



Ending the Perpetual Menace of Nuclear Weapons

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Introduction

Following the Trinity nuclear test detonation of 16th July 1945, nuclear scientist Leó Szilárd observed that, “Almost without exception, all the creative physicists had misgivings about the use of the bomb” and further that “Truman did not understand at all what was involved regarding nuclear weapons”.

These days, the movie *Oppenheimer* has been the rage based on a noteworthy biography of Robert Oppenheimer entitled [American Prometheus: The Triumph and Tragedy of Robert Oppenheimer](#) written by historians Kai Bird and Martin Sherwin. Though the movie spares its viewers the horrors of the atomic bombing of Japan, it does reflect the warnings of the early nuclear weapon scientists about the long-term or permanent dangers of a nuclear arms race and associated risks of further nuclear weapons use.

On the other hand, the film overlooks other historical works including [A World Destroyed: Hiroshima and its Legacies](#) also by Martin Sherwin, that disputes and negates the US government’s narrative about the necessity of using nuclear weapons twice over civilian targets in Japan and suggests that the decisions were driven mainly by geostrategic

At a glance...

- The first seeds were planted nearly eight decades ago warning about the catastrophic humanitarian and environmental consequences, and thus existential risks, of the possession and use of atomic weapons and the first call issued to prohibit nuclear weapons
- The five NPT nuclear-weapon States are not fulfilling the nuclear disarmament obligations of the NPT, and nearly all of the nine nuclear-armed States blatantly reject the TPNW
- Unfortunately, the vision of ridding the world of nuclear weapons is receding as the nuclear arms control architecture patiently built up over the past 50 years is collapsing before our eyes
- For the first time in the more than fifty-year history of Soviet/Russian-United States nuclear arms control not only have existing agreements been dismantled but both sides are modernizing nuclear arsenals unchecked and have lowered the threshold of nuclear weapon use in their declaratory and operational policies
- We should not despair
- It is possible to envisage unilateral complete dismantlement of today’s nuclear warhead stocks in about two decades and achieving zero nuclear warheads by 2045 - the 100th anniversary of the first test detonation and two uses of nuclear weapons

and prestige considerations - criteria still in operation today to justify continuing retention of nuclear weapons.

In entitling their biography of Oppenheimer as [American Prometheus](#), historians Bird and Sherwin did an injustice by not crediting [Lise Meitner and Otto Hahn](#) as the discoverers of atomic fission in December 1938, in their Berlin laboratory.

Leó Szilárd's observation that President Truman did not understand at all what was involved regarding nuclear weapons, unfortunately still rings true when it comes to the leaders of today's nuclear-weapon possessor States as well as of most of their diplomats and those of 30-plus countries in military defence arrangements underpinned by nuclear weapons.

From 24 July to 11 August this year, I was an official delegate at meetings in Vienna of States parties to the nuclear Non-Proliferation Treaty (NPT). After 15 days of debates, consultations and negotiations, the result was precisely - zero, nothing - no agreement on any measures however small to try to reduce the present and continuing anthropogenic existential risks of nuclear weapons.

This year's session of the [NPT Preparatory Committee](#) overlapped with 6th and 8th August - the anniversaries of the atomic bombing of Hiroshima and Nagasaki. At a side-event and to some delegates, I suggested to mark the occasion with a one minute silence for reflection in the memory of all those affected by nuclear weapons over the past nearly eight decades, but my suggestion was ignored and the blasé discussions continued heartlessly without pause or reflection - blind to the continuing suffering of survivors and victims of nuclear weapons and the NPT's obligation for nuclear disarmament - such is the disconnect now.

At the [NPT PrepCom in August](#), there were several divides, between nuclear-weapon and

non-nuclear-weapon States, between nuclear-weapon States and various political and issue-based coalitions, and between NATO States hosting nuclear weapons and many non-aligned (NAM) States.

Most remarkable in my view, inter alia, were the astounding statements by the Netherlands, Italy, and Germany - three of the five NATO non-nuclear-weapon States where US nuclear weapons are deployed, and these host States' air forces have designated nuclear war-fighting roles.

Despite an on-going "hot war" in the middle of Europe with its attendant risks of possible escalation to nuclear weapons use; undeterred last week NATO conducted "[Steadfast Noon](#)", a full-fledged nuclear war fighting exercise, "*to ensure the credibility, effectiveness and security of our nuclear deterrent*".

At the NPT PrepCom, Netherlands, Italy, and Germany, each repeated the canned lines that "*NATO's nuclear arrangements have always been and continue to be fully consistent with the NPT and were put in place well before the NPT entered into force in 1970. This resulted in seamless integration of NATO's nuclear sharing arrangements into the NPT, which has long been accepted and publicly understood by all States Parties to the NPT....*"

When one stops laughing at this ludicrous claim, it is clear that NATO States hosting nuclear weapons find themselves under increasing pressure and losing credibility. These ill-founded claims did not go unanswered by some other States - though unfortunately several [TPNW](#) States in the room chose not to engage on this matter to avoid provoking further the detractors of the TPNW.

For their part, the nuclear-weapon States were loath to accept any benchmarks, targets or timelines for nuclear disarmament. The new flavour of the day is the amorphous concept of nuclear risk reduction

being peddled by three of the five nuclear-weapon States and most of their allies and some “respectable” [think tanks](#) performing the role of echo chambers of their governments policies.

In response, most of the [TPNW](#) and non-aligned States counter that nuclear risk reduction is no substitute for nuclear disarmament, as does the UN Secretary-General.

I am glad that nearly a month ago, on 25th September, marking the [International Day for the Total Elimination of Nuclear Weapons](#), UN Secretary General Antonio Guterres clearly stated that, “*The only way to eliminate the nuclear risk is to eliminate nuclear weapons*” and urged countries to work together to banish these “*devices of destruction to the history books, once and for all*”.

