

World Virtual Indigenous Circle on Open Science and the Decolonization of Knowledge: Webinar Report

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Executive Summary

Purpose of the webinar

The World Virtual Indigenous Circle on Open Science and the Decolonization of Knowledge took place November 12, 2020. It was organized by the UNESCO Chair in Community-Based Research and Social Responsibility in Higher Education, co-hosted by the Canadian Commission for UNESCO and the World Indigenous Nations Higher Education Consortium, and the format was designed by Lorna Wanósts'a7 Williams. The Circle featured nearly 20 Indigenous speakers and attracted some 300 registrants from around the world. Its purpose was to inform UNESCO's drafting of a recommendation on open science and, in turn, to ensure Indigenous knowledge is incorporated respectfully and with integrity to help reshape how institutions recognize and use it. Ultimately, the aim was to take the next of many steps toward ensuring that Indigenous knowledge is better recognized worldwide, so it can guide individuals and institutions in education, in research, and in protecting the Earth.

Indigenous Circle format

Despite its virtual format, the webinar adhered to Indigenous protocols, opening and closing with prayers, songs and territorial welcomes from respected Elders and Knowledge Keepers. The format emulated a Talking Circle that encourages respect, information sharing, attentiveness and interconnectedness. Speakers and attendees expressed their recognition that the webinar marked a time for Indigenous people to revisit who and where they are, who their ancestors are, and where their teachings come from to move forward in a positive way. As Dr. Lorna Williams phrased it in her opening remarks, "We have gathered today in a circle and we are here to shape what's in the middle: the bundle of knowledge that will guide the way in which Indigenous peoples' knowledge is continued and created from all over the world."

Key messages

Each webinar participant brought a unique perspective—from the importance of storytelling and cross-cultural dialogue to the connection between Indigenous knowledge and political activism to the global class struggle, the intersection of Indigenous language and mental health care, and more. However, some central themes emerged:

- The knowledge that Indigenous People accumulated for thousands of years before the emergence of "civilization" is not only valuable, but necessary for the continued existence of humans on Earth. Indigenous

Participants in Order of Appearance

Laurie Robinson, Mahingan Sagaigan Nation, Executive Director, Indigenous Advanced Education and Skills Council, Ontario, Canada

John Elliott, Tsartlip First Nation

Katsi Cook, Wolf Clan Mohawk Akwesasne

Lorna Wanósts'a7 Williams, Lil'wat First Nation, Professor Emerita, University of Victoria, Canada

Sébastien Goupil, Secretary-General, Canadian Commission for UNESCO

Keiki Kawai'ae'a & Kealani Makaiwi, World Indigenous Nations Higher Education Consortium

Carrie Bourassa, Canadian Institutes of Health Research

Dominique Bérubé & David Newhouse, Social Sciences and Humanities Research Council, Canada

Kevin Fitzgibbons, Natural Science and Engineering Research Council of Canada

Leroy Little Bear, Blackfoot First Nation, Professor Emeritus, University of Lethbridge, Canada

Gregory Cajete, Tewa, Santa Clara Pueblo, Professor, University of New Mexico, US

Wangoola Wangoola Nduwala, Nabyama, MPAMBO African Multiversity, Busoga, Uganda

Zanisah Man, Orang Asli Professor, Universiti Kebangsaan Malaysia

Sonajharia Minz, Vice-Chancellor Sido Kanhu Murmu University, Dumka, India

Jazmin Romero Epiayu, Wayuu activist, Colombia

Ed Connors, Psychologist, Kahnawake First Nation, Canada

Manulani Aluli Meyer, University of Hawaii, US

Jose Barreiro, Taino, Cuba; Emeritus Smithsonian Institute, USA

Kevin Lowe, Gubbi Gubbi, Scientia Indigenous Fellow, University of New South Wales, Australia

knowledge systems have been around since time immemorial and can benefit future generations.

- The Earth is facing a crisis. The broader scientific community can help to address it and restore equilibrium by supporting Indigenous scientific communities. A central goal of Indigenous knowledge is sustainability, and it is built on relationships rather than on what can be measured.
- Indigenous science is about love of land. Its continuity is therefore linked to the continuity of life on Earth.
- Indigenous language and knowledge are intertwined, and both are at the heart of cultural survival and identity. A reinvigoration of Indigenous languages and cultures can help Indigenous populations reclaim space, dignity, equality, justice and liberty.
- Despite long traditions of Indigenous science that are now being appreciated and reimplemented, the practice of Western science has systemically excluded Indigenous thought, Indigenous ways of knowing and Indigenous peoples. This needs to stop.

Central discussion points

- Indigenous People in many parts of the world have experienced a 500-year attack on their territories, cultures, languages and knowledges. This systematic move to silence and devalue Indigenous perspectives can be seen as a form of intellectual colonization.
- We are engaged in the work of educating people that Indigenous knowledge has value and that considering other knowledges does not jeopardize their own. It is an effort to appreciate that the Indigenous knowledge that people continue to hold is precious and to recognize that it has continued despite a centuries-long effort to silence it.
- Indigenous scholars and activists around the world have diverse languages, cultures and histories, but take strength from important commonalities in their epistemologies, and agree on the importance of decolonizing knowledge and establishing a shared infrastructure to support the re-emergence of and renewed respect for their languages and knowledges.
- The importance of this work is gaining recognition among pillars and funders of research. In Canada, these include the Canadian Institutes of Health Research, the Social Sciences and Humanities Research Council, and the Natural Sciences and Engineering Research Council.
- Language is an essential starting point for reasserting the value and application of Indigenous knowledge, as they are indivisible. The richness of Indigenous knowledge systems arises from an intimate tradition of knowing and relationship with, with a focus on continuity. It is time to for these traditions to enter the mainstream and receive the same serious consideration as “western” knowledge.
- Value can be derived from bringing traditional knowledge into universities and having Indigenous institutions work alongside western institutions. These ideas are connected to the need to ensure access to quality education for Indigenous people everywhere and to ensure Indigenous ways of knowing are incorporated into educational institutions so they can be considered universal rather than western. Mainstream agencies should reflect on the need to develop an ethical space from which to frame a relationship between themselves (and the state) and Indigenous peoples.
- Colonization has had persistent effects in Indigenous communities in physical, linguistic, economic and cultural domains. Indigenous scholars face an ongoing challenge to hold space in their minds to engage in cultural survival and to continue to support cultural reclamation.
- Bringing Indigenous languages into the light is a global struggle, and the reclamation and use of language and the participation of people in Indigenous cultural work is in itself a political act.

Key Recommendations

- Acknowledge Indigenous Knowledge as science
- Recognize Indigenous spiritual practices as vital to guide and inform Indigenous Knowledge
- Support the revitalization of Indigenous cultures and languages, recognizing that they are integral to Indigenous Knowledge

- Work towards an understanding of science that prioritizes relationality – relationships with people, community, land and all Creation
- Recognize an Indigenous conception of time that ensures longevity of relationships and sustainability for future generations

For more information

The main report contains half-page summaries of each speaker's key points. These are paraphrased and condensed from the webinar and seek to convey the essence of each speaker's message. Appendix A contains a list of recommended texts. A complete transcript of the webinar is available in Appendix B, and the webinar itself can be viewed in full at: [\[URL\]](#).

Full Report on the World Virtual Indigenous Circle on Open Science and the Decolonization of Knowledge

Purpose

The World Virtual Indigenous Circle on Open Science and the Decolonization of Knowledge took place on November 12, 2020. It was organized by the UNESCO Chair in Community-Based Research and Social Responsibility in Higher Education, co-hosted by the Canadian Commission for UNESCO and the World Indigenous Nations Higher Education Consortium, and the format was designed by Lorna Wanósts'a7 Williams. The Circle attracted some 300 registrants from around the world. Its purpose was to inform UNESCO's drafting of a recommendation on open science, ensuring that Indigenous knowledge is incorporated respectfully and with integrity to help reshape how institutions recognize and use it. Ultimately, the aim was to take the next of many steps toward ensuring that Indigenous knowledge is better recognized in the world so it can guide individuals and institutions in education, in research and in protecting the Earth.

Indigenous circle format

Despite its virtual format, the webinar adhered to Indigenous protocols, opening and closing with prayers, songs and territorial welcomes from respected Elders and Knowledge Keepers. The format emulated a Talking Circle that encourages respect, information sharing, attentiveness and interconnectedness. Speakers and attendees expressed their recognition that the webinar marked a time for Indigenous People to revisit who and where they are, who their ancestors are, and where their teachings come from, to move forward in a positive way. As Dr. Lorna Williams phrased it in her opening remarks on the reason for the gathering, "We have gathered today in a circle and we are here to shape what's in the middle: the bundle of knowledge that will guide the way in which Indigenous People's knowledge is continued and created from all over the world."

