



CANADIAN GLOBAL AFFAIRS INSTITUTE
INSTITUT CANADIEN DES AFFAIRES MONDIALES

Defending the Continent: A Pan-Canadian and Pan-Domain Arctic Approach

by Nicole Covey
July 2022

CONFERENCE REPORT

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CGAI 2022 WiDS Fellow
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Panel 1 – Continental Defence Considerations for CAF Force Development, Digitization, and Combat Systems Integration

RAdm Jeff Zwick – Chief of Combat Systems Integration, Canadian Armed Forces

Moderator: VAdm (ret'd) Darren Hawco – Senior Business Advisor, Deloitte and Fellow, Canadian Global Affairs Institute

RAdm Jeff Zwick:

- Focuses on the Force development for NORAD modernization with an emphasis on digitization. This will be key going forward
- The Canada US Joint Statement highlighted four key priorities: strengthening situational awareness, modernizing command and control, enhancing defence capabilities, and advancing research.
- Operations in Ukraine make it clear that a small force using modest equipment can make an impact.
- Change is tremendous, it is important that we know how to defend and use the technology. It is how you leverage the emerging technologies that will allow you to counter the threat.

Is there a difference between pan- and all-domain?

RAdm Jeff Zwick:

- No, it is just nomenclature.

You talked about digital agenda and practical defence, can you talk more about the intersection?

RAdm Jeff Zwick:

- Being able to respond to the pace of the threat. You need to be able to respond quicker and faster and that is a key part in the digital side of all of this. You also need to use and fuse more sources of information quickly.
- Logistics is critical to any campaign so being able to digitize the supply system is critical. You cannot just look at the front end you need to look at the entire process.



What are the important elements of continental defence in the digital sphere?

RAAdm Jeff Zwick:

- It relates to Anticipate, Act and Adapt framework. It is not just about equipment it is also about enterprise; you need to ensure the backbone is sufficient. As you move technology forward you need to update the backbone infrastructure in order to support it.

Can you offer some perspective on time horizons on the next continental defence pieces and the potential for sequencing?

RAAdm Jeff Zwick:

- There is already work being done, it is more than NORAD modernization. The Minister talked about bringing a robust and open package soon. Soon is probably soon, but what that mean I cannot tell.

We hear the terms NORAD modernization and continental defence but the terms behind them is blurred.

RAAdm Jeff Zwick:

- They are different. NORAD is part of it but continental defence you need to add on it. Continental defence is being able to respond to pan-domain threats.

You mention things we are observing in Ukraine, what does that tell us in the future conflict we need to be considering and what it is telling us in regard to developmental countries like China?

RAAdm Jeff Zwick:

- The use of drone technology fundamentally changes things. It is being able to anticipate technology and how that impacts response. You always want to fight with asymmetric response. It is key to be the actor who has the best information.

The recent sending of cameras to Ukraine in response to an urgent request, what does this mean for procurement? What is the focus on where Canada needs to focus from an industrial perspective? What changes to the procurement strategy need to be considered?

RAAdm Jeff Zwick:



- Ukraine has taught us many lessons. If you plan it poorly it will not go well. Stock movement has been greatly impacted by modern communication and technologies. As you look at how operations have done you learn. This relates to a discussion of risk; what is enough? Canada needs to be far more agile with domestic procurement and work on how to keep the refresh

Panel 2 – A Strategic Survey of the Threat Environment

Dr. Abbie Tingstad – Senior Physical Scientist, RAND Corporation

Dr. Kari Roberts – Associate Professor, Mount Royal University and Fellow, Canadian Global Affairs Institute

Jake Harrington – Intelligence Fellow, Center for International and Strategic Studies

Moderator: Renée Filiatrault – Fellow, Canadian Global Affairs Institute

How has the situation with Ukraine impacted the threat level in North America?

Dr. Kari Roberts:

- I think there is no question that the situation in Ukraine has changed things. There is no question that our relationship with Russia changes in the North. The Arctic used to be a region that was cleaved off from other areas of tension but now the Arctic is no longer exceptional. There are still some areas for cooperation but there is a lot going on up there in the last ten to fifteen years in terms of modernization (not just the Russians). Half of the Arctic is Russian territory so they need to be there and the militarization of the region can be understood as dual-use and that is a concern. With Russia increasing its patrols and NATO doing the same, there is a large possibility of miscommunication. We are not talking to the Russians right now and that is what has changed.

Are you optimistic about pan-arctic communication between like-minded Arctic nations?

Dr. Kari Roberts:

- There is a pause in the Arctic Council and there is a big question now about how much arctic cooperation can continue without Russia. Ultimately, I do not perceive an immediate threat from Russia in the Arctic, as we know they are very busy elsewhere which gives us time to think.



From the American perspective, what do you think?

Dr. Abbie Tingstad:

- There has been a growing interest and acknowledgement that the US is an arctic nation that started to grow with the Russian flag plant, and the ongoing concern about Russia's northern intentions. Arctic has always been important in terms of energy solutions and has always suffered the problem of competing priorities. A big strategic problem in terms of the American perspective is not doing enough soon enough. There are three big themes I have seen in my work: operating in the arctic is more than just swapping out shorts for a parka. You need specialized and different capabilities. There is no silver bullet, and the idea to have continuous and packaged investment is very difficult. The ability to cover the space we are aware that the Arctic is a very large space. That means you need quite a bit of capability and ability to operate in the region effectively.

What about conversations around Indigenous peoples in policy circles? Does this come up, should it come up more?

Dr. Abbie Tingstad:

- I always think it should come up more but there is a growing trend in hearing more northern voices. I think this trend that people living down south are more willing to pay attention. We need to listen more since most of us have never gone up north.

Going back to the idea of threat, can you speak a little bit about that in regard how it relates to continental defence and Russia?

Jake Harrington:

- I share the fears that the Arctic will no longer be able to isolate itself. Two key trends: How is Russia going to emerge after Ukraine. China is seeking to global access and great power status. With the Arctic becoming more hospitable it creates more opportunities for humans to encounter each other's and that raises the risk of misunderstanding and miscalculations. These activities in isolation may not seem that important but they are important and require a unique set of capacities in order to combat. From the west it is presented as a defender's dilemma--how far are we willing to let them go? The way we need to get out of the escalation trap is to compete. Two ways to do that is increasing our presence (increasing our physical presence in the Arctic, working with Indigenous communities to help) and increasing our multimodal capacities and being able to integrate and fuse data. The grey zone is an informational battle space that we need to compete in, and we need to use this information to combat threats. We tend to see these threats once it is too late to flip the script Information pre-emotion is essential. The Arctic is going to be more open to these types of threats.



We keep seeing the UK and others put intelligence into the public domain in order to inoculate the narrative against propaganda. Do you see that event having a key component to Ukraine's success?

Jake Harrington:

- I think it has done a lot in sustaining awareness and I do not think we should think of information as a deterrent I think it has been remarkable to see 5eyes calling out bad behavior and showing a different way that intelligence can be conducted in a way that is in line with liberal Democratic issues/values.

Dr. Kari Roberts:

- We are seeing the Ukraine invasion being a long-drawn-out conflict the longer it goes on the louder it gets and that allows Russia to spin the narrative more what they want. It is not the problem for Putin that we think it is. Putin still has a lot of domestic support a consequence of a 20-year effort to reign in the media and crafting an anti-western message. 20-year nationalism project and Putin continues to be quite popular. How long can this go on if the economy continues to be impacted? Russians will tolerate an authoritarian state as long as there are economic benefits. Putin has a big war chest.

Do you see a weakened Russia being more unpredictable?

Dr. Kari Roberts:

- Potentially but I would not say his behavior is wholly unpredictable. He gave us a window about what he thinks about sovereignty. Regional and cultural sovereignty where Russia sees itself as the first among equals. If we listen to what Russia tells us this was not a massive surprise.

If based on the difficulty we have seen Russia have in Ukraine, should we see Russia as a threat in the Arctic?

Dr. Kari Roberts:

- This is the one region in the world where Russia has military supremacy, but the Arctic is a difficult domain. I have not seen Russia converting its military to weaponizing signals in the Arctic. I am not seeing the signals that the Russians are Coming.

Dr. Abbie Tingstad:

- I agree. Russia has legitimate interests in the Arctic. I have also not seen any activities that would be different. I have been watching two issues in the Arctic. The first is the Northern Sea Route and a potential area of rising tensions and the second is the NATO Russian geographic area in the Barents region especially with the new bids. I think it could be an increasingly tense region and what happens in the Arctic does not always stay in the Arctic.



What we are seeing in the Arctic is a shaping of information. From a western perspective what do you see as the ways we develop our coherent information operations in the north to portray it in the way we want?

Jake Harrington:

- The Arctic has been an area of international cooperation and maintaining that level of coherence the rise of the PRC information needs to be held the line that China is able to pursue its economic and political interests in the region as long as they are in line with international law. Having the right capabilities to know if things are violating international law and to be there immediately with information. If we look at the loss of infrastructure in the Arctic, it is ripe for Chinese investment.

A lot of talk circulated around the 2014 invasion of Ukraine was opportunistic and this one was pre-mediated. How long was this planned?

Dr. Kari Roberts:

- Ever since Putin became president; he views collapse of Soviet Union as a terrible event and suggests that Russia will rise back to its regional dominance. It does not appear that this operation was planned particularly well but as a concept of denying Ukraine it seems to have been around for quite some time.

Do you think we overemphasize the grey zone threat from Russia or will conventional means be the primary threat going forward?

Jake Harrington:

- We have definitely overestimated Russia's capacities as seen in Ukraine, but we have also seen Russia use information dominance not necessarily sophisticated but dominant. They have also been successful in using influence abroad which has allowed to increase their access to different countries. Russia still has successful hybrid war capabilities

I hear a lot about Russia, but I think China is the larger threat considering their ability to use soft power and their ability in cyber space, influence political decisions, espionage. I was wondering if the panelists could comment on the military growth of China and what does that mean for the future?

Dr. Abbie Tingstad:

- I think there are a lot of questions about China in my mind the greatest ways that China will continue to seek influence is working in rules setting in the Arctic. China is very good at participating in rules setting in organization in which it legitimately has stakes--and I think this is where China will seek more influence here. I also think their economic strength is something to consider. They are seeking partners in the Arctic I have not seen



an overt Chinese presence in the military, but we need to be on the lookout for dual-use capabilities. It will probably be very subtle with China.

Dr. Kari Roberts:

- Russia and China have an interest-based partnership, a partnership based on opposition to dominance of western order.

Panel 3 – The Maritime Dimension of Continental Defence

Marc Mes – Director General, Fleet and Maritime Services, Canadian Coast Guard

Timothy Choi – PhD Candidate, University of Calgary and Fellow, Canadian Global Affairs Institute

Dr. Adam Lajeunesse –Irving Shipbuilding Chair in Canadian Arctic Marine Security, St Francis-Xavier University and Fellow, Canadian Global Affairs Institute

Cmdre (ret'd) James Clarke, Business Development Analyst, Lockheed Martin Canada

Moderator: VAdm (ret'd) Mark Norman, Fellow, Canadian Global Affairs Institute

We have heard the concepts of multi domain and threat already this morning, so we are going to focus this more into the maritime focus. Recognizing it is a multi-domain issue but we are going to focus on the maritime domain in this panel. Why does all this matter? Why should the average Canadian care about this?

Dr. Adam Lajeunesse:

- From an Arctic perspective I do not think it has never not been important but what we are seeing today is an increase in complexity. During the Cold War we knew what the challenges and questions were and today continental defence has become so much more diffused. It is no longer just a question of just missiles or submarines, but they are still important. But it is also about how do we act when Chinese fishing ships come into the Arctic? We had a sailboat try to go through the NWP this year. The Arctic has seen an increase of complexity and actors, and this is only going to grow.

There are two views on the military maritime aspects in terms of the greying of militarization. Is there a concern about the militarization particularly in relation to Russia and China?

Timothy Choi:

- The ability of navies to exercise of the control of the seas is what is most important. There are four basic uses of the seas and each of them respond to a particular character of threats. First is the use of transportation (shipping, trade, movement of assets, etc), second is power projection, third use of the seas as a resource (fisheries, minerals, oil and gas, etc),



fourth use of seas a way of obtaining information (undersea cables). Navies need to find different ways to respond to the different types of threats.

How does America see a confident maritime? Can you comment on the undersea domain as it relates to this conversation?

Cmdre (ret'd) James Clark:

- We need submarines, I need to say that. In Canada we have a privileged position in the world and that is due to our relationship with the US. That is very easy to take for granted. We rely on deterrence for geography. But things are changing. There is a nuclear risk to Canada. Missile launching submarines is important. Our freedom of movement through North America is at risk and this is a problem. National credibility is extremely important which is based on the idea that you do what you say and say what you do. We made a commitment to the United States to reach 2% and we continue to fall short. We have a shared responsibility for the defence of the continent and we need to live up to our fair share. I think the expectation for the United States is that it is not all about Canada but that we make ourselves a hard target.

What is the current state of play both in terms of real capacity, activity both what we describe and friendly and concerning activity not just from the defence perspective but from a security perspective?

Marc Mes:

- What we are seeing an increased activity in the Arctic from shipping, commercial resupply, tourism, fishing, etc it is growing on a year-to-year basis. The ice is still there but there is a different type of ice. The ice is causing different challenges. With the increased traffic is an increased risk of search and rescue and environmental resource. With the lack of charting in the arctic who do not know where they are going and all the sudden, we have a catastrophe on our hands. There is also a responsibility of northern communities and industries commitment to resupply, and they rely on CCG for resupply. I think there are increased levels of expectation, including from an environmental protection, marine protection areas, how are we going to monitor and enforce things with increased traffic. We have to look at it from a whole government of Canada perspective. We are seeing more and more challenges. When transits call for ice breaking that pulls us away from other duties. We have limited capacity and only a limited number of ships. Should cruise ships be hiring their own icebreakers or are they relying on the CCG to take them across. These are questions and challenges we are currently facing.

One of the reoccurring themes is the notion of integration, information, and the speed in which things happen. The degree of integration is important, and we cannot ignore the military component of it. How could Canada start from a blank sheet of paper how could integration work?



Dr. Adam Lajeunesse:

- The whole of government approach is important because of how hard it is to get up sharing is important. The real problem is implementing that with various degrees of success, and communication is still not perfect. We are still working on what we know to be the best system and the next step would be building that interoperability with the United States.

Working from the premise of the previous question, do we have the right tools in our toolbox and are we buying the right tools for the future?

Timothy Choi:

- In terms of the AOSPs everyone is fairly happy with the ships in meeting Canada's needs. I think we are a bit of observation in our thinking of the Harry Wolfe class, Danes used their equivalent for a lot. What the AOSPs do is that they allow us a big increase of hull numbers. There are times when you do not need a heavy icebreaker in the arctic so then it would be a good time to use the AOSPs in order to alleviate the burden.

On the continuum of the very basic level support to commercial activity up to enforcement, how can we better use our capabilities?

Marc Mes:

- Integration is critical. Coast Guard is great full that the government has put in the funding for ice-capable fleet. How can we be seen as an instrument of national power in using that integrated approach as modularity and integration are important when looking at an integrated approach. How do we ensure that we do not act as a silo, that what we are building in is the ability to share information across ships and the land as integration will be the focal point over the next few years.

Can you speak on undersea domain? If we look at what is going on in the backyard and deciding if we want to do something about it. Can you help position us here today?

Cmdre (ret'd) James Clarke:

- First it is not just about submarines, it is a team support and maintaining custody is nothing new what is relatively new is the pairing of technology which now makes anti-sub warfare not something that plays out in the deep sea but instead something that impacts Canadians at home today. It is technologically and more feasible to shoot archers and not arrows. We need sensors from the sea floor to space to cyber space and it goes around NORADs north facing history.

Do we have the roles and responsibilities arranged properly?



Dr. Adam Lajeunesse:

- I think we do have the mandates assigned properly and while the CCG does not have enforcement mandates that does not mean you cannot put someone on board that does have those capabilities. CCG has deterrence capabilities as people need to know that there are people around at a psychological level it is not terra nullius. We are heading in the right direction.

VAdm (ret'd) Mark Norman:

- Deterrence is a national capacity. There are a number of different ways to deter and shape the actions of others. The structures are there but what is lacking is we do not necessarily practice enough it is not as seamless enough. At the tactical level it works brilliantly but as you move up in the organizational frameworks it becomes more complicated and convoluted it is not as seamless or as natural and that is the area for improvement if we were to evaluate ourselves.

Panel 4 – Deterring and Defeating Modern Threats to North America

Brett Heimbigner – Missiles & Defence Director for NORAD/USNORTHCOM Requirements and Capabilities, Raytheon Technologies

Col (ret'd) Brett Boudreau – Fellow, Canadian Global Affairs Institute

Peter Bates – former NORAD Policy Advisor and Fellow, Canadian Global Affairs Institute

Moderator: Renée Filiatrault – Fellow, Canadian Global Affairs Institute

What is the current situation, how are we doing and what do we need to do?

Col (ret'd) Brett Boudreau:

- Leaders are becoming more aware of the situation and that is promising. It is time to stop admiring the problem. The general tone is rising in the far-right variety. Our relatively open society and a lot of evidence to show us what is going on. Trust is gained by the teaspoon full and lost by the bucket full. The efforts to stifle POG use to originate outside the government, but now they are instead the house, and it is a consequence of excellent government communications is a national security issue. It is an existential requirement. Great communication for bad policy gets you to the worst place faster.
- I do not think we are doing well. We are late and lack many mechanisms and mindsets. We have done some things, but the issue is less about the number of resources but instead how we organize those assets.
- Three key ideas in moving forward: first the auditor general should engage in a comprehensive performance audit of the federal communications function, second defence should fund a cross-functional initiative to increase capability and capacity in civil



society, finally we need to reimagine government communications. We need to have national conversations about issues that are important to us. So that we do not run into the case of the effort made back 10 years ago with the F35s.

Do you think fighting propaganda in putting your own message out is hampered by an approval process?

Col (ret'd) Brett Boudreau:

- What is truth? Propaganda is in the eye of the beholder, if you truly believe that people hold views there is no amount of coercion and facts are going to change that. Help create decisions for more people to be involved in the policy. Strong Secure Engaged was the biggest effort and open effort into create policy but it did not create the national conversation about it. Sure, things can be improved but it really is about mindset.

NORAD seems to make a more proactive approach every time we have a scramble, there was a push to get media statements on it. Did you see an evolution?

Peter Bates:

- Yes, but It was in part a response of a bigger problem. It was to make a point that there is a genuine kinetic threat to North America. NORAD has to deal with the fact that it is both an outlier and an orphaned command. We have conditioned our mind to project our power internationally and fight anywhere except North America. Our adversaries we have been in a fight with Russia since 2008, the war with Ukraine is our war--we are at war with Russia now.
- Does NORAD have a real job? Yes, it does. NORAD provides the roof of our ability to project our power. We need to get Ottawa and Washington that NORAD is a binational combat command that has a genuine war fighting mission. The issue for NORAD remains that modernization will be extremely expensive. The last investment we had was the NWS and that was situational awareness, and that does not solve our problem.

Let's get specific about the job, and get more specific about the various missel threats? Can you provide more detail for us?

Brett Heimbigner:

- Russia is the key threat of the current administration because of their intent to using the weapons. We have been told by the administration and NORAD to focus on the hypersonic threat and the emphasis on modernization and integration. We find that dealing with other commands here is an opportunity to set a template for global integration. You cannot over amplify the threat right now. It just brings about a whole new perspective. Before we could not afford to look the north but now, we cannot afford not to. If you cannot see them or track them then you have very little chance of correctly allocating resources in a fast



fight, it is not going to be possible. Industry and government need to be sitting side by side and figure out solutions to fill the gaps.

When I think modernization it is all about joint all domain and control and the nervous center of NORAD. DO you think it is possible for CAF to integration into joint all domain control and two what are the implements to this? Do you think this is possible?

Peter Bates:

- The best is always the enemy of the good and we have insisted we need the best when we should be focused on the good. In terms of integration, we have not even been able to do it domestically. There are opportunities to take advantage of, but we need to find affordable solutions. It is pretty informative that resources are so different.

Does the resource difference between Canada and the United States Has this compromised NORAD integration, or modernization? Do you think it will impact the integration?

Peter Bates:

- No. You cannot parse DND out of aerospace defence if we are serious about combat. We need to focus on the aerospace part of the aerospace command. I think it is really important to consider as Canada continues to move forward but it is well understood that it is more than just a fighter the threat is just much more complex. You need a range of mobile and fixed infrastructure. You need an integration of different systems and branches of the military--truly integrated missile defence is vital.

Given the current picture does Canada need to rely more on the US for defence?

Col (ret'd) Brett Boudreau:

- We need to rely on ourselves to do better and build better capacities. We can do better we do not need to rely on anyone else to do better. We cannot rely on anyone else to tell our stories. We do not do a good job in sharing what we do. We need to change the communication model. With more context perspective we can know more about what we need what we do and why we need assets. The US is undergoing its own issues we are not the only ones struggling with how to respond to this space. This becomes more critical.



Panel 5 – Enhancing Canada’s Northern Defence Infrastructure: Partnering for Success

Doug Beaton – Director Government & Defence, Business Development, Frontec

Marilyne Parent – Civil and Geotechnical Engineer, WSP Canada

Moderator: BGen (ret’d) Dan MacIsaac – Associate Consultant, CFN

Marilyne Parent:

- There are various challenges in building in the north. The first topic was about the geographic consideration. When we think of the north we think about climate change, we always have to think about permafrost melt. If you build infrastructure on ground that used to be frozen, and now it is not it creates unstable infrastructure. Differential settlement is hard to maintain and is very expensive.
- It is not just climate change having an impact on permafrost, we also need to think about what construction is doing to the permafrost. Is it changing the temperature, or overloading the soil, which raises the question of how can construction have a lower impact on the environment. In the South we try to keep the ground warm in the south we need to keep the ground frozen. Just having to think about location will help us lower the costs in the future.
- The second point is partnership with locals is based on knowledge. They know the land more than we do and what their common issues are and what they are facing from community to community.
- The cost of construction is 15x higher than in the south as we have to fly in and fly out specialized labour and equipment, food and accommodation is also more expensive. The northern construction window is in the winter in order to keep the ground frozen, and dark and cold weather increases the cost and complexity of the construction project. The lifecycle of construction in the north we design for 25 years because it is high risk and we do not know how climate change is going to work. We have seen infrastructure not even lasting 25 years. So, it is not only expensive to produce but also because of the significantly shorter lifecycle.

Doug Beaton:

- Put the focus on the relationship side; forming a joint venture was a natural thing because we had already done it in oil and gas. As TRC continued to evolve the government continued to stand up and work it into a complex program with many moving parts. It gives the program a very unique position in the military context. There are no military uniforms past north bay. There are true and real Inuit benefits that are shared through the program. This is one area it takes great pride to contribute the security and defence of North America. This is a weapons system, but it is also part of the communities and families of the north.



- Partnerships take time, effort, and commitments. You cannot do fly in and fly out commitment. It is important you understand what is going on in different communities to have an impact. D&D can have a positive impact on the communities. The key thing is communication at the leadership level. What we do today will reflect in the years and generations to come. We want to ensure the military has a positive presence in the North.
- The other aspect on engagement is that it must be sincere with a willingness to follow through. You must plan to be engaged you cannot just show up. There are different realities in different communities and resources in different areas of Canada.
- There really needs a pan-arctic solution by the Pan-indigenous people in terms of a pan-weapons system. It is very much looking at our partners and how we are able to listen and learn and at the same time being able to turn around to provide value and how that all works.

Do you see any opportunities to leverage existing dual use infrastructure, with northern communities or businesses already operating? How can we do this better?

BGen (ret'd) Dan MacIsaac:

- The nature of air power is how you are going to project it. And how you can provide for the tier two services. It will take great analytics and you must do that work in detail. How can you head into true agreement? If there is new infrastructure you need to take in the realities of the situation. The community may not need or value what you want to drop in on the community.

Panel 6 – Modernizing Command and Control to Allow Digitally Enabled, Pan-Domain Informed Decision-Making

Guillaume Côté – Principal Strategy, Global Strategy, Mission Systems, Collins Aerospace

Col Donald Saunders – Director NORAD Forward Element, NORAD

Omar Rashid – Regional Lead for North America, Microsoft

Moderator: BGen Sean Boyle, Deputy Director General Continental Defence Policy, Department of National Defence

Talking about command and control what are some of the challenges do you see?

Omar Rashid:



- The speed is the number one thing keeping us awake. There are two things that are going in the collective favor of all of us. Increasingly the challenges are going commercial. Not bespoke or custom because special is costly but commercial programs and applications are being applied. Start on the low side and test on the low side.

Guillaume Côté:

- There is also the intent to go faster there is a willingness to modify. At the core at each of the project is about linking assets together. It is linking those capabilities together and legacies capabilities together. We are not there yet and it something I am a bit worried about it. When we think about procurement in Canada we tend to think about platforms and then requirements and I am not sure this paradigm is going to lead us to significant changes with respect to NORAD modernization. It is not going to be one solution that we can plug and play that will solve the solution. We need to think of it as a system of systems. While we are focusing on the gaps and what things will cost. We are not thinking about the programs and policy about what we need to find the solutions.

Do you see there being a challenge integrating as Canadians once there is a policy coverage? Do you see us having a unique command and control network or are we going to be integrated into a larger system of commands and controls?

Guillaume Côté:

- There has been a lot of experiments on convergence on linking together But they are advancing still. I do not think we should be afraid of starting small and slowly progress towards a solution with respect towards our challenges and the forces that we have. A series of scenarios that are unique to Canada and I am not suggesting we should use a copy-paste with the US but we need to be able to work together.

Omar Rashid:

- We do not need to re-invent the wheel; we have invested in data centers in Canada. The question is what the data-sharing looks like and how do we make sure we retain data sovereignty.

BGen Sean Boyle:

- We need to consider data and data sharing as strategic assets. You cannot deter and cannot defeat what you cannot detect.

How do you see JAGC2?

Colonel Donald Saunders:



- I think NORAD is very invested in JAGC2 speed and time are key. JAGC2 is a way to increase space and time. May not be defeat options but still. Four priorities Domain awareness, he's advocated by range of capacities, polar communications, second information dominance awareness, secure cloud technology and leveraging machine learning in order to make sense of data coming in. Third is decision superiority, generating faster decisions to be able to effect detour competition defeat in conflict and deescalate in crisis. Fourth is global integration, there is no more regional conflicts so when you look across the different US combat commands there are gaps because they are not integrated, this means there is competition for resources and there is nobody to adjudicate the resources.

Are there any particular elements of JAGC2 that have implications we could take advantage of from a Canadian industry perspective?

Guillaume Côté:

- I think it is important to recognize what we are good at in Canada and start from a place of expertise. There are a few niche technologies that we are really good at in Canada, and I would focus on that. Second, I would look at those existing technologies that we can integrate here and would help contribute to Canada having the same operating picture as the united States and then we can work on multilayered solutions.

Omar Rashid:

- Canada is a leader in AI. We cannot get enough for those people; we need more of Canada's thinking in this space and not less of it. The fabric is there we have a great AI model what that means now is that as is moving from object recognition to being multipurpose, allowing us to reduce time to make a decision. Then again bringing in the Canadian ingenuity is spending time on ethics and why I am such a big believer in small projects to test it out. Do we understand it fully? When I think of all the researching being done in the country let us see more of that, it can show who we are as well.

Communication is an essential element, but the escape polar program was identified in 2009 as a high priority program it is planned to be fully operational in the 2037 and I was wondering what is doing done in terms of secure broadband connection in the Arctic to support operation as well as all domain awareness.

BGen Sean Boyle:

- We are aware of the challenges, and we are aware of the timelines but I cannot speak to any specifics about this. We need to be able to communicate in the Arctic.



I am curious about your thoughts on data integrity, as the mission of the future will be about integrity and redundancy?

Col Donald Saunders:

- It is foundational. As soon as there is doubt in the system it is compromised or not trusted.

Omar Rashid:

- The entire Five Eyes alliance is based on trust and there is a lot of data movement. So in my view, we need to make sure our cyber defenses are at par with our allies. If they do not trust us how can we do joint missions, I think it is a very important question.

Panel 7 – Improving Pan-Domain Continental Situational Awareness

Dr. Jessica West – Senior Researcher, Project Ploughshares

Kristen Csenkey – PhD Candidate, Balsillie School of International Affairs and Fellow, Canadian Global Affairs Institute

BGen Chris McKenna – Director General Air and Space Force Development, Royal Canadian Air Force

Moderator: Dr. David Perry – President, Canadian Global Affairs Institute

Is there a difference between NORAD modernization and RCAF modernization? What part of the RCAF does not relate to continental defence?

BGen Chris McKenna:

- We use the language that NORAD modernization is RCAF modernization. NORAD modernization is a larger umbrella that RCAF fits into. Whatever investments are approved for NORAD modernization will have a profound impact on RCAF.

Thinking about the air domain, can you elaborate a little bit in terms of enhanced surveillance?

BGen Chris McKenna:

- If you look at the way that our past is quite focused on the continent it is not just a defence mission that aircraft will be able to look for a lot more such as ice and wildlife.



Space has been identified as a key capacity for Canada. What do you see about the space-based system to improve our understandings and how can it benefit civilians in the north?

Dr. Jessica West:

- I believe we do not do enough space in Canada. In pan-domain awareness space is vital. If we are talking about having a safe, secure, defensible arctic we need space and space surveillance. In an area that has a lack of land space infrastructure space becomes incredibly important. Almost every single indicator of climate change is best done in space using different types of surveillance capacities. If we are talking about civilian uses, we need to talk about capacity for use, we need to better about capacity building so that we can use space-based data.

What are the opportunities do you see in enhancing situational awareness in regard to cyber?

Kristen Csenkey:

- I frame the idea of cyber governance through global governance frameworks. When I say cyber security, I mean more than just the technologies but also the creators, the people who use the technologies and the people who are impacted by the technology. When we are talking about continental defence perspective it is not necessary a Canada problem, it is a Canada problem, but we need to view it through a collaborative lens. It is also the idea that sometimes technology does not solve a particular problem. There are some technologies that we cooperation on, from public sector actors, academia, and defence sectors. We need to remember the human factor in this, the expertise factor.

What does the digitization for the RCAF broadly look like?

BGen Chris McKenna:

- Our needs are extremely immediate. RCAF has a bit of a digital insurgency right now so there has been a bit of a move to work on app development. Looking at how digitization works on a day-to-day life of people within RCAF. We are continually pushing for digitization. A question that has really emerged is what are the security requirements we need to have to be in this space? This is what we are investing in because we have highly secretive data but also recognizes the need for data to be available.

From the NORAD perspective, you have a mix of fleets, the US, thinking about the continental piece how do you balance the digitization piece but also the inter-operatable capabilities?

BGen Chris McKenna:

- You need to be cognitive of where the data is imbedded. As long as you make yourself plug-able into the structure you are doing good. We have a bit of work to do internally and how to bring everybody up at the same time. There is a big focus on how data gets managed.



Are there policy and treaty considerations for space-based technologies or is it a broader policy issue?

Dr. Jessica West:

- I think that this is a key point. It is not just what space gives us, but we also need to pay attention to potential spill over from other domains. There is a gap in conventional uses of space. We talk about peaceful uses of space but do not talk about the non-peaceful uses of space, and that is a conversation that continues to this day. There is concern about the weaponization of space. The most pressing threats are not things that go boom but the ones that do not go boom, also known as cyber. Space is changing into an operational domain of military activity, mostly this is talked about interoperability which is fair game. We have been talking a lot about dual use today, and this starts to introduce a bit of messiness, so you have to start thinking about Canadian citizens who are dependent on space based critical infrastructure.

Thinking about the blurring between defence and critical infrastructure how do we think about that in a defence of the continent perspective? Should we be thinking about a governance framework?

Kristen Csenkey:

- Sometimes when we are thinking about dual use, we think about it in a linear binary way and this discussion comes up when we talk about critical infrastructure but when it comes to critical infrastructure and the layers that are included of that, it becomes who has the authority. It is not just between the private sector operator and the one particular government department it is also a wholistic approach in protection of critical infrastructure and how it should look like. It is a long-term process that needs to reconfigure old ideas and roles.

Having arctic capabilities requires a long-term investment, can you talk about the trajectory of the RCAF about the ability to operate in the Arctic?

BGen Chris McKenna:

- The investment of a tanker to drag aircraft into the arctic is incredibly important. To get there and stay there and be persistent having a tanker is required. The infrastructure piece is enormous and incredibly expensive. The thing that is really missing in the arctic is communications, we are using old, outdated technology. Canada is investing this, and this is a niche Canada can offer.

One of the investment priorities is R&D and innovation, are there particular R&D innovations in the cyber/space world?

Kristen Csenkey:



- When it comes to focus on a cyber R&D and new arrangements, I think there has to be an understanding that we are not just going to cooperate on an issue. We need to make sure we keep Canadian expertise in Canada. We can be focusing on high tech, but it is also the expertise, it is not that we are going to put money into a particular technology, but it is actually fostering the expertise and that there is a long term vision for what the R&D investment looks like.

Dr. Jessica West:

- I think there is such a dearth of basic capabilities that can operate in the Arctic, so I think anything Canada can develop is ripe for sharing. Space is an area where we can work with allies, and specifically in the Arctic capabilities can be used as key leverage.

What is your opinion of the emerging role of individuals in defining the space landscape? What the points of tension, friction, cooperation?

Dr. Jessica West:

- For a long time, the focus of space was democratization, but the commercial space race is more about privatization. This raises questions about who owns space and who has access. It is not a black and white issue. The nature of the private sector is changing but the regulations are the same.

About the Author

Nicole Covey is a PhD student at Trent University in the Canadian Studies Program and the proud recipient of the 2022 WiDS-CGAI Fellowship. She is a Graduate Fellow at NAADSN (North America and Arctic Defence and Security Network) co-lead of NAADSN's new Emerging Leaders Node. Nicole has her BA in Political Science from the University of British Columbia and her MA in Political Studies from the University of Manitoba. Her research interests focus on Arctic Geopolitics, Defense and Security Studies, and Canadian Foreign Policy.

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