



ENGAGEMENT ON NUCLEAR DISARMAMENT BETWEEN NUCLEAR WEAPON-POSSESSING STATES AND NON-NUCLEAR WEAPON STATES

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Engagement on nuclear disarmament between nuclear weapon-possessing states and non-nuclear weapon states

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**STOCKHOLM INTERNATIONAL
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HIROSHIMA PREFECTURE

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Abbreviations

CTBT	Comprehensive Nuclear-Test-Ban Treaty
DOE	United States Department of Energy
ENDC	Eighteen-Nation Disarmament Committee
EW	Electronic warfare
FMCT	Fissile Material Cut-off Treaty
HEU	Highly enriched uranium
IAEA	International Atomic Energy Agency
ICBM	Intercontinental ballistic missile
ICJ	International Court of Justice
ICRC	International Committee of the Red Cross
INF	Intermediate-range nuclear forces
IPFM	International Panel on Fissile Materials
IPNDV	International Partnership for Nuclear Disarmament Verification
JDEC MOA	Joint Center for the Exchange of Data from Early Warning Systems and Notifications of Missile Launches
JSSC	Joint Strategic Stability Centre
LAS	League of Arab States
MAD	Mutual assured destruction
MT	Metric tonnes
NAC	New Agenda Coalition
NAM	Non-Aligned Movement
NATO	North Atlantic Treaty Organization
New START	Treaty on Measures for the Further Reduction and Limitation of Strategic Offensive Arms
NNSA	National Nuclear Security Administration
NNWS	Non-nuclear-weapon states parties
NPDI	Non-Proliferation and Disarmament Initiative
NPT	Treaty on the Non-Proliferation of Nuclear Weapons
NPTREC	NPT Review and Extension Conference
NRRC	Nuclear Risk Reduction Centre
NSG	Nuclear Suppliers Group
NSNW	Non-strategic nuclear weapon system
NWFZ	Nuclear weapon-free-zone
NWPS	Nuclear weapon-possessing state
NWS	Nuclear-weapon state
OEWG	Open-Ended Working Group
P5	Permanent members of the United Nations Security Council
PNE	Peaceful nuclear explosion
PrepCom	Preparatory Committee
Pu	Plutonium
R&D	Research and development
RNAD	Royal Naval Armament Depot
SAC	Strategic Air Command
SLBM	Submarine-launched ballistic missile
SSBN	Ballistic missile submarine
START II	Treaty on Further Reduction and Limitation of Strategic Offensive Arms
UNSSOD	United Nations General Assembly Special Session on Disarmament
USAF	United States Air Force

Executive summary

As preparations commence in Vienna for the 2020 Review Conference of the 1968 Treaty on the Non-Proliferation of Nuclear Weapons (NPT), differences between the non-nuclear-weapon states parties (NNWS) and the nuclear-weapon states (NWS) on the pace and extent of nuclear disarmament are widening. As the NPT approaches the 50th anniversary of its entry-into-force, these differences are becoming ever more intractable and have endangered the future of the treaty. In addition, major divergences have emerged within the NNWS between the large majority of states and the some 30 NNWS that are members of nuclear-armed defence arrangements. Article VI of the NPT obligates NPT states parties to ‘pursue negotiations in good faith on effective measures relating to the cessation of the nuclear arms race at an early date and to nuclear disarmament’, as well as ‘on a treaty on general and complete disarmament under strict and effective international control’. How to interpret and implement Article VI remains at the heart of the disagreements between the feuding sides and has led to failure at four previous NPT review conferences to agree on an outcome document and has cast a cloud over the next review conference in 2020.

In 1995 the NPT was extended indefinitely through an interlinked package of three decisions and a resolution. This included ‘principles and objectives on non-proliferation and disarmament’—a template of measures against which to assess implementation of the treaty.

In 2000 all NPT states parties present agreed to thirteen ‘practical steps for the systematic and progressive efforts to implement Article VI’ and the relevant measures agreed in 1995 (Decision 2). The ‘13-practical steps’ provided an interpretation of the ‘effective measures’ called for in Article VI in addition to an ‘unequivocal undertaking by the nuclear-weapon States to accomplish the total elimination of their nuclear arsenals leading to nuclear disarmament to which all States parties are committed under Article VI’. Following adoption of the final document, Ambassador Antonio de Icaza (Mexico) aptly observed that ‘[W]hat has always been implicit has now become explicit’.

In 2010 NPT states unexpectedly agreed on ‘principles and objectives’ comprising 22 actions on nuclear disarmament while expressing ‘deep concern at the humanitarian consequences of any use of nuclear weapons’—a restatement, using different words, of preambular paragraph 2 of the NPT.

Subsequent international conferences on the humanitarian consequences of nuclear weapons held in Oslo (2013), Nayarit (2014) and Vienna (2014) ‘addressed the short and long-term consequences of nuclear weapons, the impact of nuclear testing, the risk drivers for deliberate or inadvertent nuclear weapons use, scenarios of nuclear weapons use and the associated challenges as well as an overview of the norms under existing international law pertaining to the humanitarian consequences of nuclear weapons explosions’.

The Vienna Conference also initiated a Pledge that gained the support of nearly 100 NNWS at the (failed) 2015 NPT Review Conference. Pursuant to United Nations General Assembly resolutions, Open-Ended Working Groups (OEWG) were convened in 2013 and 2016 to develop proposals to take forward multilateral nuclear disarmament negotiations for the achievement and maintenance of a world without nuclear weapons. On 23 December 2016 the UN General Assembly adopted Resolution 258 on commencing negotiations in 2017 on a treaty banning nuclear weapons. The first session of negotiations on the ‘ban treaty’ as it became known were held from 27–31 March; the second session is scheduled to take place from 15 June–7 July 2017. The 2016 OEWG and the ban treaty negotiations have led to an increasing polarization

between the vast majority of NNWS and the NWS, as well as between the 30 NNWS reliant on nuclear-armed defence arrangements ('umbrella' states) and the other 150 plus non-nuclear-weapon states. All nine states possessing nuclear weapons together with most of the 'umbrella' states have boycotted the ban treaty negotiations, calling them misplaced.

The first session of the Preparatory Committee for the 2020 NPT Review Conference will meet in Vienna from 2–12 May 2017. The meeting will take place in the shadow of the ban treaty negotiations and amid a raft of negative international developments including: deteriorating relations between Russia and the West, nuclear weapons modernization in all nine nuclear-armed states, an increased risk of nuclear weapons use, the advancing nuclear and missile programmes of North Korea, stalemate on the implementation of the 1995 NPT resolution on the Middle East (zone free of nuclear and other weapons of mass destruction), the unfinished business of bringing about the entry-into-force of the Comprehensive Nuclear-Test-Ban Treaty (CTBT), and efforts by most of the participating states in the Nuclear Suppliers Group to extend civil nuclear cooperation to non-NPT states in clear violation of the applicable provisions of the 1995 and 2000 agreed NPT outcomes.

