

THE PLOUGHSHARES MONITOR

VOLUME 44 | ISSUE 1

SPRING 2023

The Chinese balloon

How it reflects
the security dilemma
in outer space

UKRAINE CRISIS
Questions riddle the path
to peace

MILITARY AI
And civilian protection

CANADIAN ARMS EXPORTS
Top suppliers to the U.S.
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NOBEL PEACE PRIZE
The fight for human rights

Q&A
Talking AI in the
Netherlands

HOPE IN THE FACE
OF DISASTER
Reflections on the Nuclear
Weapons webinar series



*"and they shall beat their swords into ploughshares,
and spears into pruning hooks; nation shall not lift
up sword against nation; neither shall they learn war
any more." Isaiah 2:4*

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Cover photo: A U.S. Air Force pilot looks down at the suspected Chinese surveillance balloon as it hovers over the central continental United States on February 3, 2023. *Public Domain photo courtesy of the U.S. Department of Defense.*

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Volume 44 | Issue 1

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The Ploughshares Monitor is the quarterly journal of Project Ploughshares, the peace research institute of The Canadian Council of Churches. Ploughshares works with churches, nongovernmental organizations, and governments, in Canada and abroad, to advance policies and actions that prevent war and armed violence and build peace. Project Ploughshares is affiliated with the Kindred Credit Union Centre for Peace Advancement, Conrad Grebel University College, University of Waterloo.

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From the Director's Desk

Questions riddle path to peace for Ukraine



Written by Cesar Jaramillo

Debates about the root causes of the war in Ukraine, the positions and strategies of both sides of the conflict, and possible scenarios going forward are not heard only in the arenas of politics, diplomacy, and military strategy. They dominate social discourse, sometimes becoming emotional and charged, even hostile and personal. Project Ploughshares' call for a negotiated settlement has received some fierce, even rude, pushback. Our stand has also received encouraging support from people we respect.

A military path to peace?

Almost all Western states, including Canada, have denounced Russia's illegal invasion of Ukraine and stand in solidarity with Ukraine, offering military and humanitarian aid. A significant segment of public opinion in the West approves of this aid and wants it to continue until Ukraine achieves a decisive military victory.

But will such support for Ukraine lead to peace? Can it, in the face of Russia's oft-stated determination not to back down? The current scenario seems to promise only an indefinitely prolonged war in which more people will die and suffer, while the spectre of nuclear escalation grows.

Exploring all avenues to end the war

Russia's aggression has upended the rules-based international order, adversely impacted civilians, and created the gravest international security crisis in decades. But this acknowledgement is not incompatible with our call to end the fighting.

Project Ploughshares believes that the immediate goal of the international community should be to stop the carnage and minimize nuclear risks. After that, all stakeholders should work to create the conditions in which all areas of disagreement, including the complex issues at the heart of the current conflict, can be addressed – at the negotiating table. The resulting settlement will not involve unilateral concessions but compromises by both sides.

Critics of our position equate it with acquiescence and reject the idea of compromise. But this is how most wars since World War II have ended; decisive military victories have become exceedingly rare.

Some supporters on both sides pin their hopes on other wished-for scenarios. Perhaps internal Russian dissatisfaction will lead to President Putin's overthrow and Russia's withdrawal from Ukraine. Perhaps the West will lose interest in supporting Ukraine and Russia will win the war

Achieving peace in Ukraine

On February 25, *The Globe and Mail* published a two-page spread entitled "How does the war in Ukraine end?" to mark "the anniversary of Russia's invasion." Responses of six writers were published in the print edition; a few more could be found online. One of the responses found both online and in print was by Ploughshares Executive Director Cesar Jaramillo. The title: "A negotiated settlement is the only path to peace in Ukraine."

Why not let the battlefield determine the outcome? Cesar said this: "The dogged pursuit of an ill-defined 'win' for either Russia or Ukraine will not only prolong the war and increase human suffering – it will heighten the risk that nuclear weapons will be used." He ended with these words: "A negotiated settlement is a sensible and realistic approach to ending the war. Efforts to stop the carnage would not constitute a surrendering of principles, but a triumph for humanity, diplomacy and pragmatism. It is high time to end the war in Ukraine."

Cesar's piece generated significant comment. Some was negative, accusing Cesar of being naïve, misguided, and a supporter of Russia. (The last is easily disproved; Ploughshares has consistently condemned Russia for invading Ukraine.)

But his views also got important support from long-time peace warriors who are the opposite of naïve and were eager to email congratulations and words of support. Cesar was praised for his support of a global security agenda and a settlement that did not favour one side. The very real danger of nuclear catastrophe was raised. And several agreed that the issues and concerns that Cesar raised could not be settled on the battlefield. After the guns stopped, all the same problems – along with some new ones – would remain and a negotiated settlement would still be necessary.

We invite all who agree AND disagree with the views expressed in Cesar's brief essay to learn more about how Project Ploughshares defines and works for peace by going to www.ploughshares.ca.



and take substantial Ukrainian territory. But is the world right to base global security on such wishful thinking?

What does a win look like?

Putin's objectives remain ambiguous to Western observers and perhaps even within Russia. But are those of Ukraine any clearer? Victory could mean the end of Russian attacks on Ukraine. It could mean the expelling of Russian forces from recently and illegally annexed Ukrainian territory but could also mean going back to pre-2014 borders and retaking Crimea. It could mean inflicting a humiliating military defeat on Russia and then putting Russian leaders on trial for war crimes. Which objective is the arming of Ukraine meant to achieve? What is the time frame? When do the losses of life and increased

nuclear risks become too high?

The role of nuclear weapons

The war in Ukraine underscores the fragility and grave perils of nuclear deterrence in practice. Although Ukraine has no nuclear weapons, Russia does, as do three NATO supporters of Ukraine. But this game of chicken, which raises the real possibility of global catastrophe, is the inevitable result of nuclear weapons possession.

The optics of "rewarding" Russia with negotiations, despite its threats to use its nuclear arsenal, irks both Ukrainians and many of its supporters. The odious reality, however, is that sometimes nuclear deterrence does work. Our highlighting the fact that there are circumstances under which Russia would consider resorting to its nuclear arsenal is definitely not an en-

dorsement of so-called nuclear blackmail, merely a recognition of the implications of nuclear deterrence doctrine.

Questions about military aid

Project Ploughshares recognizes the role that military aid has played in Ukraine's ability to resist the invading force and could play in strengthening its position in negotiations, and we acknowledge the well-deserved solidarity of many suppliers of that aid with Ukraine. Still, we consider it critical and highly relevant to ask questions about the implications of arms transfers, not just for certain arms control regimes, but for the direction that the armed conflict might take.

In February, reports first surfaced that China might consider authorizing the transfer of lethal weaponry to Russia. This move, which Western leaders have already cast as dangerous and provocative, only makes confronting the impact of arms transfers on the Ukrainian conflict and its resolution more urgent. Interestingly, NATO members have repeatedly insisted that their unprecedented provision of military air to Ukraine does not imply direct involvement in the conflict. Will China take the same line? Will the rest of the world accept this interpretation?

The path to global peace

Many of the negotiation processes set up to resolve conflicts around the world have been strongly opposed. I was reminded of this fact after I received this comment in response to a recent editorial I wrote, calling for a negotiated settlement to the Ukraine crisis:

I would like to ask Cesar Jaramillo a simple question. If it was his country being invaded and dismembered, its cities bombed and turned into ruins, its peaceful citizens killed and maimed, its women raped, etc. etc., would he still be calling for peace and negotiated settlement?

My answer: Yes. I was a strong supporter of peace negotiations between the government in Colombia (my country of birth, with which I maintain deep connections) and the FARC guerrillas. While there are many differences between the Colombian and Ukrainian contexts, in each case the very idea of negotiating with the enemy was mired in controversy.

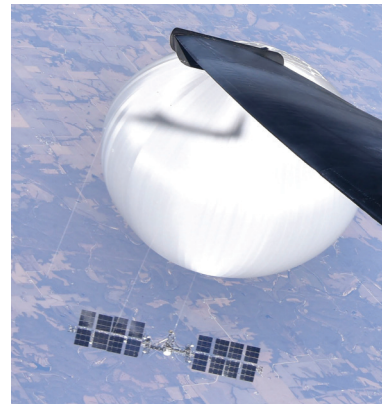
Colombian president Santos was accused of appeasing the guerrillas, acquiescence, and capitulation. Many called for the government to continue fighting until a military victory – elusive for more than half a century – was achieved. But President Santos recognized that military victory was not in the cards, and that the costs of prolonging the war were greater than the compromises that needed to be made to achieve peace. He went on to be awarded the 2016 Nobel Peace Prize.

Project Ploughshares will continue to develop and share positions that are informed by a clear desire to reduce human suffering, a pragmatic approach to reducing nuclear risks, and a strong belief in the benefits of negotiations as an alternative to armed conflict. We will do so unapologetically, with a view to end brutal and costly wars, such as the one in Ukraine. □

Cesar Jaramillo is the Executive Director of Project Ploughshares. He can be reached at cjaramillo@ploughshares.ca.

Chinese balloon reflects security dilemma in outer space

Written by Jessica West



The recent saga of a Chinese balloon drifting over Canada and across the United States captured the public imagination, leading to speculation, suspicion, and shots fired. It also provided ordinary people with a rare glimpse into growing and generally hidden-from-view security dilemmas.

In the saga of the meme-worthy balloon, we see a familiar plot about poor governance and deteriorating security relationships among states. We see some states pushing against the boundaries of law and testing the tolerance of other states. This is a dangerous game, which can easily devolve into crisis. And it plays out almost every day in outer space.

Unidentified flying objects

The intentions behind the 200-foot blimp, first spotted over North America on January 28, were not immediately known; nor were its capabilities and purpose. Was it an errant civilian “weather” balloon, as China later stated? Or was it conducting intrusive military espionage that flagrantly violated the national sovereignty of at least two states? Was it performing dual functions? Was it armed?

Speculation ran wild as the flying object hovered over sensitive military sites in Montana before making its way to the east coast. As it travelled across the continental United States, China remained largely silent. Then the United States, describing the object as a surveillance balloon and citing China’s “irresponsible act,” had it shot

down and the incident escalated into a major diplomatic spat. China described the U.S. response as “overreaction.” Tensions between the two countries heightened.

Days later, fighter jets shot down three other objects over both Canada and the United States, out of “an abundance of caution.” At that time, it was not clear if any of these objects were related to the Chinese balloon. Once again, this lack of transparency has produced a slew of speculation and suspicion.

A similar lack of transparency is also heightening tensions in outer space, although, thus far, incidents have not received much attention from media or the public. Nor, so far, have we seen objects shot down by adversarial actors.

Close encounters

Although most satellites operate in stable and predictable orbits, a growing number of states have launched objects that approach and follow foreign satellites without notice or explanation. Some are part of publicly described surveillance programs such as the U.S. Geosynchronous Space Situational Awareness Program (GSSAP), while others are unacknowledged. Operators of stalked spacecraft can only speculate on the intentions and capabilities of the intruder. This lack of transparency raises tensions and increases the chance of serious crisis escalation.

Multiply one Chinese balloon by thousands of satellites travelling at roughly seven kilometres per second and the significance of the danger

becomes apparent. The risk is amplified because satellites provide critical military and civilian services that range from command and control over nuclear weapons systems and the early warning of missile launches to the timing and navigation capabilities that underpin civilian air traffic, banking systems, and electricity grids.

A satellite that follows too closely and accidentally or deliberately collides with another would damage more than that one satellite. The collision would result in debris contamination that could harm or even destroy many other spacecraft. The potential for widespread disruption of essential services on Earth that depend on space-derived data and services is real and growing as more and more satellites are launched into crowded space lanes. In such a situation, it is not hard to imagine an escalation to military confrontation.

How are space operators to respond to possible threats while minimizing safety risks and conflict escalation? What rules should be used to interpret abnormal or seemingly threatening behaviours and inform an appropriate reaction? The procedures were not obvious in the case of the Chinese balloon and its successors over North America. Best practice is even more uncertain in outer space.

Clarity needed

The law seemed clear in the case of the Chinese balloon, even if little was known about its capabilities and the intent behind its flight. Its presence in sovereign American (and Canadian) air space was in clear violation of international law; on this basis, the United States validated its decision to shoot down the balloon over U.S. coastal waters. The same rationale governed subsequent intercepts of other objects over the United States and Canada.

But even in what was billed as a clear case of sovereignty violated, a dispute arose. China, sticking to the weather balloon narrative, pointed to norms pertaining to civilian overflight. It should be noted, however, that overflight rights must first be requested and granted – and were not. It is also the case that China frequently denies such rights to others.

If international law is open to interpretation when applied terrestrially, the rules that apply

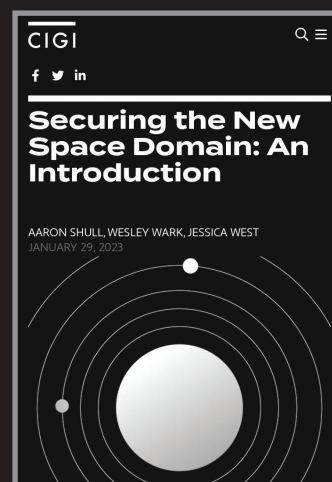
to human activity beyond Earth are even murkier. While states retain national jurisdiction over – and responsibility for – the objects that they launch into space, there is no equivalent of sovereignty over orbital space. Instead, space activities and objects are governed by the principles outlined in the Outer Space Treaty (OST) and by other sources of international law.

These principles are broad and often poorly defined. The strongest legal principle is the right of all states to access and use outer space for peaceful purposes. Other key OST concepts include due regard and harmful interference, both of which relate to relationships with other space objects and operators. Provisions in the United Nations Charter pertaining to the use of force and self-

Local collaboration on cybersecurity and outer space

As a senior fellow at Waterloo-based CIGI (Centre for International Governance Innovation), Ploughshares Senior Researcher Dr. Jessica West has made significant contributions to their current online essay series *Cybersecurity and Outer Space*. A co-editor, she also co-wrote “Securing the New Space Domain: An Introduction,” with Aaron Shull and Wesley Wark; and authored “Where Outer Space Meets Cyberspace: A Human-Centric Look at Space Security.”

Also on the CIGI site you can find an article co-written by Jessica and Wesley Wark entitled “Ukraine Offers an Ambitious Vision for Global Cybersecurity.”





U.S. sailors recover portions of the Chinese balloon off the coast of Myrtle Beach, South Carolina, on February 5, 2023.
Public Domain Photo

defence apply to outer space, but the parameters of such provisions have not been clearly established. There is little guidance in how to respond to objects that approach too closely, or even in determining what counts as “too close.”

A clear international agreement on how these laws are to be applied in practice, and to what activities, is urgently needed.

Reducing space threats

The same week that China’s balloon was spotted drifting over North America, the United Nations Open-Ended Working Group on Reducing

Space Threats held its third round of discussions. The intent: to develop the sort of clarity discussed here. The discussion touched on many of the same challenges revealed by the balloon: applying general laws to specific activities, dealing with inadequate transparency and communication processes that fail to clarify and verify intentions and mitigate misperceptions, and grappling with the growing perception of often ambiguous threats.

The Working Group has been generating proposals to mitigate both the ambiguity of space activities and their intent, in an effort to avoid incidents like the January Chinese balloon event if

Reporting from the OEWG

Dr. Jessica West attended the February meetings of the UN Open-Ended Working Group on Reducing Space Threats in Geneva, Switzerland. While there she live-tweeted the interactive discussion among states. These tweets can be found on the Project Ploughshares Twitter account.

Jessica was also featured in “Space Café Radio – at the UN OEWG – with Dr. Jessica West and Victoria Samson,” broadcast by SpaceWatch.Global.



at all possible, or at least to resolve such incidents peacefully. Under consideration: prior notification of close approaches or other unusual manoeuvres in space, better access by all space actors to space situational awareness data, the identification of points of contact and the establishment of direct communication links between operators, and the identification of specific activities that are best avoided to prevent misunderstandings and threat escalation.

The OEWG discussions can seem far removed from daily life. However, viewed after our experience of a mysterious balloon, they take on a greater sense of both practicality and urgency—for much of the world, anyway. It must be acknowledged that both Russia and China view

this process as hot air. They prioritize a new legal agreement to ban “weapons” and “the use of force.” Although a worthwhile effort, there are limits to this approach in an era of hybrid activities and dual-purpose technologies, particularly in the absence of greater transparency.

Of the utmost importance in our efforts to preserve the outer space domain for peaceful purposes is the need to fend off a shooting war that turns outer space into a battlefield, whether intentionally or not. We must develop and implement tools that bring clarity to both space activities and the rules that govern them. Otherwise, we risk close encounters of a dangerous kind. □

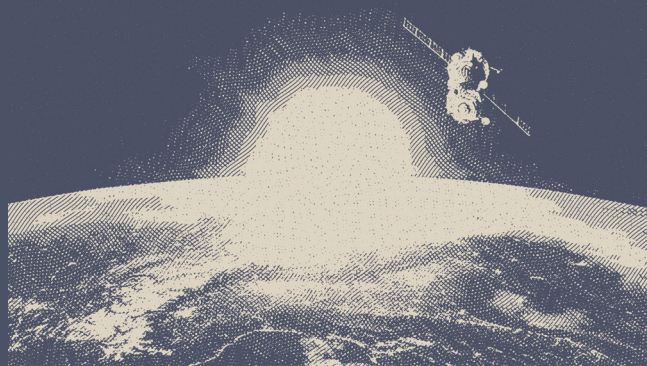
Jessica West is a Senior Researcher at Project Ploughshares. She can be reached at jwest@ploughshares.ca.

Keeping the peace in outer space

Last December, Ploughshares Senior Researcher Dr. Jessica West was a panelist in a webinar series, *Armed Conflict in Outer Space: Legal And Geopolitical Implications*, conducted by the McGill University Institute of Air & Space Law. Also on this panel, entitled *The Use of Satellites in Armed Conflict: Legal and Geopolitical Implications*, was Gilles Doucet, President of Spectrum Space Security Inc., who explored the convergence of civilian and military uses of space. He has collaborated with Jessica on significant research reports. The most recent, *A Security Regime for Outer Space: Lessons from Arms Control*, was posted on the Ploughshares website last October.

As other panelists noted, since the 1950s, the concept of the peaceful use of space has allowed for certain military functions. It is the norm for satellites to perform a variety of support functions for terrestrial military operations, including navigation, communication, surveillance, tracking, and remote sensing.

However, Jessica noted that satellites are becoming involved in more activities in which the application of law is unclear or not agreed upon and there are no established norms. She cited cyber activities. As well, some norms, like testing anti-satellite capabilities that produce space debris, are not good norms and need to be changed.



As Jessica explained, more work is needed to prevent conflict in space and to protect the space environment and civilians on Earth. Factors needed to maintain space as an environment for peaceful activities include more institutional hardware, sharing of knowledge and objectives, and hard limits on certain activities.

Jessica commended the approach of the UN Open-Ended Working Group (OEWG) on space security, because it considers both laws and norms. While international law clearly applies to space, it is not clear if international humanitarian law does. This is but one of the questions that the OEWG must confront.

Fortunately, Jessica has been attending the meetings of the OEWG and producing detailed and insightful reports, so Ploughshares readers will be aware of the latest developments. All the reports mentioned here, along with others on outer space security, can be found on our website; go to Research → Reports.

Talking AI in the Netherlands



In mid-February, Ploughshares Senior Researcher Dr. Branka Marijan participated in the first global Summit on Responsible Artificial Intelligence in the Military Domain (REAIM 2023) in The Hague. She both created and moderated one of the conference panels. The story of how she came to be there sheds light on the role of Project Ploughshares on the international stage.

Wendy Stocker: Readers of the *Monitor* are used to reading about Ploughshares staff at meetings of various United Nations groups and gatherings. Over the years, Ploughshares has also been active at meetings related to international treaties, including the Nuclear Non-Proliferation Treaty, the Arms Trade Treaty, and the Treaty on the Prohibition of Nuclear Weapons. But REAIM is a little different and novel and so, we believe, of particular interest to our readers.

Branka, why do you think that Ploughshares was invited to submit a proposal for a panel at REAIM 2023? What do you think the invitation and the acceptance of the proposal says about how the work of Project Ploughshares is viewed?

Branka Marijan: I had written a report on responsible uses of artificial intelligence (AI) by militaries two years ago. Ploughshares has observed the UN discussions on autonomous weapons for some eight years now.

The invitation was sent to organizations and individuals that were known to have followed this issue. I believe that the acceptance of our panel proposal reflects the regard in which our perspective is held. Even those with different

points of view like to engage with us.

At Ploughshares, we approach issues with nuance, conduct research with academic rigour, and communicate in policy-oriented ways. This “Ernie Regehr”-style approach, developed by Ploughshares co-founder and first executive director, has remained a key part of our organizational identity. Current executive director Cesar Jaramillo embodies this, as do Senior Researcher Jessica West and Researcher Kelsey Gallagher. I consciously work to develop this quality in my work as well.

If you watch Ploughshares staffers at events and discussions, you’ll see that we adopt a sharing approach. We’re open to new perspectives. We like to dig down and see the truths beneath the surface. We’re not big on ego and we love to collaborate. We build on our Canadian context – we might be the only Canadians in the room!

WS: You were at an event in Ottawa in January that involved the Dutch ambassador to Canada. Describe the event and your role in it, please. How was it connected with the event in The Hague?

BM: I had written a paper for the Centre for In-



In February, Senior Researcher Branka Marijan led a panel called “Known Unknowns and Military AI” at the first global Summit on Responsible Artificial Intelligence in the Military Domain (REAIM 2023) in The Hague. *Photo: Branka Marijan*

ternational Governance Innovation (CIGI) on autonomous weapons and CIGI invited me to the lunch-time event that it co-organized with the Dutch embassy to highlight some key trends in military uses of AI. I was one of two speakers at the event at the Rideau Club. Dutch Ambassador to Canada Ines Coppoolse gave the opening remarks. I was impressed by her sharp assessment of the role of emerging technologies.

The Ottawa event was one of many organized by the Dutch government ahead of the REAIM summit. I think that the Dutch model is a great example that Canada could use to take on a leadership role in regulating emerging military tech.

WS: I’ve read the Ploughshares annual reports (available on our website) and I know that our budget is finite. I’m guessing that travelling to the Netherlands isn’t cheap. Were you offered any financial support?

BM: We always look for travel support; most of our trips are funded with grants or by event organizers. In this case, the event organizers provided the venue and audio-visual support but did not cover my travel, lodging, or food. However,

serendipitously, the focus of this summit related to my research project on emerging technologies and the great power competition, which is supported by a grant from the MINDS program of the Canadian Department of National Defence. The summit helped me to move this project forward by highlighting key issues to explore. And so we were able to use funds from the grant to support my attendance.

WS: Tell me a little about the summit.

BM: The summit was spectacular! Well organized and sophisticated, it brought together leading experts on military applications of AI. Crucially, the summit aimed to bring attention to our concerns about deploying technology that might not yet be ready for the battlefield and, in some cases, should not be used at all. I listened to as many panels as I could, with some sessions held concurrently.

Perhaps my favourite was the discussion on shared challenges in civil and military AI regulation, because clearly AI technologies are multiuse. Defence applications bring heightened concern but there are some shared challenges in the civilian sector that also need to be better un-

The city of international peace and justice

Before the summit itself, I gave a lecture at the Leiden University Hague campus on future warfare and civilian protection. After, I had time to walk around The Hague, which is known as the city of international peace and justice.

The Hague has a special, if complicated, meaning for me as someone born in Bosnia because it was the site of the International Criminal Tribunal for the Former Yugoslavia, where the terrible atrocities that happened in the Bosnian war were brought to light. The distance – not only physical – between The Hague and Bosnia is symbolic of the distance Bosnia has yet to go to truly heal from a war that ended in 1995. I would love it if Bosnians could create new technologies, make wonderful art, and live in a society as prosperous as that enjoyed by so many in the Netherlands.

A highlight: I saw Rembrandt's masterpiece, *The Night Watch*, in Amsterdam and it is sublime. I highly recommend the museums of Amsterdam and The Hague, strolls along The Hague's streets, and a visit to the town of Leiden.



PHOTO BY BRANKA MARIJAN

derstood. Too often the security and defence applications of technologies are set aside as unique cases and not discussed more widely.

My panel was titled “Known Unknowns and Military AI.” It had superb panelists. Elke Schwarz is an Associate Professor of Political Theory at Queen Mary University of London. Lode Dewaegheneire is a military advisor with Mines Action Canada. Arthur Holland Michel is a Senior Fellow with the Carnegie Council for Ethics in International Affairs. I served as participant-moderator, tasked with linking together the points made by the panelists.

I think that we were able to convey clearly the numerous technical, legal, and humanitarian concerns of using AI technologies in defence applications. We stated plainly that even though some of the concerns are already well known, there is always a degree of unpredictability when deploying AI-enabled systems in volatile and dynamic contexts such as war zones.

We did descend into “doom and gloom” territory when talking about lagging regulation and the pace of technological advancement, but I think the audience was very engaged. We used a participatory software, Menti, and had a lively

Q&A that went well beyond the dedicated time. We were even praised for organizing a most engaging panel.

WS: What did you take away from the summit? How do you think that your work and the mission of Ploughshares will benefit from this trip?

BM: While I feel that this trip helped to build knowledge and capacity on military AI and will reinvigorate my work, I came away more concerned.

I went in thinking that there was wide agreement on the need to be creative in developing a multilayered governance framework to respond to challenges that AI will bring to warfare. However, all we heard were nice commitments with no specific solutions or roadmap.

The need to rein in and control the development and use of AI by militaries was not universally supported. Some of the scenarios presented in the plenary seemed to indicate that use of AI to carry out tasks such as selecting and engaging targets was inevitable, and even that it was irresponsible not to consider the need for

this application.

At the close of the summit, the United States released a framework for a Political Declaration on Responsible Military Use of Artificial Intelligence and Autonomy. The Dutch government presented the Call to Action agreed to by a number of states. Both documents feature important commitments but lack substance; the voluntary measures suggested don't respond to concerns about deployment of potentially harmful technology.

One of the conference rooms used during the summit was called Kilimanjaro. It hosted panels

on the need for regulation hosted by Automated Decision Research (ADR), a branch of the Campaign to Stop Killer Robots (to which Ploughshares belongs), and by PAX, the largest peace organization in the Netherlands. Dr. Catherine Connolly, with trademark Irish wit, noted that she hoped that the room's name was not indicative of the climb ahead of us.

I fear that the climb will indeed be steep and difficult. However, none of us can be discouraged or stop climbing. If we fail to achieve effective regulation of military AI, the consequences could be calamitous. □

Branka Marijan is a Senior Researcher at Project Ploughshares. She can be reached at bmarijan@ploughshares.ca.

An incremental transformation of killing machines, but civilians still at risk

In late February, Jen Kirby published a piece entitled "4 unanswered questions about the future of the Ukraine war" on the Vox website. Ploughshares Senior Researcher Dr. Branka Marijan was one of the experts who responded to "What has the Ukraine war taught us about conflict now?" She said:

"This is a war of incremental, not dramatic, transformation. I think everyone expected perhaps a transformation, or replacement of conventional warfare with new cyber means and using AI [artificial intelligence] and new technologies. What we're actually seeing is, all of that is happening alongside conventional warfare."



This summary reinforces the message found in two pieces that Branka published in late 2022, which debunk any claims that autonomous weapons will transform warfare any time soon.

Branka's essay *Autonomous Weapons: The False Promise of Civilian Protection* can be found on the Centre for International Governance Innovation's website, part of *The Ethics of Automated Warfare and Artificial Intelligence* essay series. In it, Branka cautions that "all claims about the direct and indirect impacts of [autonomous weapons systems] on civilians and civilian infrastructure must be carefully scrutinized."

Branka also published an opinion piece on the *Newsweek* website. Under the banner "Keep autonomous killing machines off our streets," she explains how police departments around the world are using AI-augmented technologies or are contemplating such use. While the police claim that these robots are only being used, and will only be used, in extreme situations, Branka shows that this is not always the case. While most current AI-assisted technologies are NOT "autonomous killing machines" and will never be weaponized, it is important to realize that many "can be weaponized."

Industry approaches to tech weaponization vary. Ultimately, Branka believes that local, national, and international policymakers must "try to prevent the most egregious weaponization." Otherwise, killer robots could "take us down a dystopian path that most citizens of democracies would much rather avoid."

Military AI and civilian protection

Written by Branka Marijan

While Branka was in the Netherlands, she delivered a lecture at the Leiden University Centre for International Relations in The Hague. Following is an edited excerpt.

The development of military applications of artificial intelligence (AI) has intensified in the past few years, especially since the Russian invasion of Ukraine, raising serious concerns about global stability and protection of civilians in war zones. There is no commonly agreed upon framework among states on which systems and uses are permissible and who is accountable for the effects of such systems and uses. In this time of current geopolitical upheaval, such a deficit is worrying. It is crucial that the protection of civilians and the retention of human control over key military functions, such as the selection of targets, be critical considerations in the development of any application of AI in military systems.

Current state of technology

There is evidence of diverse uses of AI by militaries in the war in Ukraine. While some applications assess battle damage and identify targets, others perform more mundane tasks, like predicting ammunition needs and determining if various weapons and systems need repairs. Interestingly, not only states but private companies such as Palantir are stepping in and providing the technology to the Ukrainian government.

Even before the Russian invasion of Ukraine there were instances of the use of AI in weapons platforms. A notable example is the use of

the Turkish-made Kargu-2 loitering munition in Libya. It is not clear if the Kargu-2 can function fully autonomously – independently of human operators – in selecting a target. But the Kargu-2, which has some machine learning and image processing capabilities, is a clear example of a current weapon system that incorporates AI. The Kargu-2 also shows us that such advanced tech is not restricted to major powers but can be accessed by smaller states.



An artist rendering of a Turkish STM Kargu kamikaze drone by Armyinform.com.ua is licensed under CC By 4.0.

State of governance

Given the lack of agreement on accountability for increasingly autonomous systems and the potential for proliferation, such technologies need to be regulated. The United Nations Convention on Conventional Weapons (CCW) has been exploring regulation for about nine years but has



Branka Marijan delivered a lecture at the Leiden University Centre for International Relations in The Hague in February. *Photo: Dr. Crystal A. Ennis*

made little headway, due to the actions of spoilers like Russia and the lack of political will of the most advanced militaries.

Still, interest in achieving regulation could be growing. This year there will be several events on responsible military AI or autonomous weapons. The next after REAIM 2023 is a regional conference in Costa Rica on February 23 and 24, and then CCW meetings in the first week of March. Luxembourg will host a conference on autonomous weapons from April 25 to 26. Other events later in the year are likely.

What next?

An international framework to bolster international humanitarian law is needed to regulate the ability of systems to select and engage human targets without meaningful control by hu-

man operators. The current lack of agreement could encourage some states to deploy and test

systems that are not ready for the battlefield, with unpredictable, possibly catastrophic results.

Harm could also arise from seemingly less direct applications of technology, such as the collection of vast amounts of data on civilians in war zones. For example, the Taliban-

controlled Afghan government now controls biometric databases of Afghan security and military personnel who assisted Western donor governments.

Currently, technology is outpacing regulation on military applications of artificial intelligence. However, there is still time to develop an international agreement that ensures the protection of civilians – if states have the political will. □

“ Given the lack of agreement on accountability for increasingly autonomous systems and the potential for proliferation, such technologies need to be regulated.

Top Canadian suppliers to the U.S. Department of Defense

(April 1, 2020 to March 31, 2022)



Written by Kelsey Gallagher

P rime contracts for many large-value Canadian exports and services are directly brokered by the Canadian Commercial Corporation (CCC), a crown corporation. The CCC not only sets the table for these deals but guarantees that the Canadian manufacturer will be paid the amount specified in the contract, and the foreign recipient will receive the services laid out in that contract.

Most of the awards tendered by the CCC relate to military goods. The United States is by far the largest consumer of Canadian-made weapons. As a result of the Canada-United States 1956 Defense Production Sharing Agreement (DPSA) and resulting programs, the CCC must directly facilitate all prime contracts for Canadian military exports to the United States valued in excess of 250,000 USD. Conservative estimates put the total annual value (including non-CCC brokered contracts) of all Canadian-made military exports to the United States at more than 1,000,000,000 CAD.

Assessing the data

The following table lists the top recipients of prime military contracts with the United States brokered by the CCC in fiscal years 2021 and 2022 (April 1, 2020 to March 31, 2022). Records were originally obtained via Access to Information and Privacy requests. Further information on relevant contracts was obtained through secondary sources.

Contracts were determined to be for military end-use after consideration of the nature of the supplier, the description of the contract, and information from secondary sources. According to CCC annual reports, the total value of military export contracts to the United States signed by the CCC in FY2021 and FY2022 was 921,000,000 and 868,000,000 CAD, respectively.

During the period under examination, the CCC also brokered contracts for military goods for other end-users, including Saudi Arabia, Morocco, Chile, and Ukraine.

Top Canadian Suppliers of Military Goods to the United States

SUPPLIER	SUM OF PRIME CONTRACTS (FY2021-FY2022)*
Ultra Electronics TCS Inc. (#1)	\$280,560,095
Wescam Inc. (#2)	\$240,456,780
General Dynamics OTS - Canada Inc. (#3)	\$235,272,164
General Dynamics Land Systems - Canada Corp. (#4)	\$182,310,627
Emergent BioSolutions Canada Inc. (#5)	\$56,045,979
Indal Technologies Inc. (#6)	\$52,980,612
Lockheed Martin Canada Inc., Commercial Engine Solutions (#7)	\$50,247,488
General Dynamics OTS - Canada Valleyfield Inc.	\$49,561,520
AirBoss Defense Group Ltd.	\$39,166,864
Patriot Forge Co.	\$35,744,200
Cascade Aerospace Inc.	\$30,536,563
General Dynamics Mission Systems – Canada	\$30,042,672
EMS Technologies Canada Ltd. (SATCOM Division)	\$29,110,194
Rolls-Royce Canada Ltd.	\$25,702,456
Canadian Helicopters Ltd. (East)	\$25,513,196
MTU Maintenance Canada Ltd.	\$25,390,630
CMC Electronics Inc.	\$22,028,873
StandardAero Ltd., Winnipeg	\$20,723,916
MDA Systems Ltd.	\$16,792,774
3M Canada Co.	\$14,393,359

* All values in Canadian dollars

1 Ultra Electronics TCS Inc.**

A subsidiary of the British company Ultra, Montreal-based Ultra Electronics TCS Inc. is a major manufacturer of components and subsystems used in maritime, aerospace, and electronic warfare applications. Its largest contract during the period under examination was for \$145,000,000 with the U.S. Naval Information Warfare Systems Command. Under this contract, Ultra is providing work

and support on the Amphibious Tactical Communications System, the new line-of-sight shipboard communications suite for the U.S. Marine Corps. Ultra will supply its Orion X500 radio systems, as well as spare parts and engineering services.

2 Wescam Inc.

Wescam Inc. produces electro-optical/infrared (EO/IR) surveillance and targeting imaging sen-

sors used on Uncrewed Aerial Vehicles (UAVs), fixed-wing and rotor-wing aircraft, ground vehicles, and maritime vessels. It is one of the best-known EO/IR suppliers in the world, boasting that it has exported its MX-series of sensors to more than 80 countries.

During the period under examination, Wescam Inc. won several high-profile contracts with the U.S. Department of Defense (DoD), including a \$70,000,000 award to supply EO/IR sensors on AC-130U/W/J aircraft, an award for eight MX-25D systems valued at \$19,488,744, and performance upgrades on 33 MX-20D systems valued at \$10,735,950.

3 General Dynamics OTS - Canada Inc.

General Dynamics Ordnance and Tactical Systems - Canada Inc. (GD-OTS Canada) is a major manufacturer of ammunition, producing everything from small calibre bullets to training rounds, hand grenades, and shells used by tanks and artillery systems. In addition to having a near monopoly on supplying ammunition to the Canadian Armed Forces, it exports large volumes of ammunition to the United States each year.

During the period under examination, GD-OTS Canada secured several contracts with the U.S. DoD, including one worth \$40-million to manufacture 57mm target-practice cartridges for the U.S. Navy and Coast Guard.

4 General Dynamics Land Systems - Canada Corp.

London, Ontario's General Dynamics Land Systems - Canada Corp. (GDLS-C) manufactures light armoured vehicles (LAVs) - wheeled combat vehicles that may or may not be armed. Since production in Canada began in the 1970s, GDLS-C has produced thousands of vehicles for the U.S. DoD, mostly the "Stryker" variant. Other countries, most notably Saudi Arabia, have also imported thousands of LAVs.

During the period under examination, the CCC actioned several contracts tied to a larger

2009 contract to supply LAV-25s to the United States, with Saudi Arabia the final destination. These transfers are being facilitated through the intermediary U.S. Foreign Military Sales (FMS) program, which establishes government-to-government arms sales between the U.S. DoD and foreign militaries seeking to procure equipment.

5 Emergent BioSolutions Canada Inc.

Winnipeg's Emergent BioSolutions Canada is a division of U.S.-based Emergent BioSolutions, which develops and produces pharmaceuticals for commercial applications and for the U.S. military to defend against biowarfare.

During the period under examination, Emergent BioSolutions Canada secured hundreds of contracts with the U.S. government. Since incorporation in 2017, Emergent BioSolutions Canada has consistently ranked near the top of the list of winners of contracts to the U.S. military through the CCC.

6 Indal Technologies Inc.

Mississauga, Ontario's Curtiss-Wright Indal Technologies Inc. manufactures aerospace components, including those used to stabilize aircraft that land on naval vessels. Curtiss-Wright Indal has been supplying the U.S. Navy for more than four decades.

On March 29, 2022, Curtiss-Wright Indal announced that it had received a contract award from the CCC to supply five Recovery Assist, Secure and Traverse (RAST) systems to the U.S. Navy for use on the Arleigh Burke-class Guided Missile Destroyers.

7 Lockheed Martin Canada Inc., Commercial Engine Solutions

Montreal's Lockheed Martin Canada, Commercial Engine Solutions, which focuses on Modification, Repair and Overhaul (MRO) work on jet

engines, is one of several Canadian-based subsidiaries of the U.S.-owned defence giant. But this facility does not only work on commercial aircraft; military customers include the Royal Saudi and U.S. Air Forces.

During the period under examination, Lockheed Martin Canada, Commercial Engine Solutions won an award through the CCC to perform overhaul work on the F108 turbofan engines used

in the U.S. Air Force's fleet of KC-135R Stratotanker aircraft. □

*** Details on various contracts are taken from a variety of sources, including company press releases, annual reports of the CCC, articles in defence publications, and contract data released through the U.S. DoD. All figures used in company descriptions are in U.S. dollars (USD).*

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Exposing flaws in Canada's arms control regime

Last November, *The Globe and Mail* published an article by Geoffrey York and Steven Chase on "the global expansion of [Canadian-owned] Streit Group," a producer of armoured vehicles. The piece focused on the building of a new factory in Uganda, which will produce riot-control vehicles for the security forces of "a long-ruling autocrat with a history of using deadly force to crush political protests."

This development "has prompted criticism from Ugandan opposition leaders and independent arms-control experts." One of the experts quoted in this article is Ploughshares Researcher Kelsey Gallagher, whose work focuses on conventional arms controls and the Canadian arms trade.

According to Kelsey, it has become "routine" to learn of the purchase of Streit vehicles by "repressive governments." And, while "Canadian arms controls exist to stop the provision of weapons to human-rights abusers," it seems a simple matter to avoid such controls by "setting up shop on the other side of the border." As Kelsey noted, "Streit's manufacturing facilities are increasingly located in states with weak export controls."

In December, *The Globe and Mail* published a related article: "Canada to sell more arms to Qatar even as scrutiny of human rights record intensifies," by James Griffiths. In this article, concern was expressed over supplying arms to a country that was not only accused of serious violations of human rights against migrant workers and homosexuals but was an autocratic and rapidly militarizing state in an unstable region already overflowing with weapons.

In this article, Kelsey is quoted as saying, "By arming these despotic regimes to the teeth, we're absolutely upholding autocracy around the world. Without the ability to procure huge amounts of weapons systems, these regimes wouldn't have the same ability to crack down on dissent."

Finally, this past January, the Toronto-based Investigative Journalism Foundation published two articles by Kate Schneider: "Justin Trudeau selling record number of weapons to authoritarian countries" and "Opposition parties condemn Trudeau for military exports to authoritarian regimes."

Both articles reference the Amnesty International-Project Ploughshares report "*No Credible Evidence: Canada's Flawed Analysis of Arms Exports to Saudi Arabia*," which was published in August 2021. One includes quotes from Kelsey.

According to him, "Canada can stop the provision of weapons when it's the right thing to do," citing the prohibition of arms sales to Belarus in 2020 "over human rights concerns." However, the Canadian government doesn't always cancel arms contracts when doing so "would have adverse political and economic effects." Indeed, it seems that such cancellations must be exceedingly rare, because, according to Kelsey, Canada is "exporting more weapons to countries accused of war crimes than at any point in Canadian history."



Reflections on the final workshop on Canada and the Abolition of Nuclear Weapons:

Choosing hope in the face of disaster



By Wendy Stocker

Last November, Project Ploughshares hosted the last of three virtual workshops it produced in 2022. The focus of this one was on Canada, the growing nuclear threat, and the Treaty on the Prohibition of Nuclear Weapons (TPNW). It was led by Ploughshares Executive Director Cesar Jaramillo and Julie Clark, a PhD candidate in global governance at the Balsillie School of International Affairs in Waterloo, Ontario, who served as an Electoral Observer during the 2019 elections in Ukraine.

The first workshop module focused on the 2022 invasion of Ukraine by Russia. While no nuclear weapons have been used, Cesar and Julie viewed the conflict as a case study of the policy of nuclear deterrence in action. Cesar frankly stated that there was a real possibility that nuclear weapons would be employed.

To avoid the results of such use, which would undoubtedly be catastrophic, he emphasized the need for “practical, realistic, pragmatic, and feasible” solutions that would allow all parties (including allies of both countries) to avoid situations in which any of them might feel compelled to use nuclear weapons. He saw many current initiatives, including the TPNW, as “too big picture” to meet the immediacy of the current threat.

Julie maintained hope that bilateral and other agreements were still possible. She was certain that diplomacy was still being conducted quietly, behind the scenes. Still, she rated the possibility of a nuclear cataclysm as very high. Even conventional fighting has led to shelling, mining, and rolling power blackouts in Ukraine that could set off an explosion at one of the largest nuclear power plants in Europe. In the meantime, nuclear-armed states, including Russia and NATO member the United States, continue to modernize their nuclear arsenals.



Julie Clark, a PhD candidate in global governance at the Balsillie School of International Affairs in Waterloo, Ontario, served as an Electoral Observer during the 2019 elections in Ukraine.

Cesar urged a redoubling of diplomacy, which he saw as particularly valuable when tensions are at their highest. But how to encourage talk rather than an unending flow of weapons? Both speakers urged Canadians and individuals from around the globe to use all tools available. Letters to the editor, posts on social media. The anti-nuclear movement needs to learn lessons from Black Lives Matter, Idle No More, and the climate-change movement.



Cesar Jaramillo is Executive Director of Project Ploughshares.

The second module focused on Canada's role in facilitating nuclear abolition. As an active player in the nuclear industry and a member of NATO, the G7, and G20, Canada should play a significant role in achieving the abolition of nuclear weapons. In recent years, however, even though Canada's stated goal is a world without nuclear weapons, Canada has remained closely aligned with nuclear-armed states.

The workshop leaders urged Canada to make nuclear disarmament a priority. It should fight for nuclear abolition in NATO. It should attend the next meeting of TPNW states parties as an observer. It should prioritize ending the war in Ukraine through diplomacy. Canada has a history of taking stands unpopular with some of its more militaristic allies, without taking serious penalties. It needs to act on that history.

We need to "choose the path of hope." State champions are needed. Canada could be one of them. We don't need to have everything worked out to move forward on nuclear abolition.

As this workshop makes clear, we've been lucky so far – no nuclear weapons have been employed since 1945. But that luck could run out at any moment. Relying on luck to prevent nuclear disaster is not a sound course of action.

We need to build a new international order to ensure our collective security – one that is not based on nuclear weapons or even super-powered conventional weapons. To achieve this new order, we need words, not weapons. □

Videos of all the workshops (in eight modules) can be found on the Project Ploughshares YouTube channel. A report on the workshops can be found on the Ploughshares website.

The three Project Ploughshares workshops on Canada and the Abolition of Nuclear Weapons would not have been possible without the financial support of Shantz Mennonite Church in Baden, Ontario. We are grateful for the opportunity and the experience.

Space Café Canada

Canadian space innovation: A sneak peek at 2023

On January 27, Ploughshares Senior Researcher Dr. Jessica West spoke with Brian Gallant, the founding and current CEO of Space Canada, an association established in March 2022 to represent Canada's outer space innovators and allied industries.

Nine companies originally came together to found Space Canada (<https://space-canada.ca>), with the aim of "strengthen[ing] the Canadian space ecosystem." Since then, Space Canada has grown to 50 members. They come from the private sector and include Canadian startups and large global companies, as well as academic institutions and non-governmental organizations. Gallant mentioned Eagle Flight Network, Inc., which is described as "an Indigenous Space Hub, Space Port company." Non-Canadian organizations can join as associate members.

Space Canada held its inaugural conference, *Spacebound 2022*, to encourage networking and discussion with Canadian "thought leaders in the industry." Jessica attended the two-day event in Ottawa last fall, speaking on space sustainability, and noted the "fabulous energy in the room." Federal government departments, including National Defence, the Canadian Space Agency, and Transport, sent representatives and made useful contributions. *Spacebound 2023* is expected to take place later this year.

Space Canada promotes the critical role of space in solving many of the world's problems. First, it strives to inform ordinary citizens about the extent to which they are already dependent on space for much of what they value in today's world. As Mr. Gallant said, space is "omnipresent" in modern lives.

People tend to associate space with exploration and science fiction. It's not always easy to convince them that money spent on developments in space is going to help them with their immediate problems. But Gallant pointed out that fintech and greentech are harder to develop and maybe not even possible without the space sector. And there are a lot of job opportunities in the space industry.

Gallant explained how four of the five top risks set out at the 2022 World Economic Forum can be fought with help from the space sector. Space can monitor and provide data on climate change. It can address social inequality by diminishing the digital divide. Cyber security, which is a feature of geopolitical tensions, is "completely intertwined" with the space sector. And the fourth risk is space traffic, which relates directly to the space industry.

Outer space, which is no longer accessed only by governments, is being rapidly commercialized. Space Canada wants the government to understand how the use of space is changing and regulate accordingly. A new space economy is developing in which businesses play an immense role. Gallant believes that Canada needs to figure this out quickly if it doesn't want to be left behind. The January 20 government announcement "Government of Canada supports commercial spaced launches in Canada," is viewed by Space Canada as a step in the right direction and can lead to an "end-to-end" space sector in Canada. This will help both Canada and its allies, all of which need to increase their space capabilities.

The Canadian government can help space businesses by providing as much certainty as possible. On the Space Canada wish list are investments, policies, and a clear regulatory framework. It is also pushing for a national space council in Canada, in which government ministers and civil servants from different sectors collaborate to coordinate on and prioritize space, which impacts "almost everything." Such a council would help to ensure that investments and policies would be more robust and timelier. It would show that Canada is prioritizing space and send an important message to the world. As Jessica noted, other guests on Space Café Canada have also recommended the establishment of such a council.

Space Canada promotes innovation in the space sector which, according to Gallant, flows from the "collision of ideas." Right now, Canadian innovators are "making stuff that will go on the moon," and developing new uses for space systems such as methane emissions monitoring devices. NorthStar is monitoring space traffic and debris. Such innovations can "make space sustainable for generations."



The Nobel Peace Prize for 2022

The fight for human rights

By Wendy Stocker



In 2022, the Nobel Peace Prize was shared by Belarusian human rights advocate Ales Bialiatski, the Russian human rights organization Memorial, and Ukraine's Center for Civil Liberties. As the official press release declares, "together they demonstrate the significance of civil society for peace and democracy." To all three, Project Ploughshares extends hearty congratulations!

Mr. Bialiatski founded Viasna (Spring), an organization that documents the abuses of political prisoners committed by the authoritarian government of Belarus. His absence from the award ceremony in Stockholm in December was perhaps the most eloquent statement of the price that many people pay for defending human rights and working for peace. Cast into prison without charge, he was not even able to provide a lecture for the ceremony. Instead, his wife Natallia Pinchuk made a brief statement and presented fragments of his writings. In this way, he was able to contribute to the powerful expression of unity created by the triumvirate of winners. (Editor's note: In early March, Ales Bialiatski was sentenced to 10 years in prison for smuggling and financing "actions grossly violating public order"; supporters claimed that the Belarusian government was trying to silence him.)

Jan Rachinsky, the spokesperson for Memorial, focused on that unity. He explained the "symbolic meaning" of sharing the prize: "It underlines that state borders cannot and should not divide civil society." This point was reinforced when he mentioned that Memorial, founded in Russia, also has branches in Ukraine and in several Western European countries. As Mr. Rachinsky notes, "Humanity has long realized that human rights and freedoms are not bound by national borders."

Rachinsky also emphasized the role of civil society in securing human rights. He spoke of a "sense of civic responsibility" that looks to the future while assuming accountability for the past and present.

The Center for Civil Liberties identifies and documents Russian war crimes against Ukrainian civilians. Speaking on its behalf, Oleksandra Matviichuk advocated for "mak[ing] human rights meaningful again." This is important because "peace, progress and human rights are inextricably linked." Indeed, "in political decision-making, human rights must be as important as economic benefits or security."

But Ms. Matviichuk saw serious flaws in the existing international system, including the United Nations. She called for a new regime that "should have human rights at its core." Achieving this goal is not only the responsibility of politicians, but of "people who want to live in peace." And, even though the rule of law is not working to protect Ukraine from Russia at present, she expressed hope that the "impunity cycle" could be broken.

The underlying message of the laureates is clear: Global peace is only possible when every person in the world is assured of their basic human rights.

Human rights are at the heart of the work that Project Ploughshares does. When we expose arms sales that contravene international law, warn of inappropriate uses of surveillance technology augmented by artificial intelligence, demand norms and laws to preserve outer space as a domain for peaceful purposes, and participate in the creation of new international agreements that prohibit nuclear weapons and the use of explosive weapons in populated areas, we are working to secure the rights of every person on Earth to "life, liberty and security of person," and all the other rights expressed in the Universal Declaration of Human Rights.

In a way, the awarding of this year's Nobel Peace Prize validates all civil society organizations that work for peace. □

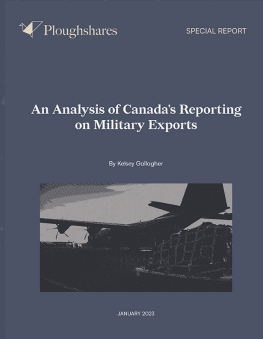
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