Reverting back to nearly eight decades ago, emerging from the ashes of the Second World War, the very first resolution adopted in 1946 by the newly formed United Nations called for the “[elimination of atomic weapons](#)”.

Thus, the first seeds were planted nearly eight decades ago warning about the catastrophic humanitarian and environmental consequences, and thus existential risks, of the possession and use of atomic weapons and the first call issued to prohibit nuclear weapons.

Despite efforts by many scientists to abolish nuclear weapons, other scientists unfortunately were successful in persuading their political leaders to develop thermonuclear weapons with much greater destructive force than simple atomic weapons.

Indeed, in 1958 there even was a short-lived US effort, [Project A-119](#), to detonate a thermonuclear nuclear device on the surface of the Moon. The rationale was to produce a very large mushroom or radioactive cloud and a brilliant super flash of light clearly visible from Earth – that would be an obvious show of strength to the Soviet Union.

Fortunately, the project was cancelled, the Moon was spared and the “[Moon Treaty](#)” of 1979 prohibits all types of nuclear tests on the Moon and other celestial bodies.

During the next decades more than 2,060 nuclear test detonations were carried out in all environments: in the atmosphere, on the surface of the Earth, underwater, underground, and even in near space. Nuclear test detonations carried out at national test sites (such as Nevada, Semipalatinsk, Novaya Zemlya, Lop Nor, Pokhran, Chagai, and Punggye Ri), and in Australia, Algeria and the South Pacific; led to radiological contamination of vast swaths of lands and seas, as well as long lasting transgenerational genetic damage to humans.

At the [first meeting](#) of States parties to the Treaty on the Prohibition of Nuclear Weapons ([TPNW](#)) held in June 2022, I chaired a [session on victim assistance and environmental remediation](#). The personal testimonies of [Karipbek Kuyukov](#) (a Kazakh man without arms but a talented mouth and foot painter) and another man with jelly bones, a Marshall Islander with genetic damage and [Suzuka Nakamura](#) (the [young grand daughter](#) of a hibakusha who wore her Nagasaki survivor grandmother’s kimono to the meeting), vividly highlighted the lasting physical and psychological effects of nuclear test detonations, and the nuclear bombing of a city.

I wish that the officials from Global Affairs Canada who attended as observers the preceding [Vienna Conference](#) on the Humanitarian Impact of Nuclear Weapons had stayed on to attend the TPNW meeting and to witness these testimonies - but that was not to be, as Canada preferred to maintain NATO unity which denies the immorality of nuclear weapons and continues its opposition to the TPNW seemingly in contradiction with NATO’s own Strategic Concept that holds that “*NATO’s goal is to create the security environment for a world without nuclear weapons, consistent with the goals of the [Nuclear Non-Proliferation Treaty](#)*”.

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Today is 23rd October, the [Cuban missile crisis](#) lasted from 16 to 28 October 1962 - it's well worth remembering how close the Soviet Union and the United States came to starting a nuclear war.

During the crisis USAF [General Curtis LeMay](#), the WWII advocate of carpet bombing of cities, told President John Kennedy that, *"We should go in and wipe 'em out today"*. LeMay believed that *"ultimately we're going to confront these people in a conflict with nuclear weapons. And, by God, we better do it when we have greater superiority than we will have in the future...."*

Little did LeMay know at the time that there were 162 nuclear warheads, including 90 tactical warheads, deployed by the Soviets in Cuba at the time and at least one Soviet submarine armed with nuclear tipped torpedoes was in the vicinity. Had Kennedy followed LeMay's advice to level Cuba from the air, very likely we would not be here today.

The [Elders](#), former internationally respected world leaders, have warned that, *"As long as nuclear weapons remain in existence, it is inevitable that they will someday be used, whether by design, accident or miscalculation"*. Contrast this with the continuing NATO mantra, to which Canada unquestioningly adheres, that [NATO shall remain a nuclear alliance as long as nuclear weapons exist](#).

Tellingly, United Nations Deputy Secretary General, [Jan Eliason](#) has remarked, *"There are no right hands for wrong weapons, and Weapons of Mass Destruction are simply wrong"*.

It is surprising and deeply disappointing that leaders of the more than 30 "nuclear-dependent States" (and I use the term advisedly) and of nine (9) countries with nuclear weapons - more appropriately the "captive nations" of nuclear deterrence - still continue to downplay the catastrophic risks and devastating effects of nuclear weapons.

The five NPT nuclear-weapon States are not fulfilling

the nuclear disarmament obligations of the NPT, and nearly all of the nine nuclear-armed States blatantly reject the Treaty on the Prohibition of Nuclear Weapons ([TPNW](#)) adopted by 122 States pursuant to a UN General Assembly resolution - a treaty now signed by 93 and ratified by 69 States. Who can forget the desperate press conference outside the General Assembly Hall at the United Nations on 7th July 2017, where three nuclear-weapon States were admonishing TPNW supporters not to adopt the treaty, and in October 2020 admonishing TPNW States to either "unsign" or not to ratify the TPNW in order to prevent the Treaty from entering into force.

On a positive note, the TPNW entered into force on 22 January 2021 and thereby is in the process of establishing a *jus cogens* rule (fundamental principle under international law) creating an *erga omnes* (obligation) for all States to renounce nuclear weapons. In this context we might recall Einstein's prophetic words that, *"Our defence is not in armaments, nor in science...Our defence is in law and order"* - something in short supply today at the international level.

Collapse of Nuclear Arms Control

Unfortunately, the vision of ridding the world of nuclear weapons is receding as the nuclear arms control architecture patiently built up over the past 50 years is [collapsing](#) before our eyes. Nuclear arms control fatigue is increasing and in light of the Ukraine war it even has become controversial.

For the first time, two successive Non-Proliferation Treaty review conferences, in [2015](#) and [2022](#), descended into chaos and failed to agree on an outcome document - in 2015 Canada needlessly joined the UK and the US in denying consensus on a final document, while in 2022 it was the Russian Federation.

This year's [NPT Preparatory Committee](#) session

could not even agree on a Chair's "factual summary", nor did the [working group on the strengthened review process](#).

The 1996 Comprehensive Nuclear-Test-Ban Treaty (CTBT) still not in force, also is under threat of resumption of explosive nuclear testing and re-opening Pandora's Box of nuclear weapon test explosions. Recent satellite imagery shows activities at the national test sites of China (Lop Nor), Russia (Novaya Zemlya), and the United States (Nevada) relevant to resumption of nuclear test detonations.

Last week, Russia "de-ratified" the CTBT and thus according to Moscow brings Russia at par with the United States (which had rejected ratification in 1999) - and added that Russia would not resume nuclear testing unless another country did so first. As an aside, it is indeed ironic that in October 2020, it was the US that was encouraging TPNW ratifying States to withdraw their ratification to prevent entry into force.

Another irony was that on the very day the Duma ratified the CTBT, the United States carried out a [sub-critical or hydrodynamic test](#) at its Nevada test site - tests that do not involve nuclear fission and, because there is no release of radioactivity, are not prohibited under the CTBT.

Given the continuing stalemate and non-action on the signature and/or ratification by the remaining eight (now nine) of the 44 Annex II States which is required to bring the CTBT into force; the prospects of the CTBT ever entering into force recede with each passing year and the likelihood of this treaty becoming a fossil of nuclear arms control are enhanced. Thus, the future rests on expectations that the voluntary moratoria on nuclear tests can remain in force.

Fissile Material Control

Nuclear weapons require highly-enriched uranium

(HEU) and weapons-usable plutonium (WPU) at their core to produce nuclear explosions. The International Atomic Energy Agency (IAEA), the sole independent international organization (set up in 1957 at the initiative of US President Dwight Eisenhower for verifying States' treaty-based nuclear non-proliferation obligations) has established that 25 kg or less of HEU or 8 kg of WPU are sufficient for a first-generation nuclear explosive device.

Today, it is estimated that global military stocks of HEU are about 1400 tonnes and about 500 tonnes of WPU - a tonne is 1000 kg - thus, there is a glut of nearly 2 million kg of weapons-usable nuclear materials completely outside any independent international accountability and monitoring.

The five nuclear security summits held respectively in 1996 (Moscow), 2010 (Washington), 2012 (Seoul), 2014 (The Hague) and 2016 (Washington) addressed only 17% of global nuclear material stocks that are in civilian uses under IAEA monitoring but failed to address the remaining 83% in military uses.

A treaty prohibiting production of nuclear-weapon usable material, commonly referred to as the fissile material cut-off treaty (FMCT) has been on the books since 1954.

At the suggestion of Canada, the Clinton administration in the United States put up a resolution in the First Committee of the UN General Assembly. In [December 1993](#), that was adopted without a vote.

With the approaching crucial extension conference of the NPT in 1995, an ad hoc committee on the FMCT was set up at the Conference on Disarmament (CD) in Geneva, chaired by Canada's Ambassador Gerald Shannon.

On 24 March 1995, he issued what is sometimes referred to as the "[report of the special coordinator and the mandate contained therein](#)" - a wordy

formulation concerning document CD/1299 that was a hurried compromise that left open the scope of a FMCT - whether to ban only new production, or to also cover past production and management and disposition of such material.

By now it should be clear that CD/1299 is outdated, it has lost its non-proliferation objectives once India, Pakistan and North Korea developed and tested nuclear weapons, now its only purpose is nuclear disarmament - that is to prohibit new production and bring existing stocks of treaty-limited nuclear material under international accounting and monitoring, and for conversion into non-weapon-usable isotopic composition.

An FMCT now that fails to capture and address the massive overhang of nearly 2 million kg of direct use nuclear material held by nine nuclear-armed States shall have little or no value.

In this context, [Canada's draft resolution](#) at this year's First Committee takes a good first step, inter alia, in calling on "*States that possess or produce fissile material for nuclear weapons or other nuclear explosive devices to engage in transparency and confidence-building measures among themselves with a view to launching negotiations*".

However, whether Canada's proposal is practical is questionable, since those States with reportedly small stocks of weapon-usable fissionable material - such as China, Israel and Pakistan - are unlikely to be supportive on national security grounds.

All concerned States could emulate the US' release of data (in 1995) on its total [HEU](#) and [Pu](#) production quantities and current inventories.

Russia - United States Bilateral Agreements

The architecture and fundamentals of bilateral and multilateral nuclear arms control have been eroded triggered by the United States withdrawal in 2002

from the crucial 1972 Anti-Ballistic Missile ([ABM](#)) Treaty followed by the Russian Federation. The delicate balance between offence and defence in the nuclear realm has been disturbed, creating new instabilities and risks, and development of new types of offensive nuclear delivery systems and destabilizing missile defences.

On 2 August 2019, the United States formally withdrew from the 1987 Treaty on Shorter- and Intermediate-Range Nuclear Forces ([INF](#)) - foreshadowed in July 2019 by the Russian Federation suspending its compliance with the treaty. Under the INF Treaty, by May 1991, 2692 ballistic and cruise missiles with ranges between 500 and 5500 kilometres had been verifiably eliminated, 1846 by the USSR and 846 by the United States under mutual verification—and nearly 5000 nuclear warheads removed from active service. Now a new intermediate-range ballistic missile race seems again to be in the offing.

Recently at the First Committee, Russia [warned](#) that it would take retaliatory measures if the US deployed intermediate- and shorter-range missiles to Europe. It also stressed that the "[strategic stability situation](#) continues to deteriorate as the US-led West keeps creating serious strategic risks".

The only remaining nuclear arms reduction treaty in force between Moscow and Washington - the New Strategic Arms Reduction Treaty ([New START](#)) - was signed on 8 April 2010, entered into force on 5 February 2011, but now is hanging by a thread.

By 4 February 2018 both Russia and the United States had verifiably met the aggregate central limits of 1550 accountable deployed strategic nuclear warheads and 700 deployed plus 100 non-deployed launchers (land- and sea-based intercontinental ballistic missiles and long-range bombers).

The New START limits and its strategic bomber loading counting rules exclude between 60 to 65 percent of the active nuclear warheads of the

two countries. Non-deployed or reserve strategic nuclear warheads are not covered. Non-strategic nuclear warheads also are not covered, whether deployed or non-deployed. The New START, which was set to expire on 5 February 2021, was extended on 3 February of that year for five years until 3 February 2026 by executive orders of the Presidents of the Russian Federation and the United States. This treaty will expire in about 16 months unless extended further through an unprecedented amendment requiring legislative approval, or replaced by a new treaty. Neither option looks particularly promising at present. Now Russia and the US, both have “suspended” implementation of this treaty.

On 28th February this year, the Russian Federation “suspended” its implementation of New START, stopped exchanging data with the United States except for notification of ballistic missile launches, and stated that it would continue to remain within treaty limits for deployed and non-deployed strategic weapons.

The United States followed suit and also ceased data exchange but later invited the Russian Federation to resume strategic dialogue started after the Biden-Putin meeting in Geneva in June 2021 but suspended in February last year after Russian troops invaded Ukraine.

Moscow rejected this offer stating that no official dialogue could be possible unless the United States ceased to seek the “strategic defeat of Russia” and stopped military support for Ukraine in the ongoing war.

As such, there no longer is any exchange of: (a) notifications required under the treaty, including updates on the status or location of treaty-accountable items such as missiles and strategic bombers; (b) telemetric information on launches of ICBMs and SLBMs; and (c) suspension of on-site inspections.

However, both sides [continue to provide](#) notification of ICBM and SLBM launches in accordance with the 1988 Ballistic Missile Launch Notification Agreement and to provide notifications of exercises in accordance with the 1989 Agreement on Reciprocal Advance Notification of Major Strategic Exercises.

The last data exchange on New START provided by the United States from [1st September 2022](#) showed that Russia had 1549 warheads on 540 deployed launchers and 759 deployed/non-deployed launchers, and the United States had 1420 warheads on 659 deployed launchers and 800 deployed/non-deployed launchers.

As of [1 March 2023](#), the United States voluntarily declared 1419 warheads on 662 deployed launchers and a total of 800 deployed/non-deployed launchers. No data was provided by Russia.

For the first time in the more than fifty-year history of Soviet/Russian-United States nuclear arms control not only have existing agreements been dismantled but both sides are modernizing nuclear arsenals unchecked and have lowered the threshold of nuclear weapon use in their declaratory and operational policies.

One bright spot at the recent NPT PrepCom was a working level meeting of the P-5 or Nuclear-5 (N-5) process, started in 2008 - the coordination was rotated to Russia. However, last week Russia accused the US of [denying visas](#) including to the delegation’s head, and views this “as a deliberate attempt by the US to disrupt Russia’s coordination”.

Canada could encourage the US to follow up separately with Russia and China as regards the US NSA’s proposals from last June, and also to encourage the N-5 to start structured working level discourse on nuclear weapons reductions and to work on progressing a standardized reporting format under the NPT review process.

According to a recent [report](#) to the US Congress, in the absence of New START, the March 2023 US inventory of 662 deployed strategic launchers with 1419 nuclear warheads could be uploaded to 3570 nuclear warheads on 715 deployed strategic launchers. Russia's March 2022 inventory of 1458 warheads on 527 deployed strategic launchers could be uploaded to 2629 nuclear warheads on 533 deployed strategic launchers.

Thus, if both the United States and Russia were to upload their deployed strategic launchers to field the maximum possible number of nuclear warheads, each of the arsenals would [approximately double in size](#). The United States would field more deployed strategic warheads but Russia would deploy a larger total arsenal of operational nuclear weapons, given its sizable stock of [nuclear warheads on non-strategic delivery systems](#) that are not treaty-accountable.

A significant increase in US and Russian deployed nuclear forces has already impelled China to further increase its projected arsenal. Reportedly, China is expanding its strategic nuclear forces that are expected to reach 1000 deployed nuclear warheads by the end of this decade and numerically match Russia and the United States deployed nuclear forces of 1550 by [2035](#), according to the US defence department.

China's nuclear buildup will in turn spur an increase in India's nuclear forces, leading to Pakistan also to increase its nuclear forces.

Furthermore, in blatant disregard of important Cold War risk reduction measures such as the Agreements on Nuclear Accidents (1971), Prevention of Incidents at Sea (1972), Prevention of Nuclear War (1973), Dangerous Military Activities (1989), De-targeting and Information Sharing (1994); in recent years and continuing today air and naval forces of NATO, Russia, the United States and China, all have been engaging in dangerous and provocative actions especially in areas adjacent to territorial wars and airspace. Though there are attempts at deconfliction

the danger of accidents remains high, especially now in the European, Pacific and Arctic theatres of operations. It is time to recall the [1958 Surprise Attack Conference](#) and take steps to hold a similar conference as soon as possible.

Nuclear Risks

It is highly disturbing that when nuclear weapon use is discussed, the vocabulary used is very often conveniently sanitized. The destruction by thermonuclear war and resulting humanitarian and environmental consequences are downplayed and substituted by antiseptic concepts of nuclear deterrence.

Alfred Wohlstetter in analyzing [The Delicate Balance of Terror](#) in 1958, noted that the existence of nuclear weapons does not automatically prevent a nuclear war but increases the danger of accidental wars particularly during a crisis, although this risk can be mitigated by arms control measures.

Worrisomely, it is the view of many erstwhile defence experts, such as [William Perry](#), former United States defence secretary, among others, that in today's world the dangers of inadvertent, accidental or even deliberate use of nuclear weapons is higher than it was during the height of the Cold War. Perry published his new book in July 2020 entitled, [The Button](#), because in his words, "*Our nuclear weapons policy is obsolete and dangerous. I know, because I helped to design it, and we have to change it before it is too late.*" He warned that the "*awesome ability to launch hundreds of thermonuclear weapons in mere minutes*" creates grave dangers of blundering into Armageddon.

Founded in 1945 by Albert Einstein and University of Chicago scientists who helped develop the first atomic weapons in the Manhattan Project, *The Bulletin of the Atomic Scientists* (which puts into context how close we are to nuclear catastrophe) set the clock last January at [90 seconds to midnight](#); closer

to nuclear catastrophe than any year of the Cold War.

In January last year, UN Secretary General Guterres in his message to the then-expected NPT review conference noted that, *"...the end of the Cold War also left us with a dangerous falsehood: that the threat of nuclear war was a thing of the past. Nothing could be more mistaken. These weapons are not yesterday's problem. They remain today's growing threat. The risk that nuclear weapons will be used is higher now than at any point since the duck-and-cover drills and fallout shelters of the Cold War ... The nuclear landscape is a tinderbox. One accident or miscalculation could set it alight."*

The Gorbachev-Reagan understanding of December 1987 that a *"nuclear war cannot be won, and must never be fought"* is no longer in the forefront of the minds of today's leaders and nuclear war planners despite some recent declaratory statements which are belied by their actions.

On 3 January 2022, in the current climate of discord we were surprised to see a *Joint Statement by the Leaders of the Five Nuclear-Weapon States on Preventing Nuclear War and Avoiding Arms Races*. Correctly the [Joint Statement](#) was labelled as from the Five Nuclear-Weapon States, and not P-5 States - though the US issued it as from the P-5 and then hastily corrected its mistake.

The Joint Statement noted inter alia that France, China, the Russian Federation, the UK and the US "consider the avoidance of war between Nuclear-Weapon States and the reduction of strategic risks as our foremost responsibilities. We affirm that a nuclear war cannot be won and must never be fought. As nuclear use would have far-reaching consequences, we also affirm that nuclear weapons—for as long as they continue to exist—should serve defensive purposes, deter aggression, and prevent war". Thus, while affirming the "no use" principle, the five NWS also reaffirmed continuance of nuclear deterrence policies - the latter point was missed by

many nuclear disarmament advocates!

While the five NWS reaffirmed that a nuclear war cannot be won and must never be fought, they did not reaffirm the full complement of the Reagan-Gorbachev commitment that: (a) *they should not fight any war between themselves nuclear or conventional; and (b) for none of the NWS to seek nuclear or military superiority.*

The [G20 Summit Delhi Declaration](#) of 9-10 September 2023 and the [G20 Bali Leaders Statement](#), of 15-16 November 2022, both notably stated that the *"The use or threat of use of nuclear weapons is inadmissible"*, but in essence these are vacuous statements as they fail to include any measures or steps to reduce or eliminate nuclear threats or nuclear weapons. Again, the latter point was missed by many nuclear disarmament advocates!

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Ending the Perpetual Menace of Nuclear Weapons

I titled my piece, *Ending the Perpetual Menace of Nuclear Weapons*, taking my cues from a masterful book by Professor William Walker, to mark his retirement, entitled, [A Perpetual Menace: Nuclear Weapons and International Order](#). Few academics have devoted more thought on the catastrophic and destabilizing impact of nuclear weapons on the international security order than has [William Walker](#) during his career at the School of International Relations at St. Andrews University. He took the book's title from a famous quote of [Niels Bohr's July 1944 memorandum](#) to Franklin Roosevelt in which Bohr advised that *"any temporary advantage [of using nuclear weapons], however great, may be outweighed by a perpetual menace to human security"*.

Both Bohr and Walker shared similar concerns about nuclear weapons risks, as well as an informed aversion to policy decisions on the development and governance of nuclear weapons. Regarding the abiding

goal of nuclear weapons abolition, Walker in common with Bohr places considerable emphasis on the importance of continuing efforts to seek the end of nuclear weapons. In this context, Walker asks: *“Where is the justice for anyone if the maintenance of nuclear forces for the purpose of security results, through accident or intent, in annihilation?”* Their thinking has been echoed by Austrian Disarmament Ambassador [Alexander Kmentt](#) of TPNW renown.

Closing in on the centenary in 2045 of the invention and twice use of nuclear weapons, the relentless pursuit of nuclear disarmament remains a necessary endeavour, even facing seemingly unsurmountable odds.

Walker maintains that to maintain “[nuclear order](#)”, i.e., to prevent nuclear weapons from destroying us, the urgency of a renewed commitment to the abolition of nuclear weapons is necessary for existential survival. The pursuit of nuclear abolition strengthens the NPT and TPNW frameworks while unnerving the nuclear dependent States which seek comfort and security in the existing structures of vertical nuclear proliferation.

The cover design of Walker’s book is based on the allegorical reference in (Book VI of) [Plato’s Republic](#), about a “[Ship of Fools](#)”, in which society is depicted as a ship crewed by idiots and reprobates unaware of their dysfunctional plight on a choppy sea. Walker notes that the allegory is stretched because the ship he is referring to “[carries the innocent and capable along with the deranged, and, far from being allowed to drift aimlessly, is being piloted in acute awareness of mortal danger](#)”.

An international order anchored in legal norms and treaties offers the best hopes for survival. In this regard the NPT and the TPNW could establish a “[right to nuclear peace](#)” and stop nuclear weapons becoming a “[perpetual menace](#)” - key objectives to strive for at the next NPT review conference in 2026, as well as at the [second meeting](#) of TPNW States in November this year.

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Nuclear Imperialism

It is not often commented that we have been living in an environment of a “nuclear imperialism” in which the nuclear-weapon States and nuclear-dependent States - collectively the captive nations of nuclear deterrence - have been dominant in framing the discourse, institutions and some think tanks on nuclear weapons and continuing reliance on nuclear deterrence.

The disenfranchised lot of more than 120 non-nuclear weapon States and a sizable portion of civil society rose up in revolt and brought about the TPNW in 2017. But, the balance of power or balance of terror remains clearly in favour of the nuclear captive nations given their parallel dominance in military and economic power, international financial institutions, and in international trade - with a multiplier effect from the [echo chambers](#) of well funded sympathetic NGOs, think tanks and universities that dominate much of the non-governmental discourse.

So, what is to be done to end the perpetual menace of nuclear weapons?

First, we should not despair. We have been through deep crises and wars over the past decades, and there exists significant experience in managing and controlling the nuclear arms race and competition. Now is not the time to lose hope or to collapse into confrontations or jingoisms. As in the past, the dangers of nuclear weapons far exceed any others, and we need to compartmentalize the nuclear disarmament and arms control file from other files of discord.

The shock of the October 1962 Cuban Missile Crisis led to the agreement on the Partial Test-Ban Treaty (PTBT) in 1963, the NPT in 1968, Basic Principles of Relations between the USSR and the US in 1972, followed by the 1972 Anti-Ballistic Missile (ABM) Treaty and the Strategic Arms Limitation Treaty (SALT I), followed by SALT II in 1979, the 1987 INF Treaty, START I in 1991, START II in 1993, SORT in 2002, and New START in 2010. All these important treaties were

possible due to “compartmentalizing” limitations on and reductions of nuclear weapons from other important vexing problems.

Now is the time for middle powers such as Canada to reorient their compass away from support for further confrontations and suggest creative ways forward to lessen tensions leading to further nuclear arms reductions - starting with pressing for a reassessment of NATO’s nuclear policy. To paraphrase Sir Thomas More, *“It profits Canada nothing to give our soul for the whole world, but for NATO?”*

In June this year, the [US National Security Adviser](#) (NSA), in a reversal of policy of non-engagement with Russia on nuclear weapons, announced that the US is ready to engage in bilateral arms control discussions with Russia and China “without conditions” but “with accountability”. Rather than waiting to resolve all current bilateral differences, the NSA said that the US is ready to engage with Russia to manage nuclear risks and develop a post-2026 arms control framework.

The US NSA proposed measures include:

- a. a P-5, [I prefer NWS], missile launch notification regime to help reduce risk of misperception and miscalculation in times of crises;
- b. maintaining a “human in the loop” for advanced-technology command, control, and employment of nuclear weapons;
- c. setting up crisis communications channels among the five capitals;
- d. transparency on nuclear policy, doctrine, and funding; and
- e. establishing guard rails for managing the inter-mixing or interplay between strategic and non-strategic nuclear weapons.

Other proposed concepts for future Russia-US nuclear arms reductions include, revisiting the proposal from the proposed START III in 1989 to include all nuclear warheads as units of account as a category of weapons separate from delivery systems - strategic

and non-strategic.

The Biden administration in its last 14 months in office seems to have woken up finally to the increased nuclear risks of its own policies and those of Russia and China and is trying to seek a way forward to try to manage these risks. The US’ performance in the recent NPT PrepCom in Vienna, however, would suggest otherwise. In practice, the US is focused on modernizing its own and NATO nuclear capabilities, ensuring broad participation in the alliance’s nuclear deterrent mission, recertifying F-35 aircraft to deliver reengineered B61-Mk.12 inertial guidance thermonuclear warheads forward-deployed in Europe - and among other things, continuing to assist the UK with nuclear weapons design information for the UK’s ballistic missile submarines. How many in the audience knew about that? Anyone??

While the aforementioned US arms control proposals are a good first step, by no means are they enough. For us, here in Canada, the question is whether Canada’s NSA and Global Affairs are keeping up or are mired in tired old dysfunctional and outdated frameworks of the [Non-Proliferation and Disarmament Initiative](#) and the [Stockholm Initiative](#) that no longer shape up to the current challenges? Has Canada’s NSA ever enunciated our nuclear disarmament and arms control priorities? I do not know? Do you?

What can Canada do? I would suggest to continue with championing a FMCT but with a broader scope to include existing stocks and their disposition. And, to break from NATO’s mindless opposition to the TPNW, and at a minimum to show up as an Observer in November at the second meeting of States parties and be bold enough to accede to the TPNW. No, the TPNW does not contradict, weaken, or compromise the NPT - an understanding that does not require a brain transplant only a change in perspective.

Also, equally importantly, Canada could set up a like-minded group within NATO to formulate a strategy for addressing non-strategic nuclear weapons in Europe and globally, and to comport with and to effectuate

the claim of [NATO's Strategic Concept](#) that “NATO’s goal is to create the security environment for a world without nuclear weapons, consistent with the goals of the Nuclear Non-Proliferation Treaty”.

Verification

Verification of nuclear disarmament often is put up as an obstacle to be overcome. A number of initiatives have been taken such as the Norway-UK exercise; the Nuclear Verification Partnership between Norway, Sweden, UK and US - known as the Quad; the longstanding project involving of the Atomic Weapons Establishment (AWE) in the [UK and the US](#)’ Los Alamos National Laboratories; and the US-led International Partnership for Nuclear Disarmament Verification ([IPNDV](#)).

These collaborative projects have done some good work on practicalities of (multilateral) verification of nuclear disarmament, but vital gaps remain that might be bridgeable technically but not politically or regarding classification criteria. Notably this refers inter alia to technically credible characterization of a declared object as a nuclear warhead, and more importantly criteria and techniques for monitoring and verifying nuclear warheads, and on-site verification of warhead dismantlement.

The US is on record that it shall never allow any outside verification of nuclear warhead dismantlement - other nuclear-armed States also hold the same reservations and objections.

Procedures and techniques exist or can be devised with reservations for international verification of the front end and the back end of nuclear warhead assembly/disassembly processes, but as yet not for the actual dismantlement of nuclear explosive devices.

No nuclear-armed State is willing to go that far and take the step of international oversight of actual warhead dismantlement, because they do not want to share design and isotopic information though the

generic workings of an atom bomb are well known. Not only are nuclear-armed States unwilling to accept warhead verification, in fact even under New START inspectors never directly see or interact with nuclear warheads, as security of warhead design information is paramount. So, if Russia and the US do not even show installed nuclear warheads on deployed or non-deployed delivery systems, why would we expect that they would allow verification of dismantlement?

Canada has been involved in IPNDV since its establishment, along with 30 others. According to Global Affairs Canada (GAC), Canada has provided more than \$2.5 million to the Nuclear Threat Initiative in Washington since 2018, to support NTI’s work as secretariat of the IPNDV to inter alia build and maintain the IPNDV website and experts’ portal, organize plenary meetings and technical exercises, travel support for representatives from developing States; and production of reports, videos, and infographics to highlight the IPNDV’s work. This support shall continue into 2025.

Would this \$2.5 million have been better spent were GAC to resurrect its long disbanded Verification Research Unit (VRU) or fund universities and research institutes to develop Canadian expertise - well one may ask? How or why the Department of National Defence ([DND](#)) can provide substantial funds to develop NACD academic and policy expertise but not Global Affairs Canada (GAC)? [GPWMD evaluation final report can be found [here](#).]

Not begrudging the Canadian contribution to NTI, after 2025, GAC should revisit its priorities and consider again setting up an independent non-career think tank in Ottawa along the lines of the Congressionally funded independent United States Institute for Peace and the Woodrow Wilson Centre - or a consortium of centres such as the University of Ottawa’s Centre for International Policy Studies (CIPS), our hosts today, and others along the model of the EU Non-Proliferation and Disarmament Consortium ([EUNPC](#)) which is a

network of independent disarmament and non-proliferation think tanks. Even in little Austria, where I currently live, the foreign ministry partially funds the Vienna Centre for Disarmament and Non-Proliferation.

###

Relinquishing Nuclear Weapons

It has been argued by some observers that we know relatively little about the drivers of nuclear weapons relinquishment or renunciation, and there is no consensus about how the elimination of nuclear weapons might be accomplished in practice. And, that the political dynamics of nuclear disarmament are under-studied and under-theorised - that there is no theory of nuclear disarmament or theory of renunciation of nuclear weapons.

Advocates of nuclear disarmament diplomacy often justify their positions with references to historical examples that are posited to provide lessons for disarmament policy. With only four cases of nuclear weapons relinquishment, including only one instance of dismantlement of an indigenous nuclear weapons enterprise, there are few lessons or processes on which to base policy recommendations for further relinquishment.

Add to the mix of this discussion that the production, testing and maintenance of nuclear weapons involves a significant number of jobs, lucrative contracts, and loci for bureaucratic inertia for a complex of companies, national weapons laboratories, government agencies, think tanks, and related organizations. This renders nuclear weapons disarmament and dismantlement being more difficult to achieve in a nuclear-armed State with an active nuclear weapons complex and enterprise, supported by a network of domestic vested interests of industry and policy institutes resisting nuclear abolition, with or without client allied and partner States.

South Africa remains the only State to have designed, assembled and then dismantled a number of

deliverable nuclear warheads (six in total, plus one partially constructed device). South Africa only disclosed its possession of nuclear weapons after it had unilaterally dismantled them. Also, it decided to dismantle its nuclear weapons itself in secrecy and after that to invite the IAEA to carry out post-facto verification. In deciding to do so, President F W de Klerk was saved the hassle of having to dispel nuclearized national myths or publicly articulated strategic narratives - which would not be the case with today's nine nuclear-armed States.

The collapse of the Soviet Union in 1991 resulted in four States with inherited Soviet nuclear weapons - Belarus, Kazakhstan, Russia and Ukraine. Only Russia had control of launch codes and procedures, as Soviet nuclear weapons were under central XII Main Directorate control. While Belarus, Kazakhstan and Ukraine had Soviet nuclear weapons on their territory - both strategic and tactical - they did not have access to launch controls, permissive action links and maintenance procedures. In the wake of Russia's military attack of February 2022 on Ukraine, some revisionist literature claims that these States could have developed the capabilities to control and launch these nuclear weapons - clearly such claims are based more on fantasy than on reality.

The international community was not ready to accept four nuclear-armed successor States to the Soviet Union - with 90% of Soviet nuclear weapons in Russian territory along with the related production, maintenance and command and control enterprise, only Russia was acceptable as the successor State and was allowed to take on the USSR's international treaty obligations - eventually confirmed by the Security Council (through the presence of Russia at the [31 January 1992](#) UNSC meeting at the level of heads of State and Government). The three other former Soviet republics were induced to relinquish the nuclear weapons on their territories and to accede to the NPT as non-nuclear weapon States (NNWS) through a mix of political pressure and economic incentives, and NPT-related declaratory security assurances.

Returning to nuclear disarmament and verification, I for one maintain that the only practical and cost-efficient way to proceed would be to emulate the South Africa model of unilateral dismantlement of nuclear warheads and placing released nuclear material under IAEA attribute monitoring with information barrier ([AVIB](#)). The AVIB technology was developed at the IAEA with the involvement of Russia and the US to place under seal to monitor plutonium released from nuclear warheads, to ensure its permanent non-reuse in new warheads with the ultimate objective of converting the plutonium into nuclear fuel for nuclear power reactors to generate electricity for the public.

Incidentally Canadian CANDU reactors can efficiently burn a mixed-oxide plutonium fuel mixture without significant technical reengineering. In fact, then-Prime Minister Jean Chretien became an ardent supporter of this version of [megatons to megawatts](#) to dispose of ex-weapons plutonium in CANDU reactors and supply electricity to Canadians. Full disclosure here, at the risk of being stripped of the CNWC award, I wrote a policy paper for Prime Minister Chretien on this and accompanied him to the 1996 nuclear safety and security summit in Moscow.

This concept of disposition of ex-weapons plutonium emulated the 1993 Gore-Chernomyrdin agreement to downblend 500 tonnes of highly-enriched uranium from dismantled Russian nuclear warheads to low enriched uranium to be used to generate electricity in the US. In this two-decade long project, HEU downblended into LEU powered US nuclear power reactors to generate nearly 25% of electricity for more than 20 years. Thus, HEU from 20,000 Russian nuclear warheads was successfully converted into electricity. The HEU is easier to “de-weaponize” by dilution to low enriched uranium at 2 to 5 percent uranium-235 for use in civilian power reactors.

The uncomfortable truth is that we cannot achieve 100% nuclear warhead dismantlement verification, we can do so for missiles, submarines, and bombers but not for the warheads - period! Nothing in life is 100%

guaranteed, we live with risks every day - so, we will need to learn to live with some risks as regards unilateral nuclear warhead dismantlement - actually we have been doing so for decades.

We may not remember that the global number of nuclear warheads peaked in 1986 at an estimated [70,374](#). The USSR peaked at an estimated 40,159 in 1991; the United States at 31,175 in 1967. In all, it is estimated that more than 125,000 nuclear warheads were built since 1945. Today, there are about 12,500. What happened to the difference of nearly 58,000 warheads between 70,374 and 12,500; and the 112,500 from the 125,000? All were unceremoniously dismantled - unilaterally!

The 2060 known nuclear test detonations consumed at least that number of nuclear explosive devices, the rest were quietly and unceremoniously dismantled. Tritium gas is bled out into cannisters, the pits (the Pu cores) and the secondaries (HEU) converted into other forms, but several thousands of pits and secondaries remain in storages - for possible reuse in new warheads - unless subject to conversion or disposition under a future FMCT that includes existing stocks of weapon-usable nuclear materials and international monitoring with AVIB.

The dismantlement process can be replicated for today's estimated 12,500 warheads - while international monitoring and verification would be desirable but not possible, but why make the good the enemy of the best? Verification ayatollahs may not be pleased at this suggestion, but we need to be practical if we are to close the era of nuclear weapons at 100 years in 2045.

A practical guide for such a measure has been in existence for two decades, we do not need to reinvent the wheel or reach for the stars as regards verification - sufficiency is called for.

In September 1993, the US Office of Technology Assessment published a manual entitled, [Dismantling the Bomb and Managing the Nuclear Materials](#). The

nuclear-armed States could be encouraged to consider further reductions and elimination of nuclear warheads by returning warheads to the facilities that assembled them, dismantle the warheads, and store or dispose of their components, parts, and key nuclear materials, and further to convert or dispose of the contained nuclear materials rendering them unavailable for re-use into nuclear explosive devices.

According to the OTA, the US annual dismantlement rate in the 1990s on average was about 1400 to 1500 warheads or just over 110 per month, meaning about 4 per day; but as inventories declined the rate went down to about 300 annually after 1999.

The estimated dismantlement rate for Russia as disclosed by MINATOM was about 1500 to 2500 warheads dismantled per year and went down to about 400-500 per year in 2007. Given time constraints I'll skip getting into data for France and the UK, and others.

The Nuclear Threat Initiative, building on the OTA, IAEA and other work, has suggested a [14-stage dismantlement process](#), beginning with the removal of a nuclear warhead from its delivery system, dismantlement (step 8) and ending with the disposition of its separate components. However, investing further diplomatic energy and financial resources to devise international verification of warhead dismantlement (step 8) is akin to chasing butterflies, unicorns and rainbows.

Thus, it is possible to envisage unilateral complete dismantlement of today's nuclear warhead stocks in about two decades and to achieve zero nuclear warheads by 2045 - the 100th anniversary of the first test detonation and two uses of nuclear weapons. This is not pie in the sky. The 1991 Presidential Nuclear Initiatives launch by Presidents Bush Sr and Gorbachev removed nuclear warheads from ships and submarines - this is still the case.

Can we do this - yes, we can!

Provided we compartmentalize the nuclear weapons threat and find ways for the nine nuclear-armed States to get to zero.

The NPT already obligates the five NWS. The TPNW provides another complementary avenue to include the four non-NPT nuclear-armed States; this Treaty provides for accession after unilateral divestment or divestment within a specified period after accession.

To expect that we can negotiate any new multilateral nuclear arms reduction agreement in the near term seems impossible, and that might well also be the case for bilateral or plurilateral such agreements.

Where do we go from here? Be practical as I have just suggested. And, at another level, an international order anchored on legal norms and treaties offers the best hopes for survival. In this regard the NPT and the TPNW, together with international humanitarian law, could establish a "[right to nuclear peace](#)" and stop nuclear weapons becoming a "[perpetual menace](#)".

I end by echoing the famous line by the late indomitable NDP leader Tommy Douglas, "*Courage my friends; 'tis not too late to build a better world*" - though time may well be running out given the existential risks and planetary emergency of continuing reliance on nuclear weapons by some 40 unrepentant States.

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These remarks were given as part of an event held on October 23, 2023 titled **Ending the Perpetual Menace of Nuclear Weapons**. The event was presented by Canadians for a Nuclear Weapons Convention and the Centre for International Policy Studies. The remarks were given by Tariq Rauf, the 2023 recipient of the Distinguished Achievement Award from Canadians for a Nuclear Weapons Convention (CNWC). The entire event is available on the CIPS Youtube channel.



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