In light of the stressed relationship between and among the NNWS and the NWS what is to be done to preserve the integrity and authority of the treaty and its review process? How can engagement be built on disarmament of nuclear weapons? Clearly, restoring engagement and dialogue should be the first order of business in an attempt to build bridges between the NWS and the NNWS, overcome differences and chart a way forward to bringing an end to the era of nuclear weapons. In this regard, the paper discusses two possible ways to bridge differences over nuclear disarmament: (a) review the roles and responsibilities of states possessing nuclear weapons and non-nuclear weapon states; and (b) transparency measures concerning nuclear weapons that contribute to preventing detonations by accident or in war and facilitating disarmament. In addition, the discussion touches upon the CTBT, the Fissile Material Cut-off Treaty including existing stocks, the humanitarian impact of nuclear weapons and the ban treaty as well as verification of nuclear disarmament.

Engagement on nuclear disarmament between nuclear weapon-possessing states and non-nuclear weapon states*

Introduction

As preparations commence in Vienna for the 2020 Review Conference of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), differences between the non-nuclear weapon states parties (NNWS) and the nuclear weapon states (NWS) on the pace and extent of nuclear disarmament are widening.¹ As the 50th anniversary of the entry-into-force of the treaty approaches, these differences are becoming ever more intractable and have imperilled the future of the treaty. In addition, major differences have emerged within the NNWS between the large majority of such states and some 30 NNWS that are members of nuclear-armed defence arrangements.² Article VI of the NPT obligates NPT states parties to ‘pursue negotiations in good faith on effective measures relating to the cessation of the nuclear arms race at an early date and to nuclear disarmament’, as well as negotiations ‘on a treaty on general and complete disarmament under strict and effective international control.’ How to both interpret and implement Article VI remains at the heart of the disagreements between the feuding sides and has led to failure at four review conferences to date to agree on an outcome document.³

The NPT was extended indefinitely in 1995 through an interlinked package of three decisions and a resolution.⁴ A key achievement of 1995 was a consensus agreement on a statement of ‘principles and objectives on non-proliferation and disarmament’—a template of measures against which to assess implementation of the treaty. The principles and objectives called for a reaffirmed commitment to Article VI by the NWS, including a programme of action for the ‘full realization and effective implementation’ of NPT Article VI; the completion of a Comprehensive Nuclear-Test-Ban Treaty (CTBT) no later than 1996; the immediate commencement and early conclusion of negotiations on a convention banning production of fissionable material for nuclear weapons; and the ‘determined pursuit by the nuclear-weapon states of systematic and progressive

¹ This paper was given as a presentation at the event ‘Bridging a gap between nuclear-weapon states and non-nuclear-weapon states’ hosted by the Hiroshima Prefectural Government, SIPRI and the United Nations Institute for Disarmament Research (UNIDIR) on 2 May 2016 at the Vienna International Centre. It draws on previous presentations by the author in relation to work with the Open-ended Working Group ‘Taking Forward Multilateral Nuclear Disarmament Negotiations’, including ‘The role and responsibilities of nuclear-weapon possessing states and non-nuclear-weapon states’, 23 May 2013, Geneva, <[http://www.unog.ch/80256EDD006B8954/\(httpAssets\)/35D48CD-FE7445637C1257B75004068DE/\\$file/Tarik-Rauf.pdf](http://www.unog.ch/80256EDD006B8954/(httpAssets)/35D48CD-FE7445637C1257B75004068DE/$file/Tarik-Rauf.pdf)>; and ‘Nuclear weapons: transparency and risk reduction’, Feb. 2016, <http://www.atomicreporters.com/wp-content/uploads/2016/02/OEWG_25Feb2016_Final_RAU2.pdf>.

² These 30 states are the NATO NNWS plus Australia, Japan and the Republic of Korea. More than 110 NNWS are parties respectively to the nuclear weapon-free zones treaties of Tlatelolco, Rarotonga, Bangkok, Pelindaba and Semipalatinsk. Mongolia is a single state nuclear weapon-free space recognized by the UN General Assembly.

³ NPT Review Conferences held in 1980, 1990 and 2005 ‘failed’ due to differences on nuclear disarmament. The 2015 Review Conference overtly failed because of differences on the implementation of the 1995 NPT Resolution on the Middle East, but it also failed to agree on the nuclear disarmament elements of the draft final document. See Dhanapala J. and Rauf, T., SIPRI, *Reflections on the Treaty on the Non-Proliferation of Nuclear Weapons: Review conferences and the future of the NPT* (SIPRI: Stockholm, 2016), pp. 141–43, 147, <https://www.sipri.org/sites/default/files/Reflections%20on%20the%20NPT_Dhanapala%20and%20Rauf.pdf>.

⁴ Dhanapala and Rauf (note 3), pp. 246–52.

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efforts to reduce nuclear weapons globally, with the ultimate goals of eliminating those weapons'.⁵

A number of positive developments from 1995 generated optimism and built momentum that ultimately led to the adoption of the 2000 NPT Review Conference Final Document by consensus.⁶ These included the indefinite extension of the treaty in 1995; the ratification of the START II agreement between the Russian Federation and the United States on reductions in strategic offensive weapons; the signing of the African NWFZ treaty; the advisory opinion of the International Court of Justice (ICJ) on the (NPT Article VI) obligation to conclude negotiations on nuclear disarmament; and the adoption of the CTBT by the General Assembly, in 1996. Further impetus was gained through the 1997 Helsinki Summit between presidents Boris Yeltsin and Bill Clinton that issued the Joint Statement on Parameters of Future Reductions in Nuclear Forces, the entry-into-force of the Bangkok NWFZ treaty and the adoption by the General Assembly of a resolution 'Towards a Nuclear-Weapon-Free World' sponsored by the New Agenda Coalition states. These constructive developments persevered through less positive developments such as nuclear tests first by India and then by Pakistan in 1998, and the reversals of 1999 of the US Senate's rejection of CTBT ratification and NATO's 'Strategic Concept' reaffirming the centrality of nuclear weapons for alliance security. In 2000, all NPT states parties present agreed to thirteen 'practical steps for the systematic and progressive efforts to implement Article VI' and the relevant measures agreed in 1995 (Decision 2). It can be said that the 2000 Final Document '13-practical steps' provided an interpretation of the 'effective measures' noted in Article VI, in addition to an 'unequivocal undertaking by the nuclear-weapon States to accomplish the total elimination of their nuclear arsenals leading to nuclear disarmament to which all States parties are committed under Article VI'. As Ambassador Antonio de Icaza (Mexico) aptly observed following adoption of the final document that '[W]hat has always been implicit has now become explicit.'

The next successful outcome—albeit a partial success that was completely unexpected given the failure to implement previous agreed outcomes—was at the 2010 NPT Review Conference. The principles and objectives agreed in 2010 were significant in that they reaffirmed the unequivocal undertaking of the NWS and the continued validity of the practical steps and agreed upon 22 'actions' on nuclear disarmament; expressed 'deep concern at the humanitarian consequences of any use of nuclear weapons—a restatement of preambular paragraph 2 of the NPT that refers to 'the devastation that would be visited upon all mankind by a nuclear war... and to take measures to safeguard the security of peoples'—and additionally reaffirmed 'the need for all States at all times to comply with...international humanitarian law'.⁸ The 22 actions on nuclear disarmament can be taken as describing some of the effective measures referred to in Article VI.

