chair on Diversity of Cultural Expression at Université Laval, Véronique Guèvremont, organized an international symposium entitled “Integrated Approaches to the Protection of Cultural and Natural Resources in National and International Law.” This event was quite interesting since it brought together researchers from various disciplines, touching on aspects such as biocultural diversity, world heritage sites, the influence of media, and the era of virtual technologies. In my case, I was invited to speak of the issues of expressions under the scenario of climate change and the role of ecosystem governance and ecosystem-based adaptation in enhancing the capacity of communities to protect biocultural diversity. The discussions were very productive and there was a consensus that we needed to go further and find ways to maintain the exchanges. More is coming as we are now moving to the step of writing our papers and exploring new collaborations.



Round table discussion in Quebec City in September.

Connecting sustainable development and conservation: A view from Latvia



Steering committee of CEM-IUCN in Latvia.

My work with the Commission on Ecosystem management (CEM) at the International Union for Conservation of Nature (IUCN) continues, and in September we were in Jurmala, Latvia for our steering committee meeting and Europarc conference. The meeting was an important one, as we continue the work on Red List of Ecosystems and the standard of Nature-based Solutions. The Red List of Ecosystem (RLE) is an international effort to identify the ecosystems that are most at risk, similar to the Red List of Species. Nature-based Solutions (NbS) are approaches that are increasingly essential for the protection of our environment and the resilience of our social-ecological systems. The standard will be useful to assess which projects can be considered NbS with sustainability in mind. Of course, we also discussed the preparation of the World Conservation Congress 2020 as well as the vision of CEM in the upcoming intersessional program 2021-2024.

The location was strategically selected as it gave us an opportunity to attend Europarc and prepare a side event which aimed to examine RLE, NbS and ecosystem governance as essential components for biodiversity conservation and enhancing connectivity among protected areas. The field trips were great to illustrate some of these principles, such as several community sustainability efforts of the local people who live around or within the Gauja National Park, including slow food movement farmers market and a factory of dried fruits coming exclusively from local organic produce. This was a great illustration of how it is possible to bring several SGDs together from food security (SDG2), land protection (SDG 15) and reduction of greenhouse gas emission/ climate action (SDG13).



Some local food in Latvia where slow food movement and local and native produce are promoted for greater sustainability.

Talking to agrologists about climate change

December 10 was also busy, since I was presenting to the Hamilton and Niagara Chapters of the Ontario Institute of Agrologists. The title of my presentation was "Great Lakes Sustainability including high water levels: Or should we say how to adapt to climate change." Now, it seems easy, but there are challenges regarding explaining climate change and convincing people that it is real and there is a need to do something about it. This is why, for me, it is important that I continue to present to various audiences. SDG 13 on Climate Action cannot be achieved if the general population is not aware, or does not understand the need to act.

Continuing to promote women in science, technology, engineering and mathematics (STEM)

In October, I was invited to speak as a keynote at the Annual General Meeting of the Ontario Council of Lifelong Learning (OULL) - Bridging Troubled Waters: CE and Future Skills. My talk was based on the reflection paper that was published in the IdeaLab of the Canadian Commission for UNESCO regarding the barriers of mature women to come back to STEM education. My work on these matters is not finished. We are just embarking on the reflection regarding other issues such as practical ways to include Equity, Diversity and Inclusion in the lab and in grants. This came after a roundtable discussion on November 26 with the new Canadian L'Oréal laureates, several federal agencies, and other organizations that also try to promote women in STEM. We all want to continue our work. Women equality remains a very important factor in ensuring sustainable development. I should also mention that November 26 was the reception for the L'Oréal prizes at the France Embassy in Ottawa. Great occasion to celebrate the role that women can play in STEM. But still more to do.



Speaking at the OULL.

Niagara Invasive Species Management Database: A tool to improve collaboration locally on a global problem

Written by: Lyn Brown, Master in Sustainability Science

Worldwide, 17,000 invasive species drive biodiversity loss, and cost the global economy at least \$1.4 trillion annually. In the Niagara region of Ontario, Canada, at least 139 non-indigenous aquatic species have established themselves. This makes invasive species a locally to globally relevant problem. The UN and Convention on Biological Diversity have declared invasive species a global initiative and requested increased data sharing on invasives as part of SDG Target 15.8 and Aichi Biodiversity Target 9. For a sustainability master's thesis at Brock University, an invasive species management database was created for the Niagara region. This database shows what organizations are doing to control aquatic and riparian invasive species, and where they are doing it. It also provides organizational contact information. The database acts as an information resource that can facilitate local collaboration. Organizations can use the database to see who else is working on the same invasive species, and, from there, contact one another to form new partnerships and pursue potential resource and knowledge-sharing opportunities. This type of collaboration can help those in Niagara and beyond effectively combat invasive species. Local databases like this one can contribute to the global information network on invasives species. Major organizations in the U.S. and Canada have already placed links to the database on their official websites, including EPA, NOAA, USDA, and ISC. Niagara-specific information can be scaled up to regional and global databases like GLANSIS and GISD. Overall, this database helps Niagara progress towards achieving Aichi Biodiversity Target 9 and SDG Target 15.8. Visit the database at: <https://brocku.ca/unesco-chair/research/invasive-species>.

Celebration of Nations

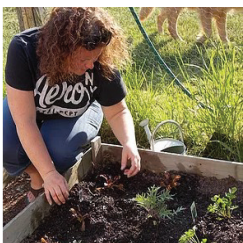
One of my priorities as UNESCO Chair and President of the Canadian Commission for UNESCO has been the inclusion of Indigenous activities and support in this mandate. In September, we saw the third edition of the Celebration of Nations in St Catharines. The event is a wonderful gathering of Indigenous and non-Indigenous peoples where various activities are organized. They include workshops, film, book and poem presentations, food tasting, cultural knowledge sharing, etc. This year's theme was "Empathic traditions." I was encouraged by the organizers to organize a couple of sessions which I did with one of my Chair collaborators, Christine Daigle. We organized two sessions. The first one was called "Living in the Anthropocene" and brought the discussion on the current and future views of this era from the perspectives of a researcher, an Indigenous woman and a youth. The second session entitled "Science as a Human Right" was a follow-up of a prior session that was held at Brock University (for academics and students) with the aim of presenting and discussing the UNESCO 2017 Recommendation on Science and Scientific Researchers, in December 2018. This new session aimed to increase awareness of the 2017 Recommendation and discuss with the general public and Indigenous Peoples what this meant for them. Issues such as free and informed consent was certainly underlined as a prerogative to ensure fair, just and inclusive science. Bridging and sharing among people from different cultures is an essential process to move forward with the Reconciliation and ensure that sustainable development is for ALL.



Women signing procession for the opening of the Celebrations of Nations in September.

Heather presents her experience

Written by: Heather VanVolkenburg, Master in Biology



Learning stirs within me a passion like no other, and it is with great satisfaction that I can now reflect on my successful completion of a graduate degree in the biological sciences. For those that may be interested in pursuing higher education in the future, my advice is this: be passionate, be curious, find a supervisor that shares in your passion and curiosity, but most of all, understand that you get back from experiences what you are willing to put into them. My experience with Liette indulged my independent nature yet provided the necessary support and guidance whenever I needed it. I was encouraged to get involved in projects outside of the scope of my thesis (e.g. researching the status of mature women entering university science programs; contributing to an international review of agroecosystems; involvement in industry partnerships connected to academic research, etc.), which provided challenges and learning opportunities for which I am very

grateful. Despite an intensely busy few years, I never felt that my family life should be put secondary to my academic life (outside of my own doing!) and found a great deal of support and accommodation was extended to me when needed. In short, I was able to be as busy as I chose to be and was consistently encouraged to strike a balance with home and academics. Most importantly, my experience has further instilled in me a resolve for not giving up or being afraid of failure, but rather to embrace uncertainty as valuable learning experiences. My future feels infinite and exciting! Unlike many of my colleagues who, after completing similar programs, are unsure of or feel limited in what the future holds for them in terms of employment, I find myself feeling happily overwhelmed with what seems like endless opportunities awaiting me. In closing, I leave those of you considering higher education in the sciences with this: science is rigorous and can be a stringent discipline, do not allow it to be so stringent that you are afraid to take risks, cross the boundaries of other disciplines or challenge the status quo. Find your niche and if one does not exist, create one! Finally, I want to say thank you, Liette; I have found in you a wonderful friend and mentor who goes beyond the call of duty for your students.

A woman in engineering. Memoirs of a trailblazer. 2019. By Monique Frize. University of Ottawa Press, 285 pp.

Over the holiday season, I was able to assess this new book from Monique. This is a good book to read, not only for engineers, but for anyone in the various scientific disciplines. Despite adversities (from the loss of her first husband to obvious gender discrimination), Monique shows how she persevered in promoting women in science, technology, engineering and mathematics (STEM). Through the telling of factual stories of her life, she demonstrates that if you have the will to achieve something it does not matter who you are. Her steps from early age have always been in one direction and, as she states, “to become a world-renowned biomedical engineer.” But she added a twist: she embarked on a journey to denounce gender bias and discrimination and define strategies to reduce barriers for women in STEM. As the first holder of the Nortel/NSERC Chair of Women in Science, she challenged the status quo, not only in Canada, but also internationally, with the establishment of the International Network of Women in Engineering and Science.

Research Excellence: the San Francisco Declaration



Research Excellence with the different federal granting agencies senior executives.

In November, I had the honor of being invited to moderate a symposium organized by the Canada Research Coordinating Committee. This symposium, entitled “The future of research excellence: A conversation with Canada’s granting agencies,” was part of the agenda of the Canadian Science Policy Conference (CSPC) held in Ottawa. In this session, the senior executives of the four main granting agencies discussed the importance of defining research excellence which does not reflect the number of publications, citations and where they are published, but rather, their content and impacts to society. In addition, there was a strong emphasis that Equity, Diversity and Inclusion (EDI) were going to take a large role in the evaluation of grant applications as a diverse team can be

more creative and innovative. This was aligned with the UNESCO 2017 Recommendation on Science and Scientific Researchers. A few days before, CIHR, SSHRC, NSERC and Genome Canada signed on the Declaration, joining CFI, NRC, the Canadian Association of Research Libraries and more than 1,500 other funders, publishers and institutions from around the world. This means that the research ecosystem in Canada, like in many other countries, is changing. Research assessment will not be the same and issues such as Open Access and EDI will also have to be considered. This symposium was very timely and connected to the CSPC pre-conference symposium that we held a couple of days before on EDI. In this symposium, we also discussed the importance of EDI and how people can be more active in promoting and encouraging good practices in this field. Another component that was encouraged to add is accessibility. How can we make sure that everyone, even those with impaired vision or physical abilities, can have full access and contribute to society? Everyone can contribute to sustainable development.

Visit of the Chinese Consulate and the Ontario Ministry of Economic Development, Job Creation and Trade



On December 10, Brock received a delegation of officials and senior policy makers who came to visit and celebrate the sharing with my lab and Boreal Agrominerals and the positive impacts of our current research project and partnership. The research collaboration with Boreal Agrominerals has been very positive and represents a great way to try to enhance sustainability in agriculture. The delegates were excited to hear about the achievement to-date as well as the potentials for future collaborations. With the support of the Office of Research, they were able to visit several components of the university and understand the important role in local and community research that Brock plays.