Key messages

Although each webinar participant brought a unique perspective—connecting Indigenous knowledge to political activism, the importance of storytelling and cross-cultural dialogue, the global class struggle, the intersection of Indigenous language and mental health care, and more—some central themes emerged:

- The knowledge that Indigenous people accumulated for thousands of years before the emergence of "civilization" is not only valuable, but necessary for the continued existence of humans on Earth. Science can no longer ignore the wisdom that comes from Indigenous knowledge systems that have been around since time immemorial and can benefit future generations.
- The Earth is facing a crisis. The broader scientific community can help to address this crisis and restore equilibrium by supporting Indigenous scientific communities. A central goal of Indigenous knowledge is sustainability, and it is built on relationships rather than on what can be measured.
- Western science is linked to money. Indigenous science is about love of land. The continuity of Indigenous science is therefore linked to the continuity of life on Earth.
- Indigenous people around the world will explain science in different ways and emphasize different aspects, but all operate from the same paradigm and share a way of understanding themselves in the world, including how they come to knowledge and self-understanding.
- Indigenous language and knowledge are intertwined, and both are at the heart of cultural survival and identity. A reinvigoration of Indigenous languages and cultures can help Indigenous populations reclaim space, dignity, equality, justice and liberty.
- Despite long traditions of Indigenous science that are now being appreciated and reimplemented, the practice of Western science has systemically excluded Indigenous thought, Indigenous ways of knowing and Indigenous peoples. Western knowledge and its proponents continue to seek to privilege it over other forms and origins of knowledge, both in mainstream media and in formal education.

- Indigenous knowledge can help communities to regain autonomy and self-governance by improving cross-cultural dialogue.
- The effects of colonization are alive and well in many of the world's Indigenous communities. The starting point for decolonizing knowledge is to colonize countries, nations, peoples and their languages.

Central discussion points

Indigenous People in many parts of the world have experienced what one webinar participant termed “the long assault”: a 500-year-long attack on their territories, cultures, languages and knowledges. This systematic move to silence and devalue Indigenous perspectives can be seen as a form of intellectual colonization.

Today we are engaged in the work of educating people that Indigenous knowledge has value and that considering other knowledges does not jeopardize their own. It is an effort to appreciate that the Indigenous knowledge that people continue to hold is precious and to recognize that it has continued despite a centuries-long effort to silence it.

Indigenous scholars and activists around the world have diverse languages, cultures and histories, but they take strength from important commonalities that emerge in their epistemologies. They agree on the importance of decolonizing knowledge and establishing a shared infrastructure to support the re-emergence of and renewed respect for their languages and knowledges.

This importance of this work is gaining recognition among Canadian pillars and funders of research, such as the tri-agency composed of the Canadian Institutes of Health Research, the Social Sciences and Humanities Research Council, and the Natural Sciences and Engineering Research Council.

Speakers agreed that language is an essential starting point for reasserting the value and application of Indigenous knowledge, as they are indivisible. They agreed that the richness of Indigenous knowledge systems arises from an intimate tradition of knowing and caring for the land and relationships, with a focus on continuity, and that it is time to for these traditions to be brought into the mainstream and given the same serious consideration as “western” knowledge.

Some speakers touched upon the intersection of western and Indigenous knowledges, drawing attention to the value that can be derived from bringing traditional knowledge into universities and having Indigenous institutions work alongside western ones. These ideas are connected to the need to ensure access to quality education for Indigenous people everywhere and to ensure Indigenous ways of knowing are incorporated into educational institutions so they can be considered universal rather than western. That said, mainstream agencies must be pushed to reflect on the need to develop an ethical space from which to frame a relationship between themselves (and the state) and Indigenous peoples.

Many presenters spoke of the persistence of colonization or its effects in their communities in physical, linguistic, economic and cultural domains. All spoke about the daily challenges of pushing back to hold space in their minds to engage in the important work of cultural survival and to remain involved in supporting cultural reclamation.

All presenters were aware of the struggles involved in bringing Indigenous languages into the light. The reclamation and use of language and the participation of people in Indigenous cultural work is in itself a political act. As Kevin Lowe phrased it in his summation of the webinar: “We need to never forget that the ongoing work of the neo-colonial state has been to deny prior occupation, sovereignty and intimate connectedness between Indigenous People, their country and knowledge systems.”

Key recommendations

- Acknowledge Indigenous Knowledge as science

- Recognize Indigenous spiritual practices as vital to guide and inform Indigenous Knowledge
- Support the revitalization of Indigenous cultures and languages, recognizing that they are integral to Indigenous Knowledge
- Work towards an understanding of science that prioritizes relationality – relationships with people, community, land and all Creation
- Recognize an Indigenous conception of time that ensures longevity of relationships and sustainability for future generations

Speaker summaries

The following summaries are paraphrased and condensed from the webinar and seek to convey the essence of what each speaker said. A complete transcript of the webinar is available in Appendix B, and the webinar can be viewed in full at: [\[URL\]](#). The summaries below are shown in the order in which participants spoke.

Moderator's remarks

Laurie Robinson

Mahingan Saganagan Nation, Executive Director, Indigenous Advanced Education and Skills Council, Canada

Thank you all so much for joining us here today. It is a pleasure to be with you all. I really appreciate all of you finding some time to be with us from your homelands across the world today. The discussions and expertise shared today will help UNESCO to develop a recommendation on open science and the decolonization of knowledge.

I am an Anishinaabekwe, and my homeland is in the territory of the Wolf Lake Peoples. I am the executive director of the Indigenous Advanced Educational Skills Council in Ontario, Canada.

For some of us, when Indigenous peoples gather to share knowledge and understandings, we do so in a circle, and particular protocols are taken to facilitate sharing information. For example, this may mean the passing of an eagle feather or another sacred item from one speaker to another.

Today, our circle is virtual. As best I can, I will facilitate our discussion honouring those protocols. We will have an opening from the western part of the lands where I sit today and an opening song from the East, remarks from a few organizations, presentations by speakers from many parts of the world, and open dialogue with all participants. We will have summations by two scholars and a closing song.

Miigwech, everyone, for your cooperation. We will begin today's circle with an opening from Mr. John Elliott of W̱SÁNEĆ First Nation. John is a respected Elder and has taught at Lau, Welnew Tribal School in Saanich for over 30 years.

Openings

John Elliott

Tsartlip First Nation, Canada

[Greetings in SENĆOŦEN.]

First of all, I want to thank Lorna, my dear, respected friend, for asking me to join you all today. I feel very humbled by this opportunity. My SENĆOŦEN name is J,SIṈTEN. It's an old name that goes back to the 1700s here in this area. I was given that name when I received an honorary education degree from the University of Victoria.

I've worked in language—and the survival of our homeland language—for a long time. Forty years went by so fast! All of our languages are a God-given right, and the wellness of our language is connected to the wellness of the Earth. I wanted to keep that in mind during my opening prayer and song. I'll do the prayer in my language, followed by the song. The song that I will use today was gifted to us in a prayer circle many years ago. Ancestral ladies came into our circle and gave us this song, and they said, "When you want your language to survive and you want to pray for the languages, use this song." With that, I begin my prayer.

[Prayer and song in SENĆOŦEN.]

That's my prayer and my song, and we've been singing that song for the last 40 years, since the ancestors passed it along to us. I use it every day and I pray that our languages will survive, that our people and our children will have dignified lives and find lives of peace and harmony once again in this world.

HÍŠWŪŪE (thank you).

Katsi Cook

Wolf Clan Mohawk, Akwesasne, Canada

Katsi Cook is an Akwesasne Mohawk, respected Elder, traditional Aboriginal midwife, and lifelong advocate for women's health and well-being. She is the director of the Spirit Aligned Leadership Program, which aims to elevate the lives, dreams and voices of North American Indigenous women Elders. Katsi gave an opening song asking the spirits of the four directions to help direct participants.

Reason for gathering

Dr. Lorna Wanósts'a7 Williams

Lil'wat First Nation, Professor Emerita, University of Victoria

Thank you to each of you for coming to join us and for coming to work together on this important topic. I want to thank the lands and the people whose lands I am on.

[Dr. Williams shares artwork depicting frogs.]

This is an important image. It's an image of the frogs that announce ceremonial gatherings at this time of year. They announce these gatherings that are used for transformation. It's a time for us to revisit who we are, where we are, who our ancestors are and where our teachings come from to help us to continue in a good way.

In a sense, that is what we're doing today. We're gathered today in a circle to shape what is in the middle—the bundle of knowledge that will guide the way in which Indigenous peoples' knowledge is continued and created from all over the world. Our knowledge systems, our languages, our identities have been under assault for generations and generations. And it was in a prophecy that the time would come when we would join together to ensure that our knowledges would continue.

As Indigenous People, we have been working with our ancestors and with the lands, with all our relatives so our knowledge systems continue to be used and known and to be gifted by us to our descendants. We're here to add our knowledges to the world.

Each of us who speaks today will shape what that looks like. We will share so that that knowledge is used in a respectful way—and so that it doesn't become distorted, that it's honest and full of integrity; so that it's protected, but it is a part of the world. We're coming out from the shadows, and I want to thank each of you for contributing to that knowledge system. Each of you will add and shape that knowledge so it can be remembered, and so it can

be a guide for all of us continuing forward in education and in research, in studies and in the reshaping of institutions to protect and to uphold our mother, the Earth, our father, the Sun and all of our relatives.

Opening remarks from organizations

Sébastien Goupil

Secretary-General, Canadian Commission for UNESCO

Welcome, everyone. I would like to acknowledge that I am speaking from the unceded territory of the Algonquin People on Turtle Island, which is known today as Canada.

Advancing reconciliation between Indigenous and non-Indigenous peoples is extremely important to us at the Canadian Commission for UNESCO. I've been working hard with my team, our members and networks to position our Commission as a strong ally of Indigenous peoples. It is a real honour to be invited to say a few words today.

UNESCO, as a specialized agency of the UN system, plays an important role in setting standards and norms on a variety of priorities, especially those relating to protecting and promoting all forms of rights, culture and heritage. UNESCO is currently working to produce a new recommendation on open science, and this new international standard-setting instruments will soon be adopted. UNESCO will invite its member states to take whatever legislative or other steps may be required to apply those principles and norms at the national level.

This is why it is so vitally important that this new recommendation contributes to efforts underway to decolonize knowledge. It needs to accurately reflect a diverse knowledge system, especially the views and experiences of Indigenous peoples around the world.

Science can no longer ignore the knowledge and wisdom that comes from these knowledge systems that have been around since time immemorial and can continue to benefit future generations. Moving forward, we need to ensure that science is open to local and place-based knowledge, as well as to previously excluded knowledge systems, including Indigenous ones. We need to ensure that science is a practice that is conducted with and for communities.

Kei'ki Kawai'ae'a & Kealani Makawiki

World Indigenous Nations Higher Education Consortium (WINHEC)

We are grateful to be here in your presence. We are honored and filled with aloha. As we meet together, let us all be in tune as we share our thoughts and learn from each other.

[\[Kealani Makawiki sings an opening prayer song, 'Ano'Ai\]](#)

We pay respect to the Indigenous Elders and traditional owners, present and past, of the Lekwungen territory. And we bring greetings from member institutions across the globe, Indigenous Elders and knowledge holders who have been the inspirational foundations of World Indigenous Nations Higher Education Consortium (WINHEC) as an international Indigenous higher education consortium.

Established in 2002, WINHEC's membership represents Indigenous nations and educational institutions in eight countries. It is working to address our collective concerns for the rights of Indigenous people to access all levels of education and to address the barriers that impede respectful engagement of Indigenous peoples in teaching, research and other endeavors in education.

The founding members determined that the goals and objectives of WINHEC must align with those of international instruments, including the United Nations Declaration on the Rights of Indigenous People, the International Covenant on Economic, Social and Cultural Rights, the Universal Declaration of Human Rights and others, and must

promote the sovereign rights of Indigenous peoples. Through these global activities, WINHEC has promoted the right of all Indigenous people to enjoy full access and participation across all levels of education. Action has been taken to develop principles and policies to protect and revitalize Indigenous languages and language systems.

WINHEC applauds and supports the open science proposal as it pertains to validating, legitimizing and recognizing Indigenous ways of knowing science as a gift that has been passed down to the generations since time immemorial.

Carrie Bourassa

Institute of Indigenous People's Health, Canadian Institutes of Health Research (CIHR)

Our vision is to improve the health and well-being of First Nations, Inuit and Métis peoples through supportive, innovative research programs based on scientific excellence and Indigenous community collaborations that respect communities and the right to self-determination. We are committed to community-based research led by Indigenous communities in a culturally safe way that builds capacity at their direction.

Our strategic plan is evergreen. It incorporates Indigenous voices while aligning with the United Nations Declaration on the Rights of Indigenous peoples, the TRC and the Royal Commission on Aboriginal Peoples. During our consultations, four key themes emerged, and what we heard, which was no surprise, was self-determination. It is about having sustainable funding, about Indigenous communities being able to hold their own funds. We've been working to enhance the capacity, development and infrastructure while acknowledging, honouring and respecting Indigenous health research and histories. This includes ensuring that Indigenous knowledge is prioritized.

Our new strategic plan will promote excellence, creativity and knowledge translation to mobilize health research for transformation and impact and achieve organizational excellence. It is really about prioritizing Indigenous knowledge. We always say Indigenous knowledge is science. We are the original scientists, and this is our ancestral knowledge that is inherently within us and must be acknowledged.

It is vitally important to acknowledge and honour our Elders, our knowledge keepers. They are our PhDs. We are working to close the existing gap in health status between Indigenous and non-Indigenous Canadians. That must include acknowledging, honouring and prioritizing Indigenous knowledges.

Dominique Bérubé & David Newhouse

Social Sciences and Humanities Research Council (SSHRC), Canada

Dominique:

The council has really benefited from the last 10 years of advice and guidance from its Indigenous advisory circle. The circle allowed SSHRC to develop its new Indigenous research guidelines that we published in 2015. These recognize the importance of the Indigenous knowledge system.

The Truth and Reconciliation Commission called on SSHRC to establish a multi-year program to better understand reconciliation. We started working on that in 2015 and 2016. Re-engagement with our First Nation, Métis and Inuit researchers, Elders and communities in Canada demonstrated the importance of renewing our relationships with partners and seeing them in terms of connections rather than silos.

Through a two-year engagement process, we developed a new Indigenous strategic plan, which we released in January 2020. During this pandemic year, we started to develop our implementation plan. This strategy presents four objectives that promote the leadership of First Nations, Métis and Inuit in research.

Recently, the SSHRC Advisory Circle reviewed the strategy and made some important, thoughtful comments about the recognition of Indigenous knowledge systems, their value and the importance of sharing them.

Thank you again for including us in this circle.

David:

I'm originally from Six Nations of the Grand River. I'm the Director of the Chanie Wenjack School. I've also been co-chair of the SSHRC Indigenous Advisory Circle for the last five years or so.

Over the last 20 years, I've had a front row seat as Indigenous knowledge became part of the social and natural science research enterprise in Canada. I've seen it come from the margins to become part of the work we do as social scientists, Indigenous researchers and natural science researchers.

I call colonization, as it is practiced in this part of the world, the "long assault." It's a 500-year-long assault on our territories, our cultures, our languages and our knowledges. We don't often think about colonization as having an impact upon our knowledge. But one of its most insidious effects has been its attempt to take the knowledge that we gained from living in our various places for millennia and systematically deride it and exclude it from state institutions, such as education.

However, since the surge of research undertaken by the Royal Commission on Aboriginal People in the early 1990s in Canada, there has been a concerted effort to bring Indigenous knowledge into our educational institutions. Over the past quarter century, we've worked to create an ethical space based on respect, friendliness and collaboration. Indigenous knowledge can be used to frame research, to determine the object of research, to determine research methodologies and methods, to interpret and make meaning of the results, and to solve the challenges we face in our own communities.

As a result, granting councils have become open to including Indigenous knowledge and Elders in research applications. And this adjustment has included changes to ethics. It has included the creation of a definition of Indigenous research and expanded the eligibility criteria for research grants to encourage and support new Indigenous researchers. All of this has been done through a collaborative process that required a willingness to take risks, to listen, to experiment and to learn from mistakes, and above all, to trust.

My strong belief is that if we do not bring our knowledge into one of the most powerful institutions that we have created as human beings — and universities are not going to disappear — we will continue the work of Indian residential schools here in Canada. We've been trying very hard to ensure that Indigenous knowledge can become part of the institution, and that these institutions work alongside the development of Indigenous institutions.

Kevin Fitzgibbons

Natural Sciences and Engineering Research Council (NSERC), Canada

Good day, bonjour and aloha. I am speaking to you from Ottawa, which is on the unceded territory of the Algonquin Anishinaabe people.

NSERC is all about understanding the underpinnings of nature in all its forms. I think that what we're hearing today, and what we hope to go forward with, is a better appreciation of the value of Indigenous and traditional knowledge more generally in our scientific endeavors.

One thing that has struck us over the past several years of engaging with Indigenous communities is the inextricable link between people and nature, wildlife, the land and the waters. We feel that as an organization, we need to understand these links better in the way we fund science, the way we engage with Indigenous communities across Canada and the way we conduct our research.

We feel that we have a very important role to play, but also a long way to go. Our job is to listen and to engage and to implement. What I would like very much to do today is to hear what others have to say and see where it is that

we can translate those insights into actions that NSERC can apply in its own programming and its evaluation of science.

The nine speakers

The foundations of science

Dr. Leroy Little Bear


Blackfoot First Nation, Professor Emeritus, University of Lethbridge, Canada

There are three major areas of science: the science of being (the cosmos), the science of the local (Newtonian physics, our everyday reality), and the science of the small (the subatomic world). But what is science? It is a search for reality.

In Western thought, it's "been there, done that, let's move on to something new." In Blackfoot thought, everything is related to place—it's space-oriented. Why? Because although land will change, it changes slowly. So place is something we can hang our hats on, at least for a time. That's why land is sacred.

Blackfoot science is about energy, and it's galactically, cosmically based. It looks at the big picture. That's why we have star stories and medicinal wheels. The Blackfoot paradigm is based on constant flux, energy waves, spirit and relationships, whereas western science is about matter, the inanimate, measurement and reductionism.

The goal of Blackfoot science is to sustain our existence, whereas Western science is about measurement. From a Blackfoot perspective, if it's not about relationships, it's not science.

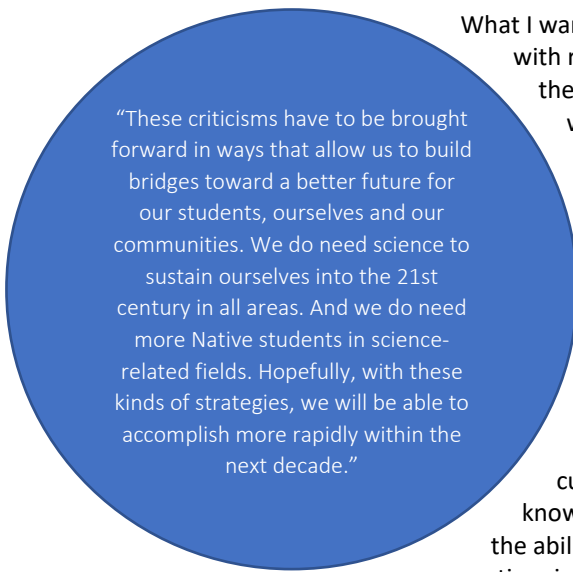


"Let me very quickly compare science to a house. A house usually has a foundation and then a floor plan. And once you've got the floor plan, then you can think about decorating, furnishing and so on. A lot of times when we're talking about science, we end up talking at the furnishing level, not so much at the floor plan level, and even less so at the foundational level. I want to talk about the foundational level."

Integrating western and Indigenous science

Dr. Gregory Cajete

Tewa, Santa Clara Pueblo, Professor, University of New Mexico, U.S.



"These criticisms have to be brought forward in ways that allow us to build bridges toward a better future for our students, ourselves and our communities. We do need science to sustain ourselves into the 21st century in all areas. And we do need more Native students in science-related fields. Hopefully, with these kinds of strategies, we will be able to accomplish more rapidly within the next decade."

What I want to emphasize in my time here today are the major issues that I see with regard to Native science and its integration with Western science—in the way Indigenous peoples view and understand themselves in the world, what we call epistemology, how we come to knowledge, how we come to understand ourselves. That is very much in contrast with Western ways of knowing, education, forms of research, economics, politics. This forum is tackling a very important issue in the sense that we're beginning to put in place an infrastructure for thinking about this.

This is what I've been doing since 1974, when I first started teaching science. Even before the term decolonized was being used, I started a decolonized science curriculum initiative at the Institute of American Indian Arts, combining science with students' cultural histories. I was teaching with Native science and Native knowledge, weaving them together using the arts, creative writing and the abilities of our talented students to describe their thoughts and perspectives in ways that reflected them as contemporary people.

Dr. Rayna Green, a Cherokee who was head of cultural knowledge and perspectives in the American Association for the Advancement of Science in the late 1970s and early 1980s, said: "The lack of Indian participation in science

is as much due to an alienation from the traditions of Western science as from a lack of success or access to science education, bad training in science or any other reasons conventionally given for minority exclusion from science professionalism. Contrary to the insistence of Western scientists that science is not culture bound, that it produces good, is that many Native people feel that science and scientists are thoroughly Western rather than universal, and that science is negative."

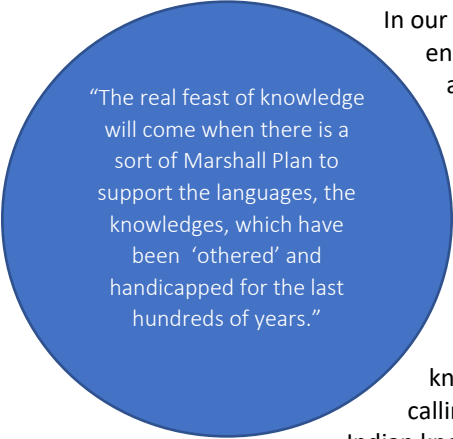
Much of that, unfortunately, is still true. It's a kind of intellectual colonization that I think we need to take a serious look at because it's the systemic exclusion of Indigenous thought, Indigenous ways of knowing and Indigenous peoples from the practice of science even though we have long traditions of science that we are now beginning to rediscover and reimplement.

Decolonization of people and language

Prof. Wangoola Wangoola Nduwala

Nabyama, MPAMBO African Multiversity, Busoga, Uganda

I speak from a background where we experience bareknuckle colonialism and oppression. I will address the issue of knowledge: where and what are the sources of knowledge?



"The real feast of knowledge will come when there is a sort of Marshall Plan to support the languages, the knowledges, which have been 'othered' and handicapped for the last hundreds of years."

In our experience, they are institutions like family, neighbourhood and community engagement in the production of requirements of material sustenance. They are an education system. (But in our case, a lot of missed education.) Other sources of knowledge struggle in countries where a small set of people oppresses the rest. There is also the global class struggle. And lastly, the struggle between countries, where a small set of countries oppresses the rest. All of this makes decolonization an issue.

Hence the talk of what is called mainstream or conventional knowledge in our country. We are weary of talking about knowledge in terms of compass directions—Western knowledge, for example. Indian knowledge, African knowledge, Chinese knowledge. I think we need to start being consistent by calling a spade a spade. If we talk about Chinese knowledge, African knowledge, Indian knowledge, then we should not be talking about Western knowledge. We should be consistent and call it European knowledge.

Instead of using the euphemism of Western knowledge, we should try to categorize knowledge and worldviews between dominative or hegemonic knowledge and knowledge that seeks to coexist with other knowledges. But in Africa, we generally find that it is not possible to decolonize knowledge when the people are colonized. The point is that first and foremost, you need to decolonize countries, nations, peoples and their languages. Colonized people cannot have a decolonized knowledge.

Building trust to support cross-cultural dialogue and self-governance

Dr. Zanisah Man

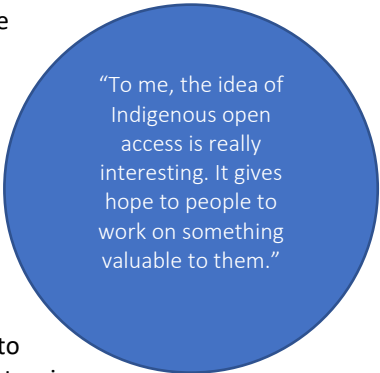
Orang Asli, Professor, Universiti Kebangsaan, Malaysia

I am interested in the Indigenous relationship to land through the lens of community notions of territory and space.

For the Jakun (Indigenous) community that I work with, the goal is to regain knowledge, autonomy and self-governance. The problem is that it is not easy to achieve self-government when the community cannot express who they are or have face-to-face communication with outsiders.

In that context, cross-cultural dialogue and collaboration are essential. Yet there are many challenges involved in getting a community to trust you—and trust is extremely important. For example, when I met the Jakun community for the first time in 1990, I assumed that as an Indigenous person, they would accept me. But they did not. They only accepted me because my friend was a Malay (Indigenous).

I'm now working on a project that involves translating Indigenous stories from the Jakuns of Malaysia and the Bribri of Costa Rica. The communities wrote their own stories. I translated them from English to Malay. When I work with the Jakun community, I have to convince them to put their stories in writing, and then I have to translate it. I have to work with the children to convince them of the importance of turning imaginary stories into pictures. I have worked with this Jakun community since 2003, so I built that trust.




“To me, the idea of Indigenous open access is really interesting. It gives hope to people to work on something valuable to them.”

Using the study of language and culture to reclaim space

Dr. Sonajharia Minz

Vice-Chancellor, Sido Kanhu Murmu University, Dumka, India

I come from an Oraon tribe in India and am second-generation literate. About five months ago, I was selected to be the head of this university in the tribal heartland of India. It is a liberal science and arts university.



“The term sustainability can only be understood, at least in India, in terms of how the Indigenous populations have continued to live.”

It is said that in India, there are over 700 distinct tribes whose population numbers about 105 million among India's total population of more than 1.3 billion. Along with the dividing line here between the Indigenous and the non-Indigenous, we have multiple other layers in Indian society. In terms of colonization or decolonization, we have had almost an onslaught of the mainstreaming of knowledge systems and society, even prior to the British colonization.

The teaching, learning of tribal languages in central India started in the mid-1970s. But the study of Indigenous People in India has not gone beyond the study of anthropology or language in a compartmental manner. And there has rarely been any genuine effort to study the culture of Indigenous peoples in India.

Now that I have the opportunity to head a liberal arts and science university, I am making efforts to start language and culture study programs. These programs are an effort by Indigenous populations to claim space, claim dignity and also thereafter try to claim what our constitution also tries to promise: equality, justice, fraternity and liberty. It's so very important to bring out the richness of the Indigenous (or as it is called in India, tribal) knowledge systems and share what has been kept in the margins—and even outside the margins—for thousands and thousands of years.

Knowledge and language as a source of strength

Jazmin Romero Epiayu

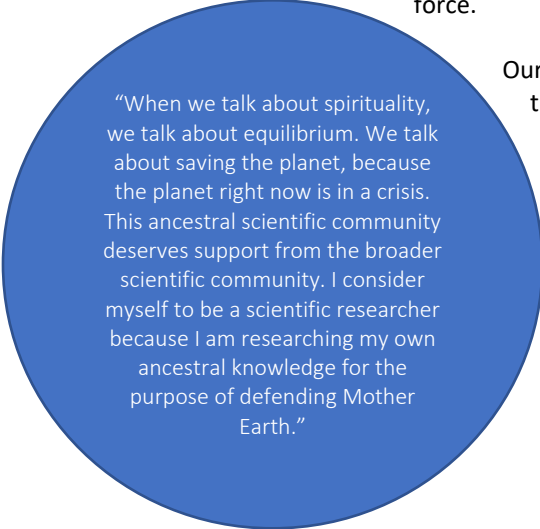
Wayuu Activist, Colombia

Translation provided by Andrés Mejía

I have been an activist and feminist for many years. I defend Mother Nature and struggle for the rights of Wayuu women, especially girls and adolescents. Today, I want to talk today about the importance of preserving ancestral

knowledges and languages and about what we are doing to gather strength to struggle for the survival of our peoples.

My focus is on defending our territories and the rights of women. The Wayuu community has also started to create some alliances with some other peoples to gain strength. We are creating a great spiritual pact for the defense of the territory. We want to safeguard and clean up our territories and recover them from the capitalist system and liberalism. We want to do this so we can look for strength from our ancestors and retake spirituality as a central force.



“When we talk about spirituality, we talk about equilibrium. We talk about saving the planet, because the planet right now is in a crisis. This ancestral scientific community deserves support from the broader scientific community. I consider myself to be a scientific researcher because I am researching my own ancestral knowledge for the purpose of defending Mother Earth.”

Our territories are in the Sierra Nevada de Santa Marta. We joined together there to create a great pact. Now, we must do it again in another mountain range, Serranía de Macuira, a sacred site for the Wayuu people. We will go there to invoke the spirits and seek guidance about how to better safeguard our territories, which are now mainly in the hands of multinational corporations.

I would like to share this project so everybody can have access to it and see it. I also call upon the scientific community and UNESCO to join in this project to save the richness of my ancestral peoples, who are at risk.

Returning to language to restore health and wellness

Dr. Ed Connors

Kahnawake First Nation, Psychologist, Canada

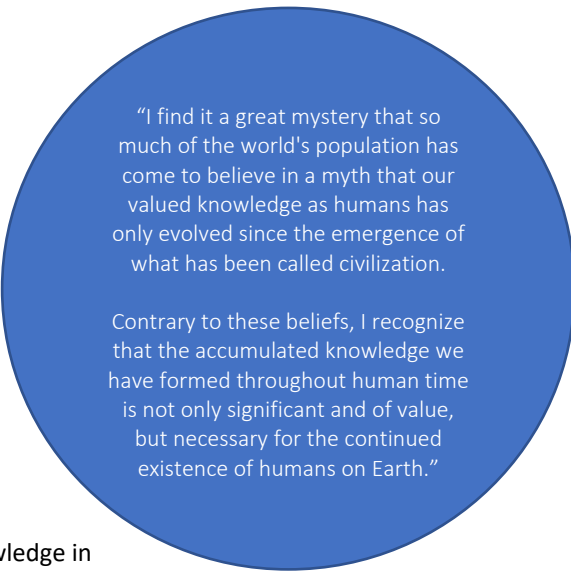
I come from Kahnawake Mohawk territory—where my mother was born and raised—and from the Town of Mount Royal, which is part of Montreal. A river divides these communities, but a bridge also connects them. So I come from two sides of the same river—or in fact, two world views. I've learned to respect both, not only in terms of sustaining my life, but in understanding how to promote and support life on Earth.

When I left the Tower of Higher Knowledge, I chose to go out to learn from territories across what is now called Canada. I sat in the lodges of my ancestors and Elders to understand more about what we need to know to survive in the face of the difficulties resulting from colonization.

Since then, I and my Indigenous colleagues are resurfacing our Indigenous knowledge in health care, justice and suicide prevention. Years ago, trying to understand suicide better, we relied upon so-called European knowledge. But we came to realize that we needed to return to the knowledge that exists within our languages. We began to speak about how we could understand suicide within the Anishinaabe language. We began to rethink our approach to prevention by thinking about it through an Anishinaabe lens or worldview.

We began to redefine “Mino-bimaadiziwin,” or living the good life. Through Indigenous knowledge and teachings, we now encourage others to explore with us how we can support each other to live long and good lives and avoid premature, unnatural death.

This shift in thinking has created a dialogue within our Indigenous communities and within health-care systems. It is shifting the paradigm from suicide prevention to a focus on supporting long and good lives. This process of



“I find it a great mystery that so much of the world's population has come to believe in a myth that our valued knowledge as humans has only evolved since the emergence of what has been called civilization.

Contrary to these beliefs, I recognize that the accumulated knowledge we have formed throughout human time is not only significant and of value, but necessary for the continued existence of humans on Earth.”

translating our Indigenous ancestral knowledge is informing much of what is helping our Indigenous communities to restore health and wellness and therefore to survive.

You can learn more about what we are doing by visiting our website, wisepractices.ca.

Building a future for the world by honouring Indigenous voices and ideas

Dr. Manulani Aluli Meyer

University of Hawaii, West O'ahu, U.S.

Aloha to all of you. What a blessing to have so many cousins in the house.

Aloha 'Āina is the love of land. When you have Aloha 'Āina at the centre of science, you're not wondering if the bottom line is money for investors. Do you understand that science is linked to money? We love our lands here. And it is more than that. Aloha 'Āina is that which nourishes us, that has always loved us.

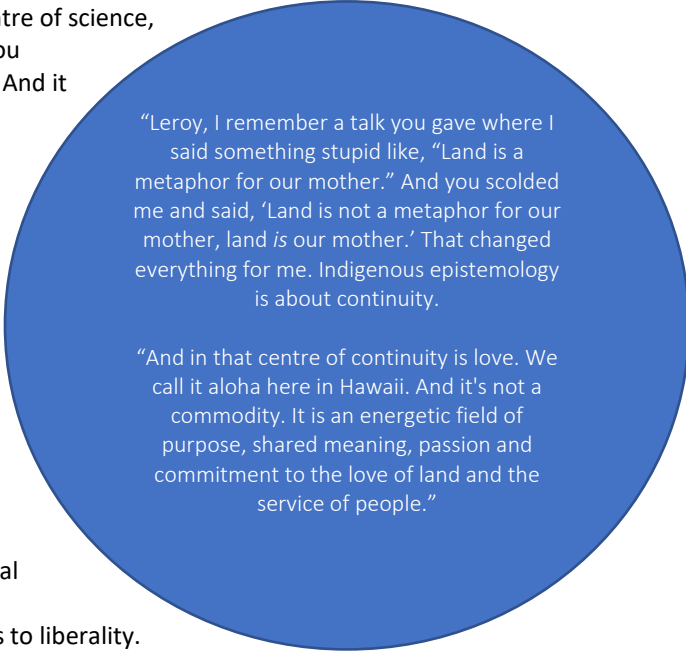
In the 1970s, we created a renaissance because research is renewal. We were renewing ourselves to relationality, dynamic coherence, interdependence, mutual causality, and what the post-quantum sciences are calling complementarity. Isn't that beautiful? We are heading into the rise of the feminine, the rise of the actualization of a kind of wisdom based on Aloha 'Āina. The ultimate sciences of the western world are called post-quantum world complementarity. Here, we have that in concepts. This is a form of simultaneity that isn't about reciprocity. It's about consciousness.

And when that consciousness is about serving people, that's a spiritual energy that builds a mutual emergent future for the world. Mutual emergence isn't about one culture over the other. Specification leads to liberality. And that's the localization of knowledge. That is the honouring of our Native voices, our Native ideas.

And when our principles become the centre of our "new" science, there's nothing "new." We have relationality. We will understand when our subjectivity changes things. We're not going to hide behind the false veil of objectivity. The maturity of the world is on fire.

Closing remarks: Witnesses

In many Indigenous communities when people come together to problem solve, make agreements, note changes in the social world such as births, deaths, unions, and in the natural world such as changes in the ecosystem, state of plants, animals, water life, these were recorded in memory by those given the responsibility or those assuming responsibility to remember. In times past when Indigenous peoples were an oral culture, transactions were recorded in memory and formal procedures were in place. This section is the voice of the invited witnesses who will share the bundle of knowledge that took shape at this gathering for all to remember.



"Leroy, I remember a talk you gave where I said something stupid like, "Land is a metaphor for our mother." And you scolded me and said, 'Land is not a metaphor for our mother, land *is* our mother.' That changed everything for me. Indigenous epistemology is about continuity.

"And in that centre of continuity is love. We call it aloha here in Hawaii. And it's not a commodity. It is an energetic field of purpose, shared meaning, passion and commitment to the love of land and the service of people."

José Barreiro

Taino Nation of the Antilles.

[Due to technical issues, José sent his summation in video shortly after the webinar. Below is a summary of some of his key ideas. His full summation appears in the transcript.]

[Speaker using words spoken in traditional language]

As I promised our sister, Lorna, this will be an oral summary of the presenters at the gathering of the World Virtual Indigenous Circle on Open Science and the Decolonization of Knowledge. We were attentive to the conversations and attentive to the discussions and interventions of the different esteemed colleagues -- women and men of knowledge that we witnessed through the webinar. I had technical issues connecting at times, thus my observations are not detailed but impressionistic.

At the very beginning John Elliott (Tsartlip First Nation) spoke about the health of our Native languages being the health of the Earth. I think he set a tone for the depth of culture that would be thought about in the discussion. He sang precisely for the language, a song for the language itself. Katsi Cook (Wolf Clan Mohawk Akwesasne) followed with a song to the Four Directions and the seeds, further situating the group in the actual practice: Mother Earth, Father Sun, honoring of the land. There was an early lesson as well in moderator Laurie Robinson's very precise and respectful intent in properly pronouncing all the speakers' Native names. Lorna Wanosta's Williams, Lil'wat First Nation, with thoughts of the ancestors and the relatives, next introduced the framework of the discussion: the opening of scientific thinking and the decolonization of knowledge, the dewesternization of knowledge, the localization of knowledge, and the knowledge within the people. Sébastien Goupil from the Canadian Commission for UNESCO spoke of alliance. Kevin Fitzgibbons of the Natural Sciences and Engineering Council called for a better appreciation of Indigenous knowledge, and the consideration of systems that emerge from a true connection to the natural world.

1. Speakers spoke of longevity, why important knowledge, including languages, lasted; about the importance of work that is truly guided, oriented, by the traditional Elders and by community perception, long-term community thinking, community culture, how that -- respected and well-employed -- can be of use in the health and well-being of the people within communities.
2. Self-determination was a word that came up early. Self-determination: the capacity for development, the rebuilding of the infrastructures, and how to increase the potential for more sustainable funding in doing this vital task. The things that survive of the cultures of Indigenous peoples, how to rescue them, how to remember and put them to use, because they survive as the people found them useful. They didn't disappear because the people found them useful.
3. The assault on all Indigenous knowledge, the assault on the culture of people was a point of focus. The impact of insidious policies—the insidiousness of the disrespect and the wish to do harm. The importance because of this previous damage, as we gain ground, to bring the knowledge into the educational institutions. Strengthening that process, particularly in communities, of introducing Indigenous knowledge in every front, the re-Indigenization, the looking again at what was useful, in concept and in practice.
4. The ceremonial approach and the commitment to clear thinking. For this, the foundation must be clear and strong; the Indigenous foundation. First, the floorplans, as Leroy Little Bear, Blackfoot First Nation, pointed out very succinctly, and truly. “What is the floorplan? What determines the foundational level? Not the furnishings, not the furniture. The foundational. From the cosmic to the local, to the sub-atomic. Perception of a science built on the different foundation, he reminded us, a different or shifted perspective. Science as a search for reality based on what one knows and what one is standing on, not a static world, a world in flux, Little Bear oriented, as

he intoned the knowledge that he had accumulated from his Elders. Thoughts of the animate in everything, relationships, not reductionism, renewal of the knowledge, spirit as energy waves, as sound, as even emotion. Jasmin spoke of a spiritual pact, deep in the territory, that centrally still informs where they are and where they're going. This pointed out the importance of spiritual ceremony, messaging, dreams in the sustaining of memory, and in the struggle to survive.

5. Place-based Indigeneity and place-based thinking: "the land is most constant," and language is a repository of much of that culture of the land. So in his remarks, Gregory Cahete, Tewa, Santa Clara Pueblo spoke of the shared paradigm by Indigenous peoples, the shared principles, and referred to the linking of arms, which is particularly poignant as there are prophecies that speak of the linking of arms by elders from different cultures pointing to the suffering of the Mother Earth; all this as relevant as we approach what became and what is known as prophetic tradition and is perhaps as truly, a very deep perception tradition. Under discussion is a multi-layered world of knowledge, interrelated and yet locally specific and ecosystemic. Following Indigenous cultural roots, in place, attachments and orientations are multi-dimensional.

6. Sustainability. Sustainability as it can best, perhaps only, be understood by the tribal peoples. Sustainability based on closer bondings both at the local level and at the global level. The knowing of the land, the territories, the working from place and time, historical and immemorial, is central to the foundation.

This work, this foundation, all of it must continue; it must stay real. The ancient, the ancestral knowledge in the present world. It's the rights of the feminine, the love of the land, spirituality at the base, local knowledge, long-term observation, empirical, practical, reality attached to cosmo-vision, to cosmo-perception, to spirit, to dreaming, to commonality as peoples; as peoples, not to be denied; as peoples, the recovery of language, orality; the recovery, the renewal of community, Indigenous community, what it will take to do that from the inside? From the deep inside, and what allies can do to help in that quest. A lot to ponder, this is just the beginning.

[Speaker using words spoken in traditional language].

Saludos, abrazos, greetings, and my love to all.

A response to the webinar's speakers and emerging themes

Kevin Lowe

Gubbi Gubbi, Scientia Indigenous Fellow, University of New South Wales, Australia

Due to technical issues, Kevin sent his summation in writing shortly after the webinar. Below is a summary of some of his key ideas. His full summation appears in the transcript.

The following points are meant as a response to some of the many issues raised by today's speakers. I have sought to pull together four touchstone issues that resonated as I listened.

1. Language and knowledge are issues of cultural survival and identity. Presenters acknowledged the conundrum (as painted by governments) of the immediacy of a community or family's economic well-being versus their survival and culture. For many, once this "choice" is enacted (by being removed or by choosing to move to larger centres), the challenge is to seek out opportunities to engage in language/knowledge work of country.

Many spoke of people needing to keep a connection to "country" beyond a physical presence. They are preoccupied with the essence of being Indigenous and the claims we make concerning our Indigenous identities and our capacity to situate ourselves in place and space. Many spoke of the issues related to the ongoing colonization of communities, and its forever presence in the physical, linguistic, economic and cultural domains that situate dominant culture in the spaces where we live.

2. The second issue centres on the question of Indigenous knowledge and its epistemic legitimacy within the eyes of the Western Academy. This is not a question of the epistemic legitimacy of the Indigenous knowledge, but rather of the way in which Indigenous knowledge has been positioned and monitored within the Academy. The boundedness of western knowledge systems, and their claims to universal truths and "understanding," judges and positions all other systems of knowing against the academy's standards and assertions.

3. The third issue concerns the development of policies meant to safeguard the work of the non-Indigenous Academy in its acquisition and or (mis)appropriation of Indigenous knowledge. There is a concern that the development of policies and practices that attempt to codify how this work is to be done in itself cements institutional control over Indigenous people's engagement.

4. The fourth issue focuses on the political space. The reclamation and use of language and the participation of people in Indigenous cultural work are in themselves political acts. We need to never forget that the ongoing work of the neo-colonial state has been to deny prior occupation, sovereignty and intimate connectedness between Indigenous peoples, their country and knowledge systems. This process is enacted in our schools daily. This is by no accident, but a purposeful act of suppression of Indigenous sovereignty by denying the very acts of invasion and colonisation.

Appendix A

Recommended reading

[CCUNESCO to provide.]

Appendix B

Webinar transcript

[Provided separately for now.]

OPEN SCIENCE AND THE DECOLONIZATION OF KNOWLEDGE

International Webinar Series

Synthesis Report

Background

At its 40th session in November 2019, UNESCO's General Conference decided to prepare an international standard-setting instrument on Open Science, in the form of a recommendation. Once the Preliminary Report on the first Draft Recommendation was prepared, it was sent to the Member States for their comments and observations, to be sent back to the Assistant Director-General for the Natural Sciences Sector no later than 31 December, 2020.

In order to contribute to this consultation process UNESCO Co-Chairs, Chair in Community-Based Research and Social Responsibility in Higher Education along with other scholars, with the support of the Canadian Commission for UNESCO wrote an Open Science Brief titled '*Open Science Beyond Open Access: For and with communities, A step towards the decolonization of knowledge*'. Based on this brief, 11 international webinar series were organised around the world to widen the pool of discussion on Open Science.

The present synthesis report has been drafted based on the aforesaid deliberations Open Science and the decolonization of knowledge, where more than 800 participants from across the world participated and made their voice count. Various regional organisations joined hands with the Canadian Commission for UNESCO and UNESCO Chair in Community- Based Research and Social Responsibility in Higher Education to organize these webinars such as UNESCO (Regional Bureau for Sciences in the Arab States - Cairo and Cluster Office for Maghreb - Rabat); The Knowledge Equity Lab, University of Toronto Scarborough; UNESCO, Delhi Office, (Cluster Office for Bangladesh, Bhutan, India, Maldives, Nepal and Sri Lanka); The RRING Project; UNESCO Office for the Pacific States and UNESCO Regional Bureau of Sciences for Asia and the Pacific.

The purpose of these webinars was to engage with different stakeholders including policy makers, scientists, practitioners and citizens at large to identify some of the most pressing issues surrounding Open Science. Through extensive discussions the 11 international webinars have proved to be a rich source of ideas, values and principles that can help establish a coherent international standard setting instrument in the form of the UNESCO Recommendation on Open Science.

Openness to publications and data

Open access to scientific publications means that research published by journals is freely available for society at large. It is founded on the principle that Science is a public good and consequently, scientific discoveries, research and policies must be available on a not-profit basis to everyone. Scientists and policy makers must not be the only ones to have access to scientific innovations because they affect daily lives of all people.

Some profit-based journals have tried confusing the issues of open access with the pay-to-publish model, despite the latter being a very small part of the open access universe. Large-scale publishers often impose double the fee for publishing an article in an open access journal. Universities and publishing houses promote competition based on access to research and data, and the quality of the research produced. However, this profit-oriented knowledge production excludes Indigenous knowledge systems, experiential knowledges, knowledges of marginalized groups and research conducted in less-advantaged countries.

However, open access initiatives in the Global South are gathering momentum, facilitating publication of research without necessitating authors to pay for the same. In Latin America, most journals are operated by university departments. In South Africa, the Academy of Science of South Africa adopted the SciELO model of open access for autonomous journal publishers to share publishing infrastructure. Independent, community-based publishing initiatives such as the Latin American Council of Social Sciences (CLACSO), the Council for the Development of Social Science Research in Africa (CODESRIA), the African Books Collective, or the more recent Grenier des savoirs initiative must be encouraged and emulated.

Language barriers majorly impact the open access model. Language is often used as an instrument to preserve the hegemonic attitudes and practices of the Global North with regard to production and dissemination of scientific research. Western Science is steeped in colonial, white-male bias. Journals and higher education institutions (HEIs) in Western Europe and North America have monopolized knowledge; they have excluded Indigenous knowledge, feminist and decolonial studies by restricting publication of scientific research to a few dominant European languages. This homogenizes scientific knowledge and prevents scientific evolution and advancement. It harbours orthodox ideas and stereotypes without giving space for alternative voices to be presented.

Corporate funding of research has accelerated the knowledge-based economy in the western world. Big corporates with their own “politics of profit” fund agenda-based

scientific research. Funders with deep pockets have “ownership” over the research results. Funding asymmetries cause further problems as funders’ priorities on what is “excellent research” and what should be funded are primarily informed by northern standards. This is problematic because it clouds transparency of the research process and lowers accuracy of the research findings.

Key Recommendations

- *The knowledge economy does not have to be abandoned completely; it can be restructured to place an inclusive knowledge society at the heart of knowledge creation and dissemination.*
- *Universities and publishers should approach scientific research as a public good and create equitable mechanisms for sharing the same.*
- *Representatives appointed to Boards governing publishing houses should be representatives of different communities; they must not be token appointees and must gain respect for their constituencies.*
- *Scientists, policy makers, universities and publishers must work together as partners to share scientific research and make it easily accessible by facilitating research in local languages by local researchers and practitioners.*

Openness to Society

Open Science goes beyond the idea of providing open access to research. It transgresses boundaries based on race, gender, religion, culture and treats all persons as equal stakeholders for contributing to scientific innovations. It echoes the sentiment that Science should be communicated to non-scientists, practitioners and community-based organisations as well. It includes open access to scientific publications as well as to society at large through research partnerships with civil society organisations.

Knowledge sharing has conventionally been restricted to scientific peers who control the direction of scientific research for the entire world. Scientific research is reserved for the “pundits” who are “capable” and “competent” enough for contributing towards its development. However for Science to assist with exploring solutions for challenges confronting society, there needs to be mutual respect and constant collaboration between scientists and societal actors. Interestingly, digital technologies have created new forms of openness to society within technoscience, especially within the open-source software and hardware movements in computing. It is important to reimagine how the map might look if it included those who contributed to the research but might not necessarily be recognised as co- authors; where research is published as an organisation or team instead of individual authors; where research is published as a set of policy reports instead of in peer review journals.

Knowledge belongs to everyone; it envisions a “community” conception of scientific work. It is the community that controls itself, monitors the quality of its process, and compliance with the ethical principles that should govern scientific work. Therefore, it must be explicitly democratized and be a good of humanity which can encourage the phenomenon of “Science Citizenship”. Openness of Science to society can be achieved only when production of the knowledge is transparently carried out in an inclusive manner. Knowing who reads and evaluates academic production contributes a lot to transparency and credibility because it avoids false conflicts of interests and biases.

Knowledge sharing with practitioners and policy-makers entails knowledge mobilisation methods other than journal articles, and researchers lack training in such methods. Scholar activism as an identity does not demand people to become activists; it embraces the broader idea of framing research, knowledge and curiosity according to global social values and movements. Researchers must be trained to look to society to frame research questions and framing partnerships accordingly. When research questions are framed in consultation with policy makers, then findings have a meaning which is relevant to their local context in which they are framed. Researchers must also learn how to disseminate their research findings to non-scholarly journals to make their research more accessible. Academia can influence state policies and make their voices heard by framing their research in easier language. There must be more academic debates, lectures and publicly available material by scholars and universities. Incentives for researchers and scientists do not include knowledge sharing other than with their peers. Grant agreements given to universities must be revisited, as must be the outputs that are expected.

Key Recommendations

- *Research agendas can be co-determined with other stakeholders, where policy makers can also play a role.*
- *Higher Education Institutions (HEIs) must help build direct connection between academia and policy making.*
- *National Science Hubs must be established in the Global South with Science-minded people.*
- *The production of knowledge should be focused on being collegiate, collaborative, interdisciplinary, inter-institutional, and international.*^[SEP]
- *Local scientific journals must be established which build on research of societal*^[SEP]*significance rather than relying on ‘impact factors’ of remote journals to measure value.*

Openness to Excluded Knowledges

Open Science encompasses an equitable framework for co-constructing scientific knowledge with the community. The field of Science has been increasingly selective about the knowledge which it terms as “scientific”. This knowledge must meet certain normative and epistemological criteria. Due to the use of western normative standards for determining the status of knowledge as being scientific, Indigenous knowledges, knowledges from marginalised groups of people as well as scholars from the less-advantaged countries in the Global South have been excluded in western English-speaking Science.

The question that arises is how can there be a radical disengagement from the inequity of western knowledge domination. The disconnect between scholarship and lived experiences has contributed to a two-tier knowledge system – the “non-experts” or members of the public typically have access to less rigorous information compared to the privileged scholars. Use of limited dominant languages of the West, especially English has created another layer of barriers for excluded knowledges. Language and epistemology are interlinked, which influences the standard of theorising.

Scholarship being considered as the preserver of academia is problematic. The notion of diversity of traditions of Science has remained untouched by recent initiatives. We must pay attention to the different power relations and perspectives rather than having one universal “truth”. Thinking of diversity means trying to uncover silent narratives and creating space for multiversity. Tokenism to include Indigenous voices or minority academic voices has become popular at global events. Fortunately there have been efforts to promote Indigenous languages and to connect knowledge production to communities, as a way to ensure that knowledge is relevant to real communities and people.

“Science” in Greek finds its root in *epistími* from *epistito* which means the lived surrounding, and how we understand our relationship to the world. The idea of Open Science is that we can live in multiple worlds of knowledge and ideas, instead of homogenising multiple knowledges into one system which would create further inequalities. There is a need to question the existing structures of knowledge systems; how to challenge these existing barriers, how to reimagine and redesign some of these knowledge systems. “Situated openness” is a critical phenomenon to remember while discussing openness to knowledge systems. In some communities, openness is interpreted as extraction by colonisers, so they want to protect their knowledges than share. Openness then has to be based on the relevance of context and culture of the community.

The whole notion of truth and reconciliation are only the beginning of addressing some of the aforesaid harms of knowledge “extraction”. Healing together as well as forgiveness are equally important elements in the process of reconciliation, since the

notion of decolonisation is not just about dismantling systems but also about coming together. The mistakes of Science to solve complex problems of humanity, the damage that the use of scientific knowledge has caused, especially to the environment, and the possibility of human survival must lead all those who consider themselves scientists to an attitude of humility and openness. It must be recognized that there are other ways of producing knowledge, which are not unscientific; they are non-scientific and they are proving their usefulness for humanity in a way which is broader than an instrumental perspective as they even shake the meaning that is given to human existence. Knowledge for the conservation of diversity, the protection and cultivation of the environment starts from philosophical premises contrary to those of the West, the latter emphasising on the human being as the pinnacle of creation that dominates nature. The ancestral knowledge of Indigenous people maintains that the human being is one more being of nature. Harmonious coexistence with nature is necessary and therefore a measured use of the resources that the earth provides us must be guaranteed.

Participatory Action Research, which, when well developed, makes those who have problems become those who contribute to their solution. It is necessary to reflect on a new architecture for universities because they are preserved in a way where the elitism of the disciplines and the mysterious work done by academics are supported, and the power of academic knowledge is increased. All these imaginaries make it continue to be believed that everything that is outside the walls of the university is not knowledge. Indigenous scholars outside of the mainstream feel alienated as if they really do not belong as a part of the scientific enterprise, but are simply imposters pretending to be engaged. Scientific data from the islands is often ignored in mainstream Science, even though this knowledge may be complementary to existing forms of scientific knowledges. Traditional systems of knowledge such as the ancient Indian medicinal practice of Ayurveda are dismissed as unscientific, especially those which combine head, heart & spirit.

The essence of being Indigenous is confronted with the ongoing colonisation of communities, which is for ever present in the physical, linguistic, economic, and cultural domains that situate dominant culture within the spaces that we live. Indigenous scholars and practitioners face daily challenges of pushing back – of keeping a space in their minds so that they can engage in the important work of cultural survival of communities, and being actively involved in supporting cultural reclamation, as both a cognitive process and as a political statement. The inclusion of Indigenous knowledge within the western informed curricula can only occur when it can be easily assimilated and where its inclusion is seen as evidence of the academic discipline's overarching epistemic pervasiveness. The enactment of language and

cultural practices in public spaces goes beyond the act itself, as the ‘doing’ of it is also the manifestation of epistemic resistance.

Key Recommendations

- *Universities must have offices or campuses near neighbourhoods so that the community can co-construct knowledge in collaboration with universities.*
- *Bringing together four processes in the knowledge generation processes and the training of new professionals in universities:*
 - *Open science^[SEP]*
 - *Interdisciplinary and the gradual transition to transdisciplinary*
 - *Epistemological dialogue and intercultural education*
 - *Participatory Action Research*
- *There is a need to transparently consider research integrity and differentiated quality measures for different disciplines.*
- *Resources must be allocated to integrate Indigenous perspectives, traditional practices & experiential knowledge with lab-based Science.*
- *Scientific research has to be participatory in order to be sustainable.*
- *Explore alternate alliances that counter market-driven knowledge economies.*
- *Skill development must be treated as an essential form of knowledge systems to be included in the conversation on Open Science.*
- *Making popular interdisciplinary knowledge practice could make the movement of Open Science more successful worldwide.^[SEP]*

Key Recommendations to UNESCO

- **Consideration 1**

Governments, universities and research funders should support strategies and systems for the co-creation and sharing of knowledge that are co-designed for and with the communities they serve – especially communities that have been historically marginalized or excluded from determining their own knowledge needs and provision. The goal is to regain knowledge autonomy and self-governance.
- **Consideration 2**

To encourage fairer, more diverse open access practices worldwide, governments, research funders and UNESCO should financially and institutionally support a wide range of actors – including non-anglophone, small, local and endogenous publishing initiatives that can build local communication capacities, or university libraries that decide to become

publishers—rather than giving precedence and fiscal advantage to international, for-profit, unilingual publishing industries.

- **Consideration 3**

Universities and researchers should provide opportunities for all students and community members to understand the multiple dimensions of open access, including the perils of a homogenized Science and the advantages of bibliodiversity and ecology of knowledges.

- **Consideration 4**

Research funders and related bodies should provide targeted funding for translation and open-access sharing of scientific works from Indigenous knowledge holders and Global South researchers, especially from non-English-speaking countries. This would support the creation of a truly plurilingual scientific commons.

- **Consideration 5**

Research funders and related bodies should demand that publicly funded journals diversify their boards to include more women, Indigenous scholars and scholars from the Global South, and diversify their language practices by providing at least abstracts in many languages. Tokenism in representation should be avoided and instead, meaningful representation of different communities must be achieved for members of governing boards.

- **Consideration 6**

Research funders and related bodies should provide targeted funding for research collaboration between communities and universities as exemplified by Canada's many programs on partnership research. There must be a built-in component within Grant agreements for university research. These agreements must evolve over time instead of being stated documents, and outputs within them must be relooked at every little while.

- **Consideration 7**

Higher education institutions should create courses and engaged learning spaces so all scholars-to-be can learn the principles of Open Science for and with communities, including community-based participatory action research, citizen-science approaches, and open-access-related issues. This would lead them to care about who can read their work.

- **Consideration 8**

Universities should provide administrative infrastructure and resources to support community-university research partnerships that empower people of *all abilities* to make and use accessible, open-source technologies.

- **Consideration 9**

All higher education institutions should teach works from the Global South and scientific approaches drawn from Indigenous ways of knowing. This would support the decolonization of knowledge.

- **Consideration 10**

Higher education institutions should appoint scholars and knowledge-keepers from Indigenous or excluded groups, such as immigrants from the Global South.

- **Consideration 11**

Higher education institutions should ask their professors to teach and cite scholars from Indigenous and other sidelined bodies of knowledge and to encourage students and researchers to quote works from women, the Global South and non-English works, using digital translation tools where available.

- **Consideration 12**

UNESCO should help universities from the Global South offer better internet access and shared, community-governed digital infrastructure for their researchers and students.

- **Consideration 13**

Higher education institutions and governments should abolish university rankings and evaluation based on criteria established by powerful institutions in the Global North and rethink the incentive and reward structure of research funding and evaluation so that it is more based on local relevance and participation.