Recalling and rephrasing the NPT preambular reference to the humanitarian consequences of any use of nuclear weapons was a turning point in the consideration of nuclear disarmament by NPT states parties; this became the seed for both unifying the vast majority of NPT NNWS to call for an internationally legally binding instrument

⁵ For a detailed account of the 1995 NPT Review and Extension Conference, see Rauf, T. and Johnson, R., 'After the NPT's indefinite extension the future of the global nonproliferation regime', *The Nonproliferation Review*, Fall 1995, <<https://www.nonproliferation.org/wp-content/uploads/npr/raufjo31.pdf>>; and Dhanapala and Rauf (note 3), pp. 8–69.

⁶ See Rauf, T., 'Interview—Ambassador Abdallah Baali on the 2000 NPT Review Conference', *The Nonproliferation Review*, Fall/Winter 2000, <<http://www.nonproliferation.org/wp-content/uploads/2016/06/baal73.pdf>>; and Dhanapala and Rauf (note 3), pp. 83–86.

⁷ Quoted by Associated Press, 'The five nuclear powers on the Security Council agreed Saturday to eliminate', *Deseret News*, 21 May 2000, <<http://www.deseretnews.com/article/761373/UNITED-NATIONS---The-five-nuclear-powers-on-the-Security-Council-agreed-Saturday-to-eliminate.html>>.

⁸ See Dhanapala and Rauf (note 3), pp. 191–93.

to prohibit nuclear weapons, and in deepening the schism between the NNWS and NWS on nuclear disarmament. International conferences on the humanitarian consequences of nuclear weapons held in Oslo (2013), Nayarit (2014) and Vienna (2014) ‘addressed the short and long-term consequences of nuclear weapons, the impact of nuclear testing, the risk drivers for deliberate or inadvertent nuclear weapons use, scenarios of nuclear weapons use and the associated challenges as well as an overview of the norms under existing international law pertaining to the humanitarian consequences of nuclear weapons explosions’.⁹ The Vienna Conference also initiated a Pledge¹⁰ that gained the support of nearly 100 NNWS at the (failed) 2015 NPT Review Conference.¹¹ Pursuant to UN General Assembly resolutions, open-ended Working Groups (OEWG) were convened in 2013 and 2016 to develop proposals to take forward multilateral nuclear disarmament negotiations for the achievement and maintenance of a world without nuclear weapons.¹² On 23 December 2016 the General Assembly adopted Resolution 258 on commencing negotiations in 2017 on a treaty banning nuclear weapons. The first session of the so-called ‘ban treaty’ negotiations was held from 27–31 March 2017 with a second session scheduled for 15 June–7 July 2017. The 2016 OEWG and the ban treaty negotiations have led to a polarization between the vast majority of NNWS and the NWS, as well as between the 30 NNWS reliant on nuclear-armed defence arrangements (so-called ‘umbrella’ states) and the other 150 or so NNWS. All nine states possessing nuclear weapons together with most of the umbrella states have stayed away from the ban treaty negotiations.

The first session of the Preparatory Committee in advance of the 2020 NPT Review Conference will meet in Vienna from 2–12 May 2017. The meeting will take place in the shadow of the ban treaty negotiations and amid a raft of negative international developments including: deteriorating relations between Russia and the West, advancing nuclear and missile programmes of North Korea, stalemate on the implementation of the 1995 NPT resolution on the Middle East (zone free of nuclear and other weapons of mass destruction), the unfinished business of bringing about the entry-into-force of the Comprehensive Nuclear-Test-Ban Treaty (CTBT), and efforts by most of the participating states in the Nuclear Suppliers Group to extend civil nuclear cooperation to non-NPT states in clear violation of the applicable provisions of the 1995 and 2000 agreed NPT outcomes.¹³

The strained relationship between and among the NNWS and the NWS raises a number of questions: how can the integrity and authority of the treaty and its review process be preserved and how can engagement be built on disarmament of nuclear weapons? Clearly, restoring engagement and dialogue should be the first order of business in an attempt to build bridges between the NWS and the NNWS and overcome differences. In this regard it could be useful to: (a) review the roles of states possessing nuclear weapons and non-nuclear-weapon states; and (b) to consider transparency measures concerning nuclear weapons that contribute to preventing accidental or deliberate detonations and facilitating disarmament. While there are other significant

⁹ Vienna Conference on the Humanitarian Impact of Nuclear Weapons, 8–9 Dec. 2014, <<https://www.bmeia.gv.at/en/european-foreign-policy/disarmament/weapons-of-mass-destruction/nuclear-weapons-and-nuclear-terrorism/vienna-conference-on-the-humanitarian-impact-of-nuclear-weapons/>>.

¹⁰ Vienna Conference on the Humanitarian Impact of Nuclear Weapons, 8–9 Dec. 2014, ‘Pledge presented at the Vienna Conference on the Humanitarian Impact of Nuclear Weapons by Austrian Deputy Foreign Minister Michael Linhart’, <https://www.bmeia.gv.at/fileadmin/user_upload/Zentrale/Aussenpolitik/Abreustung/HINW14/HINW14_Austrian_Pledge.pdf>.

¹¹ See Dhanapala and Rauf (note 3), pp. 199–209, and Potter, W. C., ‘The unfulfilled promise of the 2015 NPT Review Conference’, *Survival: Global Politics and Strategy*, Feb./Mar. 2016, pp. 151–78, <<https://www.iiss.org/en/publications/survival/sections/2016-5e13/survival-global-politics-and-strategy-february-march-2016-44d5/58-1-10-potter-728f>>.

¹² UN General Assembly Resolution 67/56, 4 Jan. 2013; and UN General Assembly Resolution 70/33, 11 Dec. 2015.

¹³ 1995 NPTREC, Decision 2, para. 12, and NPT 2000 Final Document, Article III, para. 36.

matters that could be considered in this context, this discussion focuses on the two themes noted above.

Roles and responsibilities of nuclear weapon-possessing and non-nuclear weapon states

What are the roles and responsibilities of the nuclear weapon-possessing states (NWPS) and the non-nuclear-weapon states (NNWS)?¹⁴ While there may be several different ways to address this question, for the purposes of this discussion the roles of the NWPS are categorized into two distinct but related aspects: the roles of the five nuclear-weapon states (NWS) as defined under the NPT, under nuclear weapon-free zones (NWFZs), in their capacity as the permanent members of the United Nations Security Council, and as providers of ‘extended deterrence’; and the roles of the remaining four NWPS in contributing to regional and global security. The roles of the NNWS are quite clear under the NPT and NWFZ treaties, but questions arise over the roles of some 30 NNWS that are party to nuclear-armed alliances/arrangements and as such rely on the extended nuclear deterrence or security provided by their NWS patrons. In addition, one may also consider the roles of both NWS and NNWS under the NPT and NWFZs. Finally, one might also consider the roles of all NWPS and NNWS.

Roles and responsibilities of the nuclear weapon states

In discussing the roles and responsibilities of the nuclear-weapon states, Judge Mohammed Bedjaoui of ICJ said: ‘...nuclear weapons seem to me absolutely of a nature to cause indiscriminate victims among combatants and non-combatants alike, as well as unnecessary suffering among both categories... *The existence of nuclear weapons is therefore a major challenge to the very existence of humanitarian law...*’.¹⁵

Why cite Judge Bedjaoui here, one might well ask? The reason is simple: to recall that five of the nuclear-weapon possessor states with the largest arsenals have already assumed the legal obligation under Article VI of the NPT ‘to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament’.¹⁶

Two of the principal negotiators of the NPT—the late Ambassador George Bunn (USA) and Ambassador Roland Timerbaev—recalled that in the summer of 1968, following the opening for signature of the NPT, the two co-drafters of the treaty, the United States and the Soviet Union, had given meaning to Article VI at the Eighteen-Nation Disarmament Committee (ENDC) (the predecessor of the Conference on Disarmament). At this meeting, the USA and the Soviet Union reached agreement on an agenda of measures to be discussed at the ENDC pursuant to a heading taken from Article VI, namely: ‘effective measures relating to the cessation of the nuclear

¹⁴ The term nuclear-weapon-possessing states (NWPS) covers both nuclear-weapon states parties to the NPT (China, France, Russian Federation, the UK and the USA) and states with nuclear weapons not party to the NPT (India, Israel, Pakistan and North Korea). NWPS is merely a term of convenience, the term nuclear-armed states is also used in this context. The rationale being that the term nuclear-weapon states is defined in Article XI of the NPT as ‘one which has manufactured and exploded a nuclear weapon or other nuclear device prior to 1 January 1967’.

¹⁵ Bedjaoui, M., ‘Keynote address at Conference on Good Faith, International Law, and Elimination of Nuclear Weapons: the once and future contributions of the International Court of Justice’, Geneva, 1 May 2008, <<http://www.lcnp.org/disarmament/2008May01eventBedjaoui.pdf>>.

¹⁶ Treaty on the Non-Proliferation of Nuclear Weapons (Non-Proliferation Treaty, NPT), opened for signature 1 July 1968, entered into force 5 Mar. 1970, INF CIRC/140, 22 Apr. 1970, <<http://www.iaea.org/Publications/Documents/Treaties/npt.html>>.

arms race at an early date and to nuclear disarmament... and subsequent *elimination* of nuclear stockpiles...' ‘The “effective measures...heading was the first on the agenda.”¹⁷

Earlier that same year the United States gave further force to Article VI in its statement recommending the final text of the NPT to the United Nations General Assembly asserting that, ‘ ...the permanent viability of this treaty will depend in large measure on our success in the further negotiations contemplated by Article VI...’.¹⁸

The clear interpretation of Article VI in the negotiating history of the NPT and in the practice of agreed outcomes of review conferences—in particular in 1995, 2000 and 2010—is the unequivocal commitment given by the NWS to negotiate in good faith on nuclear disarmament leading to the elimination of nuclear weapons. Article VI clearly requires all five nuclear-weapon states to commence such negotiations and, as determined by the International Court of Justice (ICJ) in 1996, to reach a definitive conclusion to negotiations on nuclear disarmament leading to the elimination of all nuclear weapons. This is a responsibility of the nuclear-weapon states.

In comparison to the earlier statements supporting their obligations under Article VI, the current rhetoric of the five-nuclear-weapon states and the non-nuclear-weapon ‘umbrella states’ that shelter under assurances of extended deterrence focuses on the argument that Article VI requires *all* NPT States parties to ‘undertake to pursue negotiations in good faith’, not only the nuclear-weapon states.

Roles and responsibilities of NNWS

In addressing the claim that Article VI requires all NPT states parties to commit to pursue negotiations in good faith and not just the nuclear-weapon states, the vast majority of the NNWS have in fact already contributed to the goal of nuclear disarmament through the fact of their membership of the treaty and the establishment of nuclear-weapon-free zones in Latin America and the Caribbean, the South Pacific, Southeast Asia and Africa and Central Asia. Mongolia’s nuclear weapon-free status has been recognized by the UN General Assembly. Furthermore, the majority of NNWS also are parties to other global nuclear arms control and disarmament treaties including the Partial-Test-Ban Treaty (1963), the Outer Space Treaty (1967), the Sea-Bed Arms Control Treaty (1971), the Moon Agreement (1979) and the Comprehensive Nuclear-Test-Ban Treaty (1996).¹⁹

Furthermore, as required by the NPT, the NNWS have demonstrated their commitment to a nuclear weapon-free world by permanently renouncing nuclear weapons, to limit nuclear activities exclusively for peaceful purposes (including the implementation of safeguards and nuclear verification, accounting and control measures in accordance with the safeguards system of the International Atomic Energy Agency).²⁰

Shared responsibility?

In considering the *shared responsibility* between the NWS and the NNWS for nuclear disarmament, Ambassador Jayantha Dhanapala posed the question: ‘Can an elephant and an ant share responsibilities for their jungle habitat?’ Dhanapala himself provided

¹⁷ Bunn G., Timerbaev, R. M. and Leonard, J. F., *Nuclear Disarmament: How Much Have the Five Nuclear Powers Promised in the Non-Proliferation Treaty?* (The Lawyers Alliance for World Security, the Committee for National Security and the Washington Council on Non-Proliferation, June 1994), p. 21.

¹⁸ Statement by the Permanent Representative of the USA to the United Nations, 26 Apr. 1968, *Documents on Disarmament 1968*, US ACDA, pp. 230-231.

¹⁹ United Nations, UN Office for Disarmament Affairs, Disarmament Treaties Database: <<http://disarmament.un.org/treaties/>>.

²⁰ The only notable NNWS exceptions to the undertaking to renounce nuclear weapons for national security are the some 30 ‘umbrella states’ that are party to nuclear armed alliances and defence arrangements, including those hosting nuclear weapons of NWS on their territories.

the answer to his question in noting that Article VI confers a greater responsibility on NWS and their allies by virtue of their possession of nuclear military capabilities. Drawing on the 1996 ICJ Advisory Opinion, Dhanapala contends that NWS therefore bear special responsibilities for achieving nuclear disarmament and thus the argument on ‘shared responsibilities’ does hold much credibility.²¹ Thus while NNWS’ responsibilities cover all aspects of the NPT, shared responsibility does not mean equal responsibility for achieving nuclear disarmament.

Therefore, NNWS should proceed cautiously in accepting arguments and proposals demanding the acceptance of yet more responsibilities under the NPT while the NWS remain in an implementation deficit in nuclear disarmament in accordance with Article VI and the agreed outcomes of 1995, 2000 and 2010. This is not to downplay the importance of nuclear safety and nuclear security measures which must be strengthened by all states, regardless of their nuclear weapons status. The crux of the matter, as emphasized by Dhanapala, is that an inherently discriminatory treaty cannot be strengthened by further discrimination and that all possessor states shoulder the main responsibility for achieving a world without nuclear weapons.²²

The NPT and the NWS

The role of the five NWS under the NPT may be considered in two further ways. Firstly, as the prime movers of the NPT (by virtue of their roles as co-drafters of the treaty text and the co-chairs of the ENDC where the NPT was negotiated and finalized), the USA and the Russian Federation (as the successor state to the Soviet Union, USSR) have a clear role and the responsibility to both uphold the treaty and their respective commitments as NWS as well as to bring the remaining three NPT-NWS and other NWPS into the fold of multilateral nuclear disarmament implementation. While Russia and the USA did not originally envisage any nuclear disarmament provision in the draft treaty, only accepting the text under pressure from the NNWS, the negotiating record of the NPT shows that the nature of the measures envisaged in Article VI clearly directly bound the NWS to the obligation to halt the nuclear arms race and pursue nuclear disarmament. Indeed, both the USA and USSR accepted this undertaking, which was considered by the NNWS not only in the context of achieving a more secure world, but as a quid pro quo for their renunciation of nuclear weapons.²³

That Russia and the USA have taken steps to dramatically reduce the numbers of deployed nuclear weapons and agreed to verified limits on deployed nuclear warheads and delivery vehicles is highly commendable. However, they have yet to agree in a formal treaty on measures to verifiably dismantle and dispose of nuclear warheads, reduce and eliminate non-deployed warheads, and further cut the number of warheads below the levels of the New START agreement on the road to complete disarmament.²⁴

Secondly, Russia, the United Kingdom and the USA are co-depositaries of the NPT under Article IX.3 of the treaty. According to the UN Treaty Handbook, the depositary of a treaty is responsible for ensuring the proper execution of all actions relating to that treaty. The depositary’s duties are international in character, and the depositary is under an obligation to act impartially in the performance of those duties. Thus, in the case of the NPT, the depositary states must be guided in the performance of

²¹ Dhanapala, J., ‘Common responsibilities in the NPT—shared or asymmetrical?’, ed. S. Sagan, *Shared Responsibilities for Nuclear Disarmament: A Global Debate* (American Academy of Arts and Sciences: 2010), p. 22.

²² Dhanapala (note 21), pp. 22–23.

²³ This argument is drawn from Shaker, M. I., *The Nuclear Non-Proliferation Treaty: Origin and Implementation 1959–1979, Volume II* (Oceana Publications Inc: London, 1980), pp. 562–65.

²⁴ Under the New START treaty, Russia and the US agreed to reduce their arsenals to 1550 deployed strategic nuclear warheads each by 5 Feb. 2018. US Department of State, ‘New START’, <<https://www.state.gov/t/avc/newstart>>.

depositary functions by: (a) provisions of the treaty; (b) decisions, resolutions and outcomes agreed by the states parties at Review Conferences; and (c) international law, including customary international law.²⁵

Nuclear weapon modernization

As referred to previously, the NWS and other NWPS have the responsibility for the stewardship of their nuclear arsenals and to reduce and eliminate the threat to humanity and to themselves emanating from their nuclear weapons—as there are no ‘right’ nor ‘safe’ hands for the possession and control of nuclear weapons. Rather than taking concrete steps toward the elimination of their nuclear weapons as required under the NPT, all NWPS are presently engaged in modernization programmes though some have reduced the numbers of weapons either unilaterally or through bilateral arrangements.²⁶

France has unilaterally taken a number of positive steps regarding its nuclear weapon arsenal by reduced its nuclear warheads stockpile and the elimination of certain systems. France, also notably, has verifiably dismantled its nuclear-weapon testing sites as well as production facilities for the manufacture of weapon-usable nuclear material. In this regard, the example set by France is one to be emulated by the NWS and other NWPS. However, the French Navy is currently modifying its *Triomphant* class submarines to carry new submarine-launched ballistic missile (SLBMs) to replace its aging M45 missiles and has begun the design work for a next-generation submarine intended to enter service by 2035. Similarly, the UK has unilaterally reduced its number of warheads, but has also simultaneously embarked on a modernization programme of its sea-based nuclear forces that is expected to preserve the UK’s nuclear capability for the remainder of this century. Notably, the USA is the sole exporter and the UK the sole importer of strategic ballistic missiles: the UK’s submarine-launched ballistic missiles (SLBMs) are not actually owned by the UK, but leased from a pool shared by the US Navy. The ‘Trident II’ D5 SLBMs for the UK’s strategic submarine force are provided by the USA, the UK installs its own nuclear warheads. The SLBMs are part of a pool of US missiles in storage kept at the Kings Bay Naval Submarine Base (Georgia, USA). British Trident SSBNs load the missiles at Kings Bay and then have the nuclear warheads installed at the British Strategic Weapon Facility at the Royal Naval Armament Depot (RNAD) Coulport (Scotland).²⁷

Both the USA and the Russian Federation are modernizing their strategic nuclear forces which will maintain their offensive nuclear capabilities until the end of this century, and China is also reportedly modernizing its strategic nuclear forces.²⁸

Regarding the other NWPS, North Korea has left the NPT and IAEA safeguards, carried out five nuclear test explosions and has put in place uranium enrichment capability in addition to its plutonium reprocessing facility, and may well be building new warheads.²⁹ Similarly, in South Asia, India, followed by Pakistan, is building up their

²⁵ Treaty Handbook, Prepared by the Treaty Section of the Office of Legal Affairs, United Nations: Revised edition of 2012, p. 13, <<http://treaties.un.org/doc/source/publications/THB/English.pdf>>.

²⁶ For overviews of NWS nuclear weapons arsenals and modernization programmes, see Kile, S. and Kristensen, H., ‘World nuclear forces’, *SIPRI Yearbook 2016: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 2016), pp. 609–67.

²⁷ Nuclear Weapon Archive, “Britain’s Nuclear Weapons—The Current British Arsenal”, <<http://nuclearweaponarchive.org/Uk/UKArsenalRecent.html>>.

²⁸ Arms Control Association, ‘US nuclear modernization programs’, Feb. 2017, <<https://www.armscontrol.org/factsheets/USNuclearModernization>>; Kristensen, H. M., *Russian Nuclear Weapons Modernization: Status, Trends, and Implications*, Federation of American Scientists, 29 Sep. 2014, <<https://fas.org/wp-content/uploads/2014/05/Brief2014-Paris-RussiaNukes.pdf>>; and, Zhang, H., ‘China’s nuclear weapons modernization: intentions, drivers, and trends’, <<http://www.belfercenter.org/sites/default/files/legacy/files/ChinaNuclearModernization-hzhang.pdf>>.

²⁹ Hecker, S., ‘The US must talk to North Korea’, Freeman Spogli Institute, Stanford University, 12 Jan. 2017, <<http://cisac.fsi.stanford.edu/news/hecker-us-must-talk-north-korea>>; Chanlett-Avery, E., Rineart, R. E., Nikitin, M. B.

nuclear forces. The US nuclear cooperation agreement with India (later sanctified by an exemption agreed by the participating Governments of the Nuclear Suppliers Group, NSG) upended the NPT-based nuclear disarmament and non-proliferation system and constitutes a dereliction of duty by the 48 NPT states—both NWS and NNWS—which comprise the NSG. Not much is known officially about Israel's nuclear-weapon capability; suffice it to say that it likely maintains a sizeable capable force of deliverable nuclear warheads.³⁰

The Comprehensive Nuclear-Test-Ban Treaty

Regrettably, only three of the five NWS have ratified the Comprehensive Nuclear-Test-Ban Treaty (CTBT); of the other four NWPS, three have not signed the treaty more than two decades after it was opened for signature. Presently, there seem no prospects for the remaining ratifications required for the CTBT to enter into force. History's 'longest sought, hardest fought prize in... arms control negotiations' thus remains withering on the vine and representative of yet another instance of unfulfilled commitments and outlier behaviour.³¹ Should the Nuclear Suppliers Group decide to admit non-NPT states into its ranks, it should as a minimum require signature and ratification of the CTBT as a condition for membership.

The Fissile Material Cut-off Treaty

Similarly, over two decades have elapsed without the commencement of negotiations on a non-discriminatory, multilateral and internationally and effectively verifiable treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices (FMCT). The current and future value of a FMCT is solely for nuclear disarmament: turning off the tap and eliminating stocks of weapon-usable nuclear materials. Failure to address existing stocks and effective verification makes a mockery of the treaty.³² However, attempts to negotiate a FMCT have foundered and discussions have encompassed arguments for an FMCT without any verification provisions, and for a treaty *sans* stocks under the oft-repeated banner of being the next logical step in nuclear disarmament. Five nuclear security summits since 1996 (Moscow (1996), Washington (2010, 2016), Seoul (2012) and The Hague (2014) have dealt with just 17 per cent of the world's weapon-usable nuclear materials, leaving 83 per cent outside any international accountability, transparency or verification.³³ For a FMCT to be of any use, existing stocks of weapon-usable nuclear materials must be included and the expert preparatory group established pursuant to General Assembly Resolution 259 (2017) should note the inclusion of all stocks of weapon-usable nuclear materials in its recommendations in order to be credible and taken seriously.³⁴

D., *North Korea: U.S. Relations, Nuclear Diplomacy, and Internal Situation*, Congressional Research Service Report RL41259, <<https://fas.org/sgp/crs/nuke/R41259.pdf>>; and Nikitin, M. B. D., *North Korea's Nuclear Weapons: Technical Issues*, Congressional Research Service Report RL34256, 3 Apr. 2013, <<https://fas.org/sgp/crs/nuke/RL34256,56.pdf>>.

³⁰ Fisher, M., 'Why is the US okay with Israel having nuclear weapons but not Iran?', *The Washington Post*, 2 Dec. 2013, <https://www.washingtonpost.com/news/worldviews/wp/2013/12/02/why-is-the-u-s-okay-with-israel-having-nuclear-weapons-but-not-iran/?utm_term=.06a9d42577eb>.

³¹ See 'Clinton sends CTB Treaty to Senate: hearing set to begin in October,' *Arms Control Today*, 1 Sep. 1997, <https://www.armscontrol.org/act/1997_09/ctbsept>.

³² See Rauf, T., 'Fissile Material Treaty: negotiating approaches', *Disarmament Forum*, no. 2 (1999), pp. 17–28; and Rauf T. and Jadoon, U., 'Perspectives on a Treaty Prohibiting the Production and Stockpiling of Weapon-Usable Nuclear Material', eds. J. L. Black-Branch and D. Fleck, *Nuclear Non-Proliferation in International Law—Volume III Legal Aspects of the Use of Nuclear Energy for Peaceful Purposes* (T.M.C. Asser Press: The Hague, 2016), pp. 113–45.

³³ Nuclear Threat Initiative, *Bridging the Military Nuclear Materials Gap*, Nov. 2015, p. 11, <http://www.nti.org/media/pdfs/NTI_report_2015_e_version.pdf?_=1447091315>.

³⁴ UN General Assembly Resolution 71/259, 11 Jan. 2017.

NWFZs and security assurances

All five existing nuclear-weapon-free zone (NWFZ) treaties, as well as Mongolia's nuclear-weapon-free status, provide for negative security assurances to be provided by the NPT-NWS. In general, each NWS party to NWFZ Protocols undertakes not to use, or threaten to use, a nuclear explosive device against any party to the NWFZ treaty or on their territory. Not all nuclear weapon states have provided the required security assurances to the parties to the NWFZs, and not all such security assurances are unburdened by conditions. The NWS should be encouraged to provide the necessary security assurances without further delay and without conditions.

In 1968 the three NPT depositary states co-sponsored Security Council Resolution 255 on positive security assurances in order to facilitate acceptance of the NPT.³⁵ However, the form in which they were offered (three national statements and a resolution which referred to them) was regarded by some states as no more than a restatement of commitments already existing in the UN Charter. No attempt was made at that time to provide NPT NNWS with binding collective negative security assurances. Continued pressure from the non-aligned movement (NAM) led to the provision of such assurances in 1978 at the first United Nations General Assembly Special Session on Disarmament (UNSSOD) in which all five NWS gave unilateral statements on negative security assurances. China's statement was unconditional while France's assurance was limited to states in NWFZs. The USSR covered all states that renounced the production and acquisition of nuclear weapons and that did not have nuclear weapons stationed on their territories. The UK and the USA made a commitment not to attack or threaten to attack a NNWS with nuclear weapons, but excluded NNWS allied with a NWS. At the second UNSSOD in 1982, France provided NNWS with a broadly similar commitment to the UK and USA.

Following the dissolution of the Soviet Union, the three NPT depositary NWS provided security assurances on 5 December 1994 to Belarus, Kazakhstan and Ukraine, in the context of the renunciation of Soviet-deployed nuclear weapons on their territories and their subsequent accession to the NPT as NNWS. France and China, respectively, provided security assurances to Ukraine (5 December 1994) and Kazakhstan (February 1995). In the lead-up to the 1995 NPT Review and Extension Conference, Security Council Resolution 984, adopted in April 1995, encompassed both negative and positive assurances based on a series of national statements by the NWS made in parallel letters to the UN Secretary General on 5–6 April 1995.³⁶ As in previous assurances these were not in treaty form though some states argued that Security Council Resolutions were legally binding.

In 2009 UN Security Council Resolution 1887, adopted at a session attended by Heads of State and government, recalled the statements by each of the five NWS noted by Resolution 984 (1995), in which they provided security assurances against the use of nuclear weapons to non-nuclear-weapon states parties to the NPT, and affirmed that such security assurances strengthen the nuclear non-proliferation regime.³⁷

It is the responsibility of the NWS to provide the required security assurances to all states parties to the NPT and NWFZ, unburdened by conditions or restrictive interpretations. It is also the responsibility of the other NWPS to provide positive and negative security assurances to all NNWS.

³⁵ UN General Assembly Resolution 255, 19 June 1968.

³⁶ UN Security Council Resolution 984, 11 Apr. 1996.

³⁷ UN Security Council Resolution 1887, 24 Sept. 2009.

Roles and responsibilities of other NWPS

The NWPS—other than the five NWS—have thus far have stubbornly remained outside of global nuclear norms established since the entry-into-force of the NPT. Both India and Pakistan have remained outside of the NPT and CTBT frameworks. South Asia is generally considered as the most heavily arming region in the area of nuclear weapons and ballistic missiles, and the most recent and ardent believer in the concept of nuclear deterrence.³⁸

The Democratic People's Republic of Korea (DPRK) is still in a state of war and has defended its nuclear-weapon capability in terms of addressing its vulnerability in the context of the US-ROK (Republic of Korea) bilateral defence agreement, which includes extended nuclear deterrence. Despite overtly pursuing a nuclear weapons capability, backlash against the DPRK has only recently extended beyond punitive UN Security Council resolutions, with a recent warning by the USA that ‘all options are on the table’³⁹. Compared to the aggressive stance against Iran that included threats of military intervention, including the possibly a nuclear attack, this disparity of approach suggests that some NWPS are held to different standards than others and unfairly penalized. Given rising tensions in the Korean peninsula, it is vital to resume a DPRK–USA dialogue within the broader framework of a reformulated Six-Party Talks on nuclear safety, security and stability with the ultimate objective of denuclearization and accession to the CTBT.

The sole NWPS in the region of the Middle East has not officially admitted to a weapons programme, but it is widely believed that it had acquired a nuclear-weapon capability as far back as 1967 (which reportedly led to the formulation of Article IX.3 of the NPT on defining a NWS).⁴⁰ Progress towards the establishment of a nuclear weapon-free zone in the Middle East remains a distant goal despite both the resolution adopted at the 1995 NPTREC as an integral part of the decision to indefinitely extend the NPT, and agreement at the 2010 NPT review conference to convene a conference in 2012 involving all the states of the region to pursue such a zone. Reinvigorating efforts to convene the 2012-mandated conference with the participation of *all* states of the region of the Middle East, along with the unveiling of the draft treaty prepared years ago by the League of Arab States, should be undertaken by the concerned parties.

Over the past decades some 20 states have renounced nuclear weapon programmes and were driven by different motivations. Not one did so because of yielding to bullying, sanctions or isolation; some did so in return for incentives, others due to domestic rebalancing, and yet others nestled under nuclear alliances. The NWPS may be encouraged and invited to consider the options of renunciation and thus to join the mainstream of the UN member states which do not rely on nuclear weapons—though, in order to accomplish this, the unresolved conflicts in the three afflicted regions will need to be resolved in a manner that addresses security deficits without nuclear weapons.

UN Security Council and NWS/NWPS

At its 3046th meeting on 31 January 1992, the UN Security Council met for the first time at the level of Heads of State and Government. The Council included in its agenda

³⁸ Nair, P., ‘Nuclear weapons in South Asia: competitive modernisation, aggressive posturing and growing jingoism’, 4 Sep. 2016, <<http://www.dianuke.org/nuclear-weapons-south-asia-competitive-modernisation-aggressive-posturing-growing-jingoism/>>.

³⁹ Voice of America, ‘Pence: “all Options” considered for dealing with North Korea,’ VOA News, 18 Apr. 2017, <<https://www.voanews.com/a/us-china-time-patience-pressure-north-korea/3814221.html>>.

⁴⁰ Melman, Y., ‘Did Israel ever consider using nuclear weapons?’, Haaretz, 7 Oct. 2010, <<http://www.haaretz.com/did-israel-ever-consider-using-nuclear-weapons-1.317592>>.

an item entitled ‘The responsibility of the Security Council in the maintenance of international peace and security’. The President of the UN Security Council read out a statement on behalf of the Council which stated that the ‘proliferation of all weapons of mass destruction constitutes a threat to international peace and security. The members of the Council commit themselves to working to prevent the spread of technology related to the research for or production of such weapons and to take appropriate action to that end.’⁴¹ Unfortunately the Council neglected to enforce the commitment by the NWS to nuclear disarmament—a signal failure of both the-then NNWS and NWS members of the Council to live up to their responsibility of promoting nuclear disarmament at the UN body charged with the maintenance of international peace and security.

UN Security Council Resolution 1887 (2009), also adopted at a session attended by Heads of State and Government, resolved to ‘seek a safer world for all and to create the conditions for a world without nuclear weapons, in accordance with the goals of the NPT, in a way that promotes international stability and based on the principle of undiminished security for all’.⁴² The resolution underlined that the NPT remained the ‘cornerstone of the nuclear non-proliferation regime and the essential foundation for the pursuit of nuclear disarmament and for the peaceful uses of nuclear energy’. On nuclear disarmament, the resolution merely repeated the text of Article VI and called on all other states to join in this endeavour. This represented yet another lost opportunity for the NWS to recommit to their unequivocal undertaking to accomplish the total elimination of nuclear weapons as agreed in the 2000 NPT final document and for the NNWS to uphold the cause of nuclear disarmament.

Article 23 (Chapter V) of the United Nations Charter is parsimonious in stating that the ‘Security Council shall consist of fifteen Members of the United Nations. The Republic of China, France, the Union of Soviet Socialist Republics, the United Kingdom of Great Britain and Northern Ireland, and the United States of America shall be permanent members of the Security Council.... Each member of the Security Council shall have one representative’.⁴³ Article 27 of the Charter states that each member of the Security Council shall have one vote. Chapter VII outlines action with respect to threats to the peace, breaches of the peace, and acts of aggression. Article 39 states that the ‘Security Council shall determine the existence of any threat to the peace, breach of the peace, or act of aggression and shall make recommendations, or decide what measures shall be taken in accordance with Articles 41 and 42, to maintain or restore international peace and security.’ Nowhere in the UN Charter do ‘the Peoples of the United Nations determined to save succeeding generations from the scourge of war’ equate permanent membership in the Security Council with the acquisition, development, possession or use of nuclear weapons, nor for that matter with exercising nuclear deterrence.

Thus it may be asserted that the role of the permanent members of the Council—the so-called P5—is clearly defined in the Charter and since there is no mention therein of nuclear-weapon possession or status, it is incorrect for the five NWS in the context of the NPT review process to claim that they are the ‘P5’ (emphasis added) as they did in Geneva at the 2013 NPT PrepCom, or indeed in any other multilateral arms control/disarmament process.⁴⁴ The proper course for the NWS would have been to issue their

⁴¹ Note by the President of the Security Council, UN Security Council S/23500, 31 Jan. 1992, <<http://www.securitycouncilreport.org/atf/cf/%7B65BFCF9B-6D27-4E9C-8CD3-CF6E4FF96FF%7D/PKO%20S%2023500.pdf>>.

⁴² UN Security Council, ‘Historic summit of Security Council pledges support for progress on stalled efforts to end nuclear weapons proliferation’, 24 Sep. 2009, <<http://www.un.org/press/en/2009/sc9746.doc.htm>>.

⁴³ UN, ‘Chapter V: The Security Council,’ *United Nations Charter*, <<http://www.un.org/en/sections/un-charter/chapter-v/>>.

⁴⁴ ‘Joint Statement of Fourth P5 Conference: On the way to the 2015 NPT Review Conference’, NPT/CONF.2015/PC.II/7, Geneva, 18–19 Apr. 2013.

joint statement in their capacity as nuclear-weapon states as defined in Article IX.3 of the NPT, and *not* as the ‘P5’ as the P5 as such have no status under the NPT or any other arms control instrument.

This is most certainly not a trivial point as some might observe. Nomenclature is important, and it is important for the NNWS to be cognizant of this and to ensure that proper terminology is used in the serious matter of nuclear weapons. The NNWS also are at fault here for not being alert or responsible enough to catch and challenge this misrepresentation.

Finally, as regards the UN Security Council, any future expansion must require that all new members have accepted and are implementing internationally legally binding commitments regarding the disarmament and non-proliferation of nuclear weapons, and other weapons of mass destruction (i.e. be parties in good standing to the NPT, the Chemical Weapons Convention and the Biological and Toxin Weapons Convention). Furthermore, it would behove all existing and aspiring members of the Security Council sign and ratify to the Comprehensive Nuclear-Test-Ban Treaty.

Deterrence and extended deterrence

As a number of commentators have pointed out, the history of the cold war demonstrates the damaging effects of the open-ended quest for nuclear deterrence.⁴⁵ The ultimate irony of nuclear deterrence may be the way in which the strategy of deterrence undermined much of the very political stability that the reality of deterrence should have created.

It might be surprising to learn that in the 1960s when US Defense Secretary Robert S. McNamara adopted ‘mutual assured destruction’ (MAD) as the official US strategic doctrine based on a US capability to destroy 50 per cent of the USSR’s population and industry in a retaliatory strike, he recommended to Soviet Premier Aleksei Kosygin in 1967 that the USSR develop a similar capability to ensure stable deterrence.⁴⁶ This equal opportunity—or balance of terror—was disrespectful of their citizens’ lives. Despite their best efforts, supporters of the concept of nuclear deterrence cannot prove that nuclear weapons preserved the peace in Europe or elsewhere.

The strategy of nuclear deterrence was ultimately self-defeating and provoked the kind of behaviour that it should have prevented, which led to the deployment of a combined total of nearly 70 000 nuclear warheads by the two superpowers at the height of the cold war.

Discussion of nuclear disarmament tends to be hampered by faith-based fervour at the altar of deterrence and stability. Nearly a quarter of a century after the end of the cold war world, defining national security merely, or primarily, in nuclear military terms conveys a false sense of reality. Fifty years of the cold war transformed the issue of security into powerful simplifications of dubious validity and yet many of these traditional and out-dated concepts continue to retain great currency in current diplomatic discourse, while the dominance of nuclear military and strategic considerations in the conduct of international relations endures. While stability has been of constant importance in a transforming world, its pursuit by some countries places exaggerated emphasis upon nuclear military concepts and deterrence relationships that are presumed still to lie at its core (i.e. that stability and security would be jeopardized in

⁴⁵ See e.g. Lebow R. N. and Gross Stein, J., ‘Deterrence and the cold war’, *Political Science Quarterly*, vol. 110, no. 2 (summer 1995), pp. 157–81; Wilson, W., ‘The myth of nuclear deterrence’, *The Nonproliferation Review* 15, no. 3 (Nov. 2008), pp. 421–39; and Bundy, M., *Danger and Survival: Choices About the Bomb in the First Fifty Years* (Random House: New York, 1988).

⁴⁶ Lebow and Stein (note 45), p. 159, 169.

the absence of nuclear deterrence.) Such deeply embedded beliefs are extraordinarily resistant to new thinking or to change.

The lessons of the cold war experience with regard to nuclear weapons and nuclear threats can be summarized as follows: nuclear weapons do not provide real or imagined nuclear advantages for security or political gain; credible nuclear threats are difficult to make and to convey; all nuclear threats are fraught with risk; nuclear-weapon build-ups are more likely to provoke than to restrain adversaries; and mutual fear of nuclear war can pave the way for arms reductions.⁴⁷ The NWS and the other NWPS would do well to heed these lessons, as should the 30 NNWS seeking security through extended deterrence.

International humanitarian law dimensions of nuclear weapons

Nuclear deterrence as practiced during the cold war and in the present is based on targeting cities (i.e. essentially holding the lives of civilians hostage). This is the logical evolution of the area targeting of cities and civilians during World War II: USAF General Curtis ‘Bombs Away’ LeMay and Marshal of the Royal Air Force Sir Arthur Travers ‘Mad Bomber’ Harris pioneered the systematic strategic bombing of cities that led eventually to the nuclear bombing of Hiroshima and Nagasaki. This experience was later encapsulated in evolving nuclear deterrence strategy based on long-range bombers and supplemented by intercontinental ballistic missiles. This legacy remains, and it is unfortunate that all the NWPS remain focused on the targeting of cities and civilians with counter-force targeting (targeting military capabilities) a secondary priority. No scenarios exist that warrant nuclear strikes, let alone on cities and civilians. Both the use and threat of use of nuclear weapons should be regarded as a crime against humanity if we are to survive in a civilized world.

At the NPT PrepCom and at the General Assembly in 2012, in Oslo (2013), Nayarit (2014), Vienna (2014) and New York (2015), several NNWS in exercise of their responsibilities under the NPT highlighted serious concerns related to humanitarian dimensions of nuclear weapons. They noted that when the horrific consequences of their use became apparent in Hiroshima and Nagasaki, the International Committee of the Red Cross (ICRC) took a clear position calling for the abolition of these weapons of ‘extermination’.

At the international conferences on the humanitarian impact of nuclear weapons, it was stated that in light of the devastating global consequences of the use of nuclear weapons, it was increasingly unacceptable that such an existential threat to all humankind continues to be handled by a handful of states only as their national security matter. In this context, it is sobering to recall the statement by General Lee Butler, ex-commander of the US Strategic Air Command, on 4 December 1996, that proliferation cannot be contained in a world where a handful of self-appointed nations both arrogate to themselves the privilege of owning nuclear weapons, and extol the ultimate security assurances they assert such weapons convey.⁴⁸

Considering the Preamble to the NPT which warned of the ‘devastation that would be visited upon all humankind by a nuclear war and the consequent need to make every effort to avert the danger of such a war and to take measures to safeguard the security of peoples’, it is clear that the responsibilities of, and policy options for, non-nuclear weapon states should include establishing and implementing the norm of the illegitimacy of nuclear weapons. Consequently, NNWS must continue to actively seek the delegitimization and elimination of nuclear weapons, preferably with the support of

⁴⁷ Lebow and Stein (note 45) pp. 177–79.

⁴⁸ Butler, L., ‘National Press Club remarks’, 4 Dec. 1996.

the NWPS through creative engagement. Doing so would be entirely consistent with the aims of the Preamble and Article VI of the NPT, the UN Charter and international humanitarian law, and would serve as a complementary measure to physical disarmament measures that need to be carried out by all the NWPS.

Delegitimizing / devaluing nuclear weapons

Since the five NWS did not participate in the OEWG and the ban treaty negotiations, the question of what more the NNWS can do to support nuclear disarmament presents an interesting challenge. While a norm-setting approach by NNWS to delegitimize and devalue nuclear weapons is only a partial step, it does not involve actual nuclear disarmament. Nonetheless it is an important beginning that could lead to more significant steps.

Unlike chemical and biological weapons that are considered not militarily useful, devaluing and delegitimizing nuclear weapons is alien to nuclear alliances. NATO's 1999 Strategic Concept relied on nuclear weapons as the 'essential political and military link' (binding together North America and Europe),⁴⁹ and the 2012 NATO Strategic Concept stated that nuclear weapons are 'a core component of NATO's overall capabilities for deterrence and defence... and that as long as nuclear weapons exist NATO will remain a nuclear alliance'.⁵⁰ In 2013, the UN High Representative for Disarmament Affairs challenged NATO at its annual conference on disarmament and non-proliferation to consider adopting a strategic concept on nuclear disarmament and to pursue it not just as a noble goal for some distant era but as a guiding star.⁵¹

In pursuit of measures that seek to devalue and delegitimize nuclear weapons thus facilitating disarmament, it is essential as an interim step to review and assess critical measures such as transparency and risk reduction as these relate to nuclear weapons as a basis for engagement between NNWS and NWPS.

Nuclear weapons: transparency, risk reduction and catastrophic consequences

What are the challenges facing global nuclear weapon governance and how can it be strengthened?

The convening of General Assembly-mandated multilateral negotiations on a legally binding instrument to prohibit nuclear weapons leading towards their total elimination is a welcome and much overdue development particularly in light of the exacerbated differences over nuclear disarmament witnessed at the (failed) 2015 NPT Review Conference. The question of transparency measures, measures to reduce the risk of accidental detonation of nuclear weapons, