

## APPENDIX 3

### WEBINAR 2: HOW CAN SCIENCE TRANSFORM DATA INTO EVIDENCE FOR INFORMED DECISIONMAKING?

THURSDAY, 10 MARCH 2022

TRANSCRIPT (RECORDING AVAILABLE ON THE [UNITAR WEBSITE](#))

**Prof. Paul Arthur Berkman – 00:12**

Welcome to this Webinar Series on Enhancing International Scientific Cooperation: Arctic Science and Technology Advice with Ministries

My name is Prof. Paul Arthur Berkman and I have the honour as well as pleasure to coordinate this webinar series that is funded by the Ministry of Foreign Affairs of Japan, continuing today with Webinar 2 and Webinar 3 on 24 March 2022.

This webinar series is convened in the spirit of science diplomacy – as a “language of hope” – as an international, interdisciplinary and inclusive process, involving informed decisionmaking to balance national interests and common interests for the benefit of all on Earth across generations.”

I thank the Japanese Consulate in Boston for introducing the opportunity for this webinar series building on the 3rd Arctic Science Ministerial, which was convened in Tokyo in May 2021 by Japan and Iceland.

I especially thank the excellent team of collaborators with the webinar series: Dr. Jenny Baeseman at Baeseman Consulting and Prof. Akiho Shibata at the Polar Cooperation Research Center, Kobe University for their core partnership; Ms. Clara Lopez and Ms. Michelle Glazer at the United Nations Institute for Training and Research (UNITAR) for superbly managing the logistics of this webinar series; and wonderful team of scholars from the Harvard Kennedy School (including Mr. Teruaki Fujii and Ms. Nadia Filimonova) and the Arctic Challenge for Sustainability (ArCS II) program in Japan (Dr. Zia Madani, Dr. Osamu Inagaki and Mr. Jugo Sato).

Importantly, I thank each of you from across the 43 nations and many time zones, with deep appreciation for sharing your insights to help enhance international cooperation with science “for the benefit of all on Earth across generations.”

“What is science” was the focus of the first webinar. The observations from the keynote presenters (again thank you to the Hon. Mikhail Pogodaev, Prof. Kirsi Latola, Mr. Henry Burgess, Prof. Andrey Petrov) and the participants emphasized the transdisciplinary convergence of the natural sciences and social sciences with Indigenous knowledge together as the ‘study of change.’ All of these knowledge systems reveal patterns, trends and processes (albeit with different methodologies) that become the bases for decisions, which is the focus of today’s webinar to consider “How can science transform data into evidence for

informed decisionmaking?” Importantly, Webinar 1 highlighted the core elements of inclusion, respect and trust that give us the capacity to enhance international scientific cooperation.

We are now confronted with the war in Ukraine, which is shaking the foundation of our globally-interconnected civilization with great peril for all eight billion of us. This terrible situation has heightened the importance of enhancing international scientific cooperation to make informed decisions, operating across a ‘continuum of urgencies’ with resilience from security time scales (addressing immediate instabilities) to sustainability time scales (balancing societal, economic and environmental considerations across generations). Short-to-long term, international scientific cooperation is a vital bridge for dialogues among allies and adversaries alike inclusively, ultimately to enable the stability and peace of our world based on our common interest to survive.

As stated with Webinar 1, the Arctic will be applied as a global case study, considering climate and planetary challenges to balance national interests and common interests, promoting cooperation and preventing conflict for the sustainable development of our globally-interconnected civilization. The Arctic also is a harbinger of great danger, where “burning security issues” noted by Soviet President Mikhail Gorbachev in his 1987 Murmansk speech still remain as does the enduring hope for the North Pole as “a pole of peace.”

This 1987 Gorbachev speech also introduced the concept of an “Arctic Research Council”, building on the example of the Scientific Committee on Antarctic Research that preceded the 1959 Antarctic Treaty, where the United States and Soviet Union along with ten other nations agreed to consult continuously on “matters of common interests.” The “matters of common interest” that enabled the United States and Soviet Union to cooperate continuously throughout the Cold War in Antarctica as well as outer space – the umbrella that was larger than the national interests of the two superpower adversaries – simply was matter of survival in the face of mutually assured destruction, which is why the Antarctic Treaty became the first nuclear arms agreement.

The instabilities from Ukraine have propagated prominently into the Arctic, challenging the dynamics of the eight Arctic states, who established the Arctic Council in 1996 along with the six Indigenous Peoples’ Organizations to address “common Arctic issues” of sustainable development and environmental protection. Our informal dialogue today, convened with inclusion, is a timely opportunity to contribute substantively to informed decisionmaking, short-to-long term, especially in view of the Joint Statement on Arctic Council Cooperation Following Russia’s Invasion of Ukraine on 3 March 2022, considering “the necessary modalities that can allow us to continue the Council’s important work in view of the current circumstances.” More closely coupled to our webinar today is the IASC Statement on Ukraine from 7 March 2022, noting the International Arctic Science Committee “will evaluate the situation at its next meeting at the end of March during the Arctic Science Summit Week 2022 in Tromsø, Norway” – with deep respect for the leadership of Prof. Larry Hinzman as President of IASC and with sincere appreciation for his contributions to today’s dialogue.

As noted in the International Science Council Statement on Ukraine from 28 February 2022: “Science has proven to act as a platform for dialogue even in times of war.” Echoing the

timeless guidance of US President Kennedy in his 1961 inaugural speech: “Let us never negotiate out of fear. But let us never fear to negotiate.”

Science is a critical tool of diplomacy because of its contribution to common-interest building as a necessary complement to conflict resolution. The freedom of Ukraine to speak as a nation demands listening and hearing the voices, loud and soft, from wherever they come. This is our common responsibility at local to global levels now and forever – facilitating dialogues with inclusion and respect for the diversity of perspectives – ultimately to destroy the tyranny of systemic exclusion, condemning violence in any form.

We are both observers and participants in the holistic (international, interdisciplinary and inclusive) process of informed decisionmaking with research that involves data to answer questions and actions that involve evidence for decisions by institutions that produce governance mechanisms and built infrastructure as well as their coupling for sustainable development.

Enhancing international scientific cooperation involves contributions across the data-evidence interface with research and action to produce informed decisions – not good decisions or bad decisions; right decisions or wrong decisions; but decisions that optimize the available information to operate short-to-long term.

This webinar will involve an opening plenary session for an hour with keynote presenters who will introduce expert insights, addressing a set of questions, designed to build common interests. I will facilitate the panel dialogue among these experts, welcoming questions and comments from the audience in the chat for consideration toward the end of the panel.

After the first hour we will break into pre-assigned sessions where you will have the opportunity to interact with the keynote presenters, who will further facilitate dialogues with your inclusive input about addressing the framing questions for this Webinar. Considering the focus on enhancing international scientific cooperation, in view of the core elements of inclusion, respect and trust, this Webinar is designed to consider:

#### **How can science transform data into evidence for informed decisionmaking?**

- ❖ How are the decisions and priorities to be addressed?
- ❖ Who are the decisionmakers?
- ❖ What evidence is needed and how is that evidence defined?

To reflect on these questions, it is an honour as well as pleasure to briefly introduce the three keynote presenters for today:

- **Dr. Volker Rachold** – Head of the German Arctic Office, Germany; Co-Host of the 2nd Arctic Science Ministerial; Former Executive Director of the International Arctic Science Committee (IASC).
- **Prof. Anne Husebekk** – Professor and Former Rector, UiT | The Arctic University of Norway; Vice-President for Freedom and Responsibility in Science, International Science Council.

- **Prof. Larry Hinzman** – Executive Director, Interagency Arctic Research Policy Committee (IARPC); Assistant Director for Polar Sciences, Office of Science and Technology Policy (OSTP), Executive Office of the President, The White House; President, International Arctic Science Committee (IASC).

This plenary session will be recorded and placed on the UNITAR platform, but the following 45-minute breakout sessions will be unrecorded. There will be a health break after the breakout sessions, before the final plenary reporting. With appreciation for the scholar-rapporteurs, reporting from this webinar will be further distilled into a Science Diplomacy Action publication (as previously), capturing insights from the webinar series to help enhance international scientific cooperation in the Arctic with global lessons to both promote cooperation and prevent conflict as the umbrella goal.

### **Dr. Volker Rachold – 09:33**

Yeah. Thank you very much, Paul, and welcome, everyone. Good morning or whatever time zone you're in. When I started thinking about this webinar and what I was supposed to say, the situation was a bit different than it is today. And of course, it also has influence of what I'm going to say. Paul mentioned the various statements that appeared in response to the war in Ukraine in the last days. This has major impacts on international cooperation in the Arctic. We cannot ignore that. I think that's important that we cannot. Of course, I want to start with the Arctic Council, which in my view, is, of course, the main forum for the Arctic. It's very effective. It's successful in terms of providing the advice that people need for the Arctic to decision makers. But as you saw, the statement says that the Arctic Council decided to pause all these activities, and that also relates to the working groups of the Arctic Council. The Arctic Council is currently in a hold mode and is not doing any activities. Of course, this has some impacts on international cooperation in the Arctic. I think what made the Arctic Council strong over the last 25 years are particular scientific assessments. The assessments are the main instrument that the Council has to get science into policy advice. And I think if you take, for example, the Arctic Climate Impact Assessment, which was really the first big one, I think it changed people's mind on what the Arctic is.

And that continued with various agreements, various assessments that the Arctic Council working groups did and that were then translated to the ministers. I think it is a very efficient and very effective form of providing advice to policymakers. The other thing I think that the Arctic Council did was also very successful is that they used the forum also to get the Arctic States together to negotiate legally binding agreements. What the Arctic Council does is not really legally binding. It's more like advice or recommendations for the member countries. But these agreements that were developed under the auspices of the Arctic Council, they are legally binding. So we can take the oil assessment, the oil school assessment, we can take the search and rescue assessment, the agreement, the agreement for scientific cooperation. All legally binding agreements which are really actually the outcome of the work of the Arctic Council. And then of course the Arctic Council is also very strong in terms of getting the Indigenous peoples on board. And I think that's a unique setting in the Arctic Council that the Indigenous Peoples are participating in the activities, and they have a say on what the Council does. They are asked. Furthermore, also the observer countries are participating in the council's activities and providing their science and helping to get really the advice to the right

people. So that's about the Arctic Council, of course, the Arctic Council, that's nothing that should be mentioned. The Arctic Council does not talk about security issues and does not talk about resources. The Arctic Council focuses on the environment of the Arctic and the Arctic Council focuses on sustainable development. And I think that is what made it successful. And now of course, it's very sad that exactly those kinds of things are affecting the Arctic and that the Arctic Council cannot continue its work simply because one member country decided to get into war with another country. So that's about the Arctic Council. The other thing I want to mention, of course, is the International Arctic Science Committee. I will not talk about this too much because there are incidents also here. It is the role in defining scientific priorities that must be highlighted. I think it is the organization that helps to really identify what are the big questions in science and it has been very effective and very successful on that with this international conference on Arctic research planning. I'm honored to participate in two of them. I know they are working on the fourth one.

I think that's an extremely important element. Of course, this is connected to the Arctic Council. The active climate impact assessment was a joint venture of the Arctic Council which was actually initiated by Is. The thing that most people don't know, it came from Is and was then taken to the Arctic Council. The third thing on that high international level that I want to mention is of course, the process of the Arctic Science Ministerial started in the US in 2016 with the Washington Ministerial. And then I had the honor and the pleasure together with Jenny Baseman to help coordinating the second one in Berlin. And then there was a third one held in Iceland, Iceland with Japan last year, and there was supposed to be a fourth one, and also for this fourth one, which was supposed to be jointly organized by Russia and by France, we see that this is not going to work, at least in the timeline that was supposed to be organized. Also, here we see that scientific cooperation in the Arctic, of course, is really substantially affected by the political situation in the world, but more of the Ukraine. These are all the high-level things.

But I think we must go a bit deeper. If we talk about providing advice on policymakers, we must go a bit deeper and also look into regional things. One thing that we have been working a lot on is the European level. So how do we provide advice on the European level? We have instruments for that. We have European funded projects like Europe PolarNet. We have the European Dollar Board and other mechanisms for doing that. So that's one level, just an example of, let's say there's regional format. And then the other one that I want to mention is the more local level. And we are also working, of course, with, for example, the Arctic mayors in terms of providing our advice or science to those kind of decision makers, which are more, say lower level overall. I think there are two things that we must keep in mind when we translate science into policy advice or how do we transfer our science to policymakers. I think the first thing is everything that we do need to have some dialogue.

If we don't know what the questions are, policymakers have, we cannot answer them. So, we need to have that dialogue in order to be able to provide the advice that's needed. That's one central point. And then the second point, I think, is that we need to somehow translate our science in a way that is understandable for decision makers, and that's very important if we just do our science and write a scientific paper that will not be understandable for a policymaker. And that is a very important process. And I think the Arctic Council has been very good at that, because all the assessments that the Arctic Council produces, they all have a

scientific component, which is normally a book or a publication. They also have the layman version, which is understandable for everyone. And then they have a very important document, which is their summary for policy makers. And that document really translates the science into an understandable version for policy makers, including recommendations. I think these are the two main points, the two overarching points that I put forward in terms of how do we communicate science to policymakers. So, yeah, and with that I would like to end, and I guess that Larry will continue a bit more on IASC and Anne will also have something to say. I get. So, thank you very much and I'm looking forward to the discussion and to the breakout session and to discuss this with you.

**Prof. Paul Arthur Berkman – 17:26**

Thank you very much, Volker, for your thoughtful insights and passion comments. I now have the pleasure and honor to introduce to you Professor Anne Husebekk. Anne. Please.

**Prof. Anne Husebekk – 17:38**

Thank you, Paul. Thank you for the nice introduction and thank you for inviting me to give a speech in this webinar. I think also I must start with Ukraine because that is in our mind all the time and we could ask ourselves and maybe discuss whether the war in Ukraine is in favor of science diplomacy or not.

Without an operating Arctic Council, I think we are so much worse off. I think that the Arctic Council was the sort of a guarantee that we could collaborate in the Arctic area around very important questions, such as the climate question. Without Russia participating in this research, I think we lose a lot of input, discussions and data that could provide us with a more accurate picture of the situation in the north.

These are very unfortunate things that have happened. I would say that there is a ban on collaboration with Russia from almost every country in the world that is affected. But it also affects scientists that has condemned the war and young people who wanted to have discussions about Arctic questions. So exchange of students for instance, and collaboration within the framework of University of the Arctic in which I also board member, is now put back to a minimum. And it's very unfortunate. So, about the questions that are asked in this webinar. How are the decisions on what priorities are to be test made?

Even in the greatest democracies, politicians are elected for a four-year period. Many of the questions that we think are important and which are important now have a much longer timeline and many of the decisions that politicians have to make are not necessarily very popular among the public that should eventually reflect the politicians. In that case, I think it's hard to see that the right decisions are made even in very developed democracies. And I think that the SDGs are an attempt to make a global approach to really overarching questions that need to be addressed and hopefully we will succeed with the 2030 agenda. But we cannot take that for granted.

I think it is a very hard work to reach the goals. And when we have setbacks as we have right now, I think the chances of reaching these goals are less than we would like to see. Who are the decision makers? I would claim that the decision makers are politicians and I think that politicians are normal people with some education, more education, and some can

understand scientific questions and answers very well. Others cannot. And also, the political parties are made on or they are created by ideologies that may set scientific questions aside because the ideology is stronger. I will give an example of how politicians can struggle. In Norway, for instance, the national budget is based on the fossils that are exploited in Norway and sold to other countries. And there is a big opposition to what's been done today in order to stop exploring fossil fuel. Knowing that one fifth of the national budget is based on income from fossil fuels. It is of course a challenge for the politicians to stop this exploitation because it will affect the welfare, it will affect all kinds of things in the Norwegian society, and the politicians will probably not be reelected.

Also, I can give another example related to the IPCC reports it's made by scientists. The scientists say that there is a 99.5% or even more percent probability that this information is correct based on all available scientific knowledge. But even if there is a slight amount of uncertainty, I think many people will use that uncertainty to say we cannot trust scientists, we see other solutions, we see other problems that is not addressed by the scientists. So what evidence is needed and how is that evidence defined? I think that those politicians often base their ideas on other basis, in comparison to scientists. And it may also be very difficult to understand a scientist approach. Also, some of the problems or challenges we are facing is not addressed by one scientist in one discipline. It is a transdisciplinary societal challenge what we should aim to.

By just listening to one scientist's approach is probably not the solution to a problem. I think that we, as scientists, must approach the public and politicians in a nice way so that we can give our message in an understandable way and communicate the complexity by putting different disciplines together to advise politicians. I think that we need to enhance our communication skills. We need to discuss with each other how to approach politicians on serious matters. And by doing this the right way, I think that we can influence political decisions knowledge based, but it takes some effort from our side. And I think that the field of science diplomacy is addressed more than ever. And the International Science Council has now gathered a group of people being experts in science advice to try to approach the difficult problems related to the war in Ukraine, but also other international questions. I think I stopped there as an introduction. Paul. Thank you.

**Prof. Paul Arthur Berkman – 25:45**

Thank you very much, Anne, for your helpful and insightful observations to stimulate the discussion. Professor Larry Hinzman, it's an honor and a pleasure to have you participate in this webinar. I provide the floor to you please, Larry.

**Prof. Larry Hinzman – 26:03**

Thanks, Paul. And it's wonderful to be a part of this. Thank you very much for this invitation. It's wonderful to see so many of my old friends and colleagues and so many new faces. It's a real pleasure to be here. In contrast to my previous colleagues. I'm going to end with Ukraine. I'm going to go back a little bit in history and talk about how science does play a really important role in affecting diplomacy. I guess first, I must say so. I am the assistant director for polar Sciences at the White House Office of Science Technology Policy, and I'm also the executive director of the Interagency Arctic Research Policy Committee. And I need to say that because I have to note to acknowledge that I am not speaking for the White House on this

point. I will talk a little bit about the Interagency Arctic Research Policy Committee, but not with respect to current world affairs.

I want to note that just going back, Volker and I will know very well how important Sciences played a role in melting the Cold War. The first international conference on Permafrost was held in 1973 and Volker and I have since and have each hosted for Frost conferences on our own following that. But it was those first meetings, those early scientific meetings that really opened the doors for scientific collaboration cooperation. And from that following that policy relation relationships opened. And so, the same is true for other relationships with China and other nations around the world. I think we can't underestimate the importance the value of maintaining these relationships and these partnerships.

I was also the director of the International Arctic Research Center, which the purpose was to foster and promote collaborations across the Pan-Arctic. And through that, I worked very closely with the Arctic Challenge for Sustainability. And it's a pleasure for me to note all my colleagues, Drs. Fukasawa Masao and Yuji Kodama on this call today, and that I think that those partnerships that we shared as far as studying the Arctic, sharing data, sharing understanding, sharing resources, working together to advance those collaborations that improved the strength of both of our nations.

It improved our capability for understanding weather dynamics, for navigation, and just so many different aspects that carried on helping our nations become stronger, but also helping the global environment maintain the peaceful nature that we had. And we saw in the arctic for so many years that understanding from those collaborations and research that reduced, that improved understanding, that reduced risk, that eliminated some hazards that our nation, our communities, our industry faced. When we can reduce risk, we can improve business opportunities, industry, and it improves the economics of all nations. Again, science led the way to do that. It is very important. Another point that I want to note for my time at IARC, because when I worked with Jenny Baseman to establish and she led the establishment of APECS, the Association of Early Polar Career Researchers, Scientists, excuse me. And that is the program, the effort that gives me the most hope for our future.

Seeing these young researchers and the capability and the enthusiasm and the tools they bring to our scientific world just opens the doors for great opportunities in the future. And in these dark times, it gives me the most hope for where we are going. I will forever be in debt to Jenny and the early career researchers as far as where they will take us into the future. I also want to come back to a comment that Volker made with respect to the Arctic Science Ministerial and ICARP, the International Conference on Arctic Research Planning. Those have been very successful efforts in uniting the world's researchers, at least Arctic researchers, and looking at what needs to be done. And again, when we can focus our attentions and on challenges that are of international nature that we can make great advancements on when we work together, again when we share our understanding, when we share our data, when we share our resources, when we share a common focus, we can make great achievements. And I think looking back, we are planning now the fourth international conference on our own research planning.

But if we look back at the first, which was in 1995 and the second which was in 2005, and the third, which was hosted in Toyama in 2015, by Dr. Enomoto was one of the leads on that. When we look back at those programs and what has been accomplished, we must take the long view. We have to look back 10, 20, 30 years to see what those priorities were, what was accomplished, and how it changed the world.

And looking back a year, too, you can't see that when we take a long view, we really do see we can acknowledge the importance of science in advancing our nation's policies and making the world a better place. Finally, I do need to come back to Ukraine. I want to acknowledge and thank my friend Michael Lucia from Poland. He's helped clarify my own thinking on this. This has been a very difficult time for all of us as the President of IASC. This has been a very difficult time for us. We do have the Arctic Science Summit week coming up in a couple of weeks in Tromsø. I look forward to seeing Paul there.

And it's a very difficult time for us because IASC has been the home for 23 member nations, including Russia, and we've had strong, the purpose, again was to foster international collaborations. We've done so much good work over the past 30 years. It is very difficult for us now to lose our collaborations with Russia. I must also think again, Volker helped us develop this statement that was issued by IASC a few weeks ago or I'm sorry, just yesterday. And we are moving forward to look at the harsh actions that must be taken by the international arctic research community and what we can do to help end this conflict in Ukraine.

It's so difficult for all of us. It's been very difficult for me as one who spent all my life essentially developing these collaborations and string these partnerships to put up these walls and end it. But at the same time, we do feel great sympathy for the people in Ukraine, and the world must stand United to stop these harsh events. It is a difficult time for us. The host of the Arctic Science Week in Norway have issued a statement that the scientists from, the scientists and researchers, policymakers from Russia, from institutions within Russia will not be invited to participate, will not be allowed to participate either in person or online. This is a very hard line for us. But unfortunately, it's a line that we had to draw on, a line we have to stand behind. And so, with that, I will thank you and look forward to the discussion.

**Prof. Paul Arthur Berkman – 34:42**

Thank you very much, Larry, for your leadership in these difficult times and for your helpful comments. I'd like to ask a question in response to one of the points that you raised, Larry, that has to do with the association for Polar Early Career Scientists and our responsibility collectively to empower and champion the leadership of the next generation. What type of messages should we be giving to the next generation in terms of operating short term to long term in a hopeful manner, recognizing that we are struggling seriously with problems that are of a global nature now? But what kind of message should we be giving to the next generation leaders. To empower them rather than to incapacitate them with the gloom and the doom. And so I asked that to each of you, Larry, Volker and Anne.

**Prof. Larry Hinzman – 35:49**

I will jump in really quickly with a brief response in that that's been the most fulfilling and rewarding part of my life is to work with the young researchers and to see how they can take

the accomplishments of the past, build upon the knowledge that we have. And really leap forward with that to resolve many of these challenges. Right now, this political situation is awful. The pandemic is terrible. But we also face this issue of climate change. And the challenges before us are beyond our capabilities that we're going to resolve by driving electric cars or using paper instead of plastic bags. We have to have some huge technological and scientific and policy advances. And I one hand worry. But I'm also grateful for our young people. Because I know that they can and will resolve these challenges. There are technological advances that we must, and we will make to resolve this and to preserve the world we have. But unfortunately, that responsibility is going to fall to our next generation of researchers. Because I'm afraid that our generation has not done such a great job resolving those issues. And I'll pass it to Anna and Volker.

**Prof. Paul Arthur Berkman – 37:10**

Please Anne or Volker

**Prof. Anne Husebekk – 37:12**

Well, I can maybe follow up. I did say something about young people. I think they are the future. We must invest in young people. We must invest in young people in the Circumpolar area as well as the rest of the world. And as it is now, it is much harder in the Arctic area because there is sanctions that we have to follow up. But I do not think that it is young people's will to have a war in Ukraine. And I think we have to as soon as possible when the situation agent probably is solved and go back and resume of a program for young researchers and students in the Arctic area, including what is being done with Indigenous peoples. I believe they are capable of looking into the future, trying to solve the most pressing problems. And I fully agree with Larry that we do not leave the Earth in a good state. There is a lot to do for those who are following in our steps. But I think we still have to prepare the best we can, a society that will be resilient also in the future together with young people. So hopefully we can resume the work in your Arctic young Arctic researchers as soon as possible, also with Russia as a participant.

**Prof. Paul Arthur Berkman – 38:48**

Thank you, Anne. Volker, please.

**Dr. Volker Rachold – 38:56**

Yeah, I can only support what Larry said. I remember when APECS was starting, or APECS was formed. When I met Jenny for the first time, it was within the IPY international Polar year, and I think it was 2006 or seven or something like that. When we met Jenny, we met in Hanover, New Hampshire, I think for the first time at the Artist Side summit. And then Jenny and a few other smart people started to design APECS. Of course, they came to us and we supported them and helped them. And when I look back and see what these people are, some of these people are doing now, it's interesting to observe that Jenny has been the Executive Director of SCAR for a couple of years. My successors in IASC; the first was Allen Pope. He was the President of APECS for some time. Now it is Gerlis Fugmann. She was the executive director of APECS for quite some time. She's now the direct director of IASC. I think it really pays off that we changed things and made the young generation more responsible and gave them more visibility and more responsibility. The other example that I would like to mention is, of course, the IASC fellowship program that we started in I think 2014 for the first time. Also, I

did an Arctic science summary and these fellows that we supported through IASC. And now there are more additional programs that were kind of modeled on the highest fellowship program. And I very much enjoyed working with these people. They are all dynamic and enthusiastic people, I think, who can really change things. I think this is a very successful thing. And I think it started within the international pull of year. Before it was different, before it was just the old people having to say what happens. But now I think it changed and that's important.

**Prof. Paul Arthur Berkman – 40:48**

Thank you, Volker. I hadn't anticipated inviting Jenny to ask questions or comments, but Jenny, your name is invoked with appreciation, and I would like to provide an opportunity for you to either address questions or ask questions.

**Dr. Jenny Baeseman – 41:05**

Thanks, Paul, and thank you all for such wonderful comments. And it brings up great memories to think about the building of APECS. And there were some struggles along the way to try and get people's minds to change and to realize that young people did have a place and could have a voice, and that our well, I'm not young anymore, but what we had to say or what young people had to say could be important. And I can't help but thinking in these times of uncertainty and how crucial of a role APECS could play, particularly because it's an organization made up of members and not countries. And I think there's a real strength in that, and I hope that the APECS leadership takes advantage of that and thinks long term through some of these things. But I also want to make sure that it's clear that the three of you and Paul as well, you guys were instrumental in helping us make sure that we had a voice and that you helped us navigate the political waters to do something really good. And I want to make sure that you get the definite recognition for helping us to do that as well. I just really think it's great to see how things are changing and opening these wonderful opportunities for young people and just have been really glad to be part of it. Thanks, Paul.

**Prof. Paul Arthur Berkman – 42:32**

Thank you. Jenny. Volker, you just mentioned the context of the IPY. I understand that there is planning for another International Polar Year in 2032, and if we begin to think short to long term, that's a decade into the future, how do we imagine the circumstances today where doors are being shut, isolation is happening. Russia is being excluded from programs like the Arctic Science Summit Week. How do we imagine moving to develop next International Polar Year in 2032?

**Dr. Volker Rachold – 43:14**

Maybe we should go back to history and see what the IPY originally was. The first IPY, I think, was the first coordinative effort to do polar research, extremely successful. And then the one, the International Geophysical Year 1957-58, there was more on the Antarctic. It was a huge international Antarctic program, and it was in the 50s, where really during difficult political times, and still there was scientific cooperation. And I mean, the outcome of that International Geophysical Year was at the end, the Antarctic Treaty System was formed as an outcome of this national polar. The last one in 2007-2008, was a bit different because it was during very positive times, I would say. I'm not involved in the next one. Because I will be retired at the time, I guess. I hope so but of course, I would hope that people who oversee organizing it, they think about that, and they also think about the history of the international

polar and what it can do. So, of course, it's a chance ten years, something like that, Larry, you know more about it. But yeah, I would hope that it's a way to get people again on the same table and to continue the 25 years of fruitful cooperation that we had in the Arctic until just two weeks ago.

**Prof. Paul Arthur Berkman – 44:52**

Very good.

**Prof. Larry Hinzman – 44:54**

I've been working as the President of the University Arctic. And I have been trying to promote the initiation of the international polar in 2032 and 2033. And we've been working with SCAR, which is the Scientific Committee on Antarctic research. Because we can't have an international polar. Without the Antarctic research community. That is ten years away. But it is time to start thinking about this. Because it takes ten years to really develop international programs. We get the international collaboration. We get the funding agencies to develop new money to support these programs.

And I also think it's very appropriate to have it only 25 years after the fourth International Polar Year. In that at this point, many of the young researchers that we talked about in APECS. They will still be active researchers in 2032. They will be the ones who can reoccupy the previous research sites who can repeat the cruise tracks from the Oceanographic expeditions. And revisit these studies that were conducted. So that we do understand how our polar regions are changing. We can really characterize that and quantify it well. So, we can develop the projections of where we're going. This really does need to be done in 2032.

With respect to Russian participation. It's my most fervent hope that this does not evolve into another Cold War. That we don't enter those dark periods of isolation. I'm hoping. I'm just praying that this conflict ends soon. And we can welcome back Russian researchers. Who have done so much for Arctic research over the years? Welcome back into this international fold of collaborators. I do think we need to take a hard line now. But at the same time, we need to be optimistic and hopeful that international collaborations and partnerships do continue again. For the benefit of all our nations. I'll stop there. Thank you.

**Prof. Paul Arthur Berkman – 47:23**

Thank you, Larry. Anne, did you have comments? Please.

**Prof. Anne Husebekk – 47:26**

Please just to say that I think the International Polar Year is in one year. But the process ahead of this year is what is important. It seems a long way to go. But I think that the process that will go on until this year arriving is very important. And it is, of course, not a possibility just to stop the arctic research and wait for this international polar here. We need to do business. Whatever we can to understand what's happening and prevent climate change that are to make the situation bad for all of us, both in the south and the north. We must do as much as we can in the meantime to make the situation as good as possible. Thank you.

**Prof. Paul Arthur Berkman – 48:26**

Thank you very much, Anne, for the audience. If you have questions, please put them in the chat. I will endeavor to ask them in the remaining ten minutes. Larry, Volker, and Anne, the response from the seven Arctic States without Russia regarding the Arctic Council talked about new modalities during this period. What do you imagine those new modalities might look like to continue the operation of the science in the Arctic going forward?

**Prof. Anne Husebekk – 49:07**

Well, I can start, the new modalities have to be researched and approached without having Russia and active participants, which is, of course, doable, but will not be a good solution. We can't stop collaborating the other seven countries in the meantime until we hopefully have Russia on board again in goodshape. I think that this is an option that needs to be discussed, and we think that that is a new modality. I don't know, but I think so.

**Prof. Paul Arthur Berkman – 49:50**

Thank you, Anne. Larry or Volker, please.

**Dr. Volker Rachold – 49:52**

I can say something. I think it is a bit more because the Council operates on consensus, and that's, of course, an issue. If one country is not there, you cannot reach the consensus. It is not possible for the, let's say, the remaining seven Arctic countries who just continue the Arctic Council and excluding Russia, that will not work. I think that's what they mean with new modalities, that there must be another arrangement in order to continue the work of the Council. And I think that's what they must work on. I mean, I don't think that anyone was surprised by the statement of the Arctic Council. At least I was not surprised. It was to be expected, I think. But the way how they will continue the work of the Council, especially now since Russia has the Championship of the Council, which makes it even more difficult. I don't know. I don't think that people know this now. I think this requires some discussion.

**Prof. Paul Arthur Berkman – 50:49**

Larry, please.

**Prof. Larry Hinzman – 50:51**

I very much appreciate the comments from Anne and Volker. IASC, the International Arctic Science Committee, is struggling with the same issues and how we will move forward, and we are fortunate to have wonderful council members and wonderful executive committee. I need to acknowledge that Dr. Paula Kankaanpää is also one of our vice presidents and has been very helpful in trying to resolve this as far as how we will move forward in a nature of international collaborations. And we're struggling with this at this point. And unfortunately, I don't have a good answer for you, Paul. And I don't foresee a positive solution in the short term. I think the only thing we can say is that it is something we need to we have the best intentions of working through and continuing our international collaborations. But exactly how we will do this into the future is really a challenge for us at this point.

**Prof. Paul Arthur Berkman – 52:00**

Are there questions from the audience? Any questions will be welcome, particularly in the context of this webinar, which seeks to address informed decision making, which operates across a continuum of urgency, short term to long term. The objective is not just thinking about the moment and the responses now, but how to translate actions and research from the moment across time. Certainly, a component of this discussion was introduced in thinking about next generation leaders. But are there other elements of informed decision making where we as a community of researchers can contribute to a process not necessarily the answers, but the process of framing questions that bring together dialogues among allies and adversaries to operate with continuity, peace, and stability going forward? That is the intention of the Webinar series itself, to think about how science contributes to that type of stability short to long term and brought specifically forward today and thinking about informed decisions. Volker and Larry, do you have any observations based on what we've talked about? You're thinking about your activities. Given the circumstances, we operate with continuity from the present and the future, even with bumps in the road and Wiggles and variability in terms of responses and dynamics, how do we create the continuity from the present into the future, recognizing we have challenges to address along the way.

**Prof. Larry Hinzman – 53:45**

So maybe I'll respond first. I guess I'd like to come back and acknowledge something that Volker mentioned really touched on that the fellowship that IASC sponsored, as far as giving young people the opportunity to take a leadership role and to promote their ideas, moving forward, I think has been important. The other thing I think has been important, and I think looking back on the last 30 years that I can see has been super effective is by sharing our expertise in that I think some of the most productive researchers that we've had, those who have had the best impact, the biggest impact have been those who have worked across international lines. So, I know from all the collaborations that we've had with Japan over the years that the greatest productivity has been from those who have spent time in other nations when we have sent researchers to work in Japan or any other nation. What a great benefit it has been to our nation as far as the tools, the techniques, the insights, the partnerships that they picked up over the years and how that has benefited all our nations. And so I would really strongly continue to encourage that sharing of information and that development of those internships, those partnerships, those fellowships where we can share people I think that's our greatest strength and allowing these individuals to develop those capability in other laboratories and then bring that information home or stay there and continue the collaborations that they have from their home nation It's just a tremendous benefit to everyone And I think that's something we should really continue to promote and foster in these coming years.

**Prof. Paul Arthur Berkman – 55:44**

Thank you, Larry. Anne or Volker, please.

**Prof. Anne Husebekk – 55:48**

I can continue I agree with Larry I think that science by itself is international, and science should be for the global public good. So, in its nature it is to collaborate and to make progress together and today it's not only a disciplinary progress It is also combining different disciplines in interdisciplinary research and what's coming out of the trans disciplinary approach in research Combined with collaboration with, for instance, industry and so on. So, I think the time is not there anymore Where you can sit in your laboratory and doing the experiments

that you think you should do without looking to the rest of the world and trying to put your research into a global context. I think that young scientists today see this as something that they would like to participate in and see the beauty of this collaboration which now is somewhat destroyed but hopefully it will be up and going soon.

**Prof. Paul Arthur Berkman – 57:22**

Anne, thank you for this.

**Dr. Volker Rachold – 57:24**

Maybe in that context one thing that I always feel is somehow going wrong Because the criteria for a scientist to be successful is still scientific papers. I mean, if I'm going into a scientific career and if I apply for professorship, of course they only want to see peer reviewed papers. So, there's nobody asking what did you do in terms of policy advice? What did you do in terms of communicating? And that's really a problem. I mean for a young PhD or a postdoc of course I get responses when I asked them can you help with this? I don't have time. I must write a paper. So, nobody is giving me any credits for doing this kind of work. It's not part of my job. And I think there's something wrong in the system that we must think about, that this kind of work needs to be somehow honored and somehow reflected. If you do something like that, that this is the criteria for you also to be promoted in your career. I'm in a good position that I'm only doing that. So, I'm beyond that already. So, I'm only getting paid for doing this kind of work. But for young scientists, it is difficult. And I think I hear that very often.

**Prof. Paul Arthur Berkman – 58:31**

It was very much along those lines. That sentiment, Volker, that the context of today's discussion emerged in the sense of bridging the data to evidence interface, recognizing that data is a component of research, and evidence for decisions involves actions with decision makers, and bridging that across that data, evidence interface was an intention of the discussion. So, I appreciate your highlighting that in the closing remarks here. I have one question that has emerged in the chat. It's sort of a specific question.

I'll see if I can make it a more general. What is the success of joint environmental research activities and scientific dialogues as confidence building measures? So how do we, in a sense, take these dialogues, these research activities, as confidence building measures?

**Prof. Larry Hinzman – 59:34**

Maybe I'll jump out with just talking about the recent Mosaic expedition, which was very much a tremendous ordeal. It was really led by the German government, but it was an international partnership which strongly included the Russian government and China and Japan and just many other nations with the interest in Arctic research. And it produced important outcomes. So, it was an expedition where the ship was frozen from the ice. But the studies that were able to be done extended far beyond anything we've ever done before, as far as looking at the atmospheric processes, the influence of solar influences, but also looking at the subsurface, the subsea dynamics of not just the major ocean currents, but also the subtle eddies and what role they play in transferring heat. So important results come out of that study. It was a tremendous international collaboration as follows, involving so many ice breakers from so many countries and just the contributions of scientists from around the world playing a huge role.

The success that came out of that gives us great hope to look forward into other major international collaborations that could do something very similar. So right now, there is international cooperation on a program called T-MOSAIC, which is terrestrial MOSAiC, looking at the same thing to try and make similar progress in a different regime. Again, tremendous international interdisciplinary activities. And there's also further plans on the horizon to think about something similar conducted in the Southern hemisphere, around the Southern Ocean. I think it is those successes where success begets success, those achievements that give us great hope and great confidence that we can take this further. We can do more if we work together. I'll stop there. Thanks.

**Prof. Paul Arthur Berkman – 01:01:51**

Thank you very much, Larry, for comments that are helpful. Volker or Anne, please.

**Prof. Anne Husebekk – 01:01:56**

I think another example is the IPCC reports. I mean, it's so many researchers, so many scientists who are sort of forced in a good way to collaborate. And what comes out of it is meta-analysis. That is important. And I think it makes impression also on public and politicians. But it is, of course, hard to take the steps forward to avoid further damage to happen. But I think among the public, these reports are really discussed and reported on discussed in the news. I think this is maybe the greatest effort ever to put scientific knowledge together in order to influence public and politicians. And then you also have a summary for politicians, a summary for the public. You don't have to read those thousands of pages in order to know what this is about. So, I think it is hope that it takes courage. It takes international collaboration, and it takes a lot of money to have these things going on, but we can't afford not to do it.

**Prof. Paul Arthur Berkman – 01:03:18**

Thank you very much. Anne. Volker, do you have observation, please?

**Dr. Volker Rachold – 01:03:22**

Yeah, just a very short comment. I think the very best example is the Arctic Council itself because I mean, the Arctic Council started as an environmental protection strategy and then later became the Arctic Council. So, in terms of the question, what is the most successful thing? I think you can just name the Arctic Council because that's how it started from the common interests of the eight Arctic countries to protect the Arctic and to have an environmental protection strategy, and that later became the Arctic Council. So, I think it's a fantastic model.

**Prof. Paul Arthur Berkman – 01:03:54**

Excellent. I very much appreciate everybody's, Larry, Volker, Anne's thoughtful comments throughout this discussion and hope for the next generation leaders listening. What they see is an approach of everyone struggling in spirit of humanity to try and improve the search circumstances, recognizing we have ongoing challenges to address. With that, I would like to take this opportunity to personally thank you, Larry, Anne, Volker, for taking your time and participating in this opening plenary and now invite you to facilitate breakout sessions for the next 45 minutes. Michelle and Ream, if you could transfer us into the various breakout sessions, and then after that, there will be a ten-minute break in preparing for the final

plenary. So again, thank you, Larry, Volker, and Anne, for your important and hopeful observations. Final question to address before we go into the breakout sessions, I would like to ask how difficult it is, in your opinion, to reach common people when promoting informed decision making about major issues, particularly because most of the time people are not involved in science find it difficult to interpret scientific data. That's a question of communication and I would say it's a question of how we as a community build common interests across the board with each other cross boundaries of nations, across boundaries of disciplines, cross boundaries of ages. How can we as a community be inclusive? So, question of reaching common people. I would say the challenge is one of common interest building. But leave us if Volker, Anne, or Larry have additional feedback on this question, please.

**Prof. Larry Hinzman – 01:06:01**

I have a slightly different take on this. I think one of the things that we've done over the last 30, 50 years is much of our science has been focused upon understanding of processes, particularly in the Arctic. We studied permafrost, we study sea ice, we study ocean circulation. But most of that is not of interest to the public. For the last year I've been working on developing the Arctic research plan for the United States and we've changed that as far as our approach and we've taken these disciplinary studies to address the challenges that you see in the newspaper every day, the front page of the newspaper taking on those issues people. They're of course interested in climate change; they're interested in sea ice dynamics but what they're really concerned about is food security and how they're going to make their mortgage payments. And so, what we're trying to do is take all these scientific studies and pull it together to address these major challenges and so we're taking on issues of economics, livelihoods, community resilience. But all of that must be those resolutions to those challenges have to be based in the strong understanding and coherence of science. So, we bring all these multidisciplinary sciences together to address these common, everyday challenges and I'll stop there.

**Prof. Paul Arthur Berkman – 01:07:35**

Thank you very much, Larry. Anna or Volker, do you have any additional observations?

**Dr. Volker Rachold – 01:07:41**

I think we mentioned a few things already. I think it's all about how to translate your science to make it understandable and make it interesting. I brought the example of the Arctic assessment and I think that report was so welcome communicated that it also changed the public opinion on the arctic that was a successful story. And then the other thing is of course especially young people in APECS. I must mention APECS again. Of course, they use different formats of communicating science. There are citizen science projects. There are, for example, cartoons and different things, interactive websites, and very different and modern ways of communicating science. And I think that's the way to reach, let's say the person on the street and not only other scientists or obviously makers. So, I think it very much depends on how you sell your science and communicate it.

**Prof. Anne Husebekk – 01:08:32**

I totally agree with what has already been said. But I think that schools and universities also need to be places where that the students learn to understand and to translate things into what must be understood by the public. And since so many people or young people go to

schools for a long period of time and then most of them go to universities, I think it is a big challenge and something that must be approached also among students as sort of generic 21st century skills to understand and to participate in the public discussion around his main challenges.

**Prof. Paul Arthur Berkman – 01:09:28**

You've set the bar high for next generation in terms of a skill for them to develop and communicating with the public. So, I thank you again, Larry, Anne, and Volker. Michelle and Reima, if you could place us in our various breakout sessions and we will continue from that.

**FIRST BREAKOUT-SUMMARY SESSION**

**Prof. Paul Arthur Berkman – 01:09:45**

Thank you very much, everybody. I hope there was a lot of fun in the breakout sessions. I would like to invite Anne, Volker, and Larry to provide debrief synthesis of the breakout sessions, if that makes sense. And if it does make sense, perhaps we can start with you, Anne.

**Prof. Anne Husebekk – 01:10:17**

I don't know if we had fun, but we had very good discussions call so it was good to have a smaller group and we went into the questions and discussed both the communication of scientific messages to the public and to the politicians, which is maybe hard but could be done. And maybe we should think into new sources or communication channels like social media, which is not new anymore, but which could be used actively. And we could use influencers that are trustworthy to give our message to those who make the decision. It was also discussed how we should communicate in a way that is understood by layman and by those who we would like to address. It must be a simple message that can be understood also with those with science industry. We discussed also how decisions are made. Is it so that there is a straight line from the scientist to the decision maker? No, it is not. It's a lot of influence. It's an ecosystem of influence on the way and all from different organizations, those who promote fake news, those who will lobby their own view into a decision maker. And even in a perfect democracy, we must look at what those influencers are to know that the message we want the decision makers to take is still in a way that is based on knowledge. I think that was what is left from the discussion. The last question that I haven't addressed in this breakout session is the homework that everyone had to do to discuss the paper that was provided as homework. So, this has not been done. If this can be approached now, I'm more than willing to participate in that discussion, but maybe some of the reporters from the group can add something to my summary. That's fine with me. Thank you.

**Prof. Paul Arthur Berkman – 01:13:08**

Thank you very much. Anne, was it Teru and Jugo were in this section? I don't know whether Akiho was in that session or not. Tero or Jugo, did you have additional comments?

**Teruaki Fuji – 01:13:23**

No, thank you very much. I don't have additional comments, but we had a very fruitful discussion and good leadership by Anne. Thank you very much.

**Prof. Paul Arthur Berkman – 01:13:34**

Excellent. Thank you very much, Anne, for facilitating the discussion. Absolutely. Volker, please.

**Dr. Volker Rachold – 01:13:42**

Yeah, thanks, Paul. So, we didn't specifically work along the questions that you provided, but had a just general discussion, but I think we touched upon all of them, and I think we had a very interesting and lively discussion. So, with many points and many questions and many comments. It's all on the Google Docs. But I will try to make just a few key points that we talked about. We started with a question, who are decision makers? Our scientist's decision makers too. And we thought, yes, they somehow are. But of course, it's very often practical issues that dictate the science. But what we agreed is that the fundament of any communication is scientific getting facts. Without scientific getting facts, it doesn't make any sense to communicate things. This is something that I think is the starting point where we are.

And then we talked a bit about the role of media communicating science or not communicating, translating science. And is there an influence that the media has on the public, on the person on the street? Can signs be politicized? And we think, yes, of course it can. Then we talked about what is the role of the scientists. So, should scientists also be part of this political discussion or is there a danger to becoming an activist? Are you still a good scientist if you are considered an activist? So, it's quite dangerous. But we in any case agree that it's responsibility of scientists to make corrections in the context of science. If there's something wrong, of course we as scientist set to take responsibility to correct things and in the context of climate change.

Then we talked a bit more about decision makers. Decision makers in the Arctic, are they more knowledgeable than those outside of the Arctic? We agreed that they're probably not. But on the other hand, politicians are traveling to the Arctic to see what climate change means because there's no place on the globe where you can see climate change more obviously than in the Arctic. So, from that point of view the Arctic plays a very important role in terms of decision making. We had a little discussion on non-Arctic countries what non-Arctic countries view as important in terms of science in the Arctic. And of course, we agreed that one thing is changes that happen in the Arctic and affect the rest of the world. For example, permafrost. Also, economic interests are an important issue for non-Arctic countries. Things like shipping, tourism, exploitation of resources. That's something that non- Arctic countries are also very interested in.

And then we discussed Indigenous and Western research, and we agreed that you cannot distinguish between Indigenous research and Western research. But what is important to notice that there is Indigenous knowledge and we normally as scientists would not use this as research, but it is still extremely important to get this traditional knowledge. The correct term is Indigenous knowledge to get this knowledge into our science and to use it in terms of

making advice or giving advice to policy makers. Decision makers so that this Indigenous knowledge is considerate. We talked a bit more about the role of media and of course the media is important to make people aware of what's happening in the Arctic.

And then in the last part we talked a bit about priorities. Who defines priorities? And now we noted that of course an important thing is to have a dialogue between scientists and policy makers. Otherwise, you will not be able to identify the priorities that scientific decision makers have. We need that dialogue. Scientists of course are responsible to answer questions to society and that requires that you know the questions, of course. Then we talked a bit the last part here. Oh, yeah, we talked a bit about the human element. We talked about who do you talk to if you talk to policymakers? And I think we agreed that you will never talk to a Minister. There are always hundreds of people supporting the Minister, writing the speeches, preparing agreements, and then at the end, the Minister comes and just signs this agreement or gives a speech.

So, it's important, if you want to have an influence, to find the right people to talk to, talk to those people who prepare the ministers for a decision. In that context, we talked about training opportunities for young scientists. We talked about the role of APECS because as a scientist, you are normally not trained to do science communication and policy advice. And Jenny highlighted that there are, of course, a couple of activities, APECS tests and others to help people getting into that field and to better understand what it means to do science communication. So, I think that was what we talked about. And Jenny or any other one of the groups, if you have anything to add, please do. Jenny, are you happy with that?

**Prof. Larry Hinzman – 01:19:29**

Thumbs up from Jenny.

**Dr. Volker Rachold – 01:10:31**

Okay, good. Head over to Larry.

**Prof. Paul Arthur Berkman – 01:10:34**

Okay, Larry, please. Thank you very much, Volker.

**Prof. Larry Hinzman – 01:19:37**

Thanks. I'll be brief in the time we have left, so I apologize upfront to anybody if I missed your comments. So, we had a good discussion, and I think it reflected many of the comments that Anne and Volker just mentioned on too. So, we did talk about the importance of culture and educational exchanges with the next generation as far as facilitating the next generation of researchers to work with communities and to advance the science and how important it is. We also talked about how important it is, again, for researchers and scientists, but also policy makers to spend time in other cultures, other communities, so that they have that understanding of walking in their shoes and being able to understand where people are coming from. Again, we talked much about APECS and significance of incorporating young science estimate. We all agree that's hugely important for building our world.

We talked about common interest building and conflict resolution. And we think that common interest building can be an effective mechanism for conflict prevention and conflict

resolution. People have a good understanding of where others are coming. From their perspective, we can really avoid a lot of problems to begin with. Paul brought up a good point. I thought that a great model that we should have for contract resolution is the Antarctic Treaty and space Cooperation. The Antarctic Treaty is signed by a couple dozen nations. The space collaboration is a smaller group of nations, but it's very positive approach. And I think the big difference in those two examples is that both those examples are forward looking examples. The nations came together and said, what do we have to do to go from where we are to where we want to be? And so many of the other conflicts that we're in now are based on history, and it's so hard to resolve history from everybody's perspective. And so that's always difficult. So, if we can look forward instead of looking backward, everybody would be better off. One of the challenges for conflict resolution is negotiating with side start with different interests and so different perspectives.

The challenges again, how do we pull those all together? We did talk about the importance of communications and informing at the local level. And it's not just providing science to the local level, but also getting their perspectives and their concerns up to the higher levels. We talked about ways of bringing those local needs to national and global awareness. And then we talked about the value of bringing science into communities and how that can improve life in those communities, but also, again, expand our own capabilities, capacity for doing science in communities and in the future. And with that, I think I'll stop and turn it back to Paul. Thank you.

**Prof. Paul Arthur Berkman – 01:22:44**

Thank you very much, Larry. It's truly an honor and a pleasure to have Larry Hinzman, Anne Husebekk, and Volker Rachold as the keynote presenters for the second webinar. And I profoundly thank you for your contributions. And I thank you for your leadership and just in general. And Larry, I wish you every success with the challenging decisions that are coming up. And I guess as one among many congratulate you on your stewardship as President of the International Arctic Science Committee.

Next, we do have planned third webinar on the 24 March, and the webinar series has been developed and implemented in the spirit of inclusion, recognizing the challenges that are currently being faced. Andre Bruce Handoff is one of the keynote presenters who's been involved in these throughout the first and the second webinar. Andre, very much appreciate your collaboration. Certainly, welcome your contributions in the third webinar. We'll also have Fran Ulmer, Anton Vasiliev was in the audience today. I saw as well. And we will also have Hiroyuki Enomoto, who is vice President for IASC and is among the leadership at the National Institute of Polar Research in Tokyo in Japan.

So, I thank everybody for their kind collaboration, their important contributions to the second webinar. It's truly an honor and a pleasure to be able to coordinate this series with support of the Ministry of Foreign Affairs of Japan and the implementation by the United Nations Institute for Training and Research. And again, I thank Volker, Anne, and Larry for your important contributions today. Thank the audience and participants for your many important observations as well, and to that on 4:30. Look mytime at the end as on time. I wish everybody good health and I look forward to next steps. Stay healthy. Thank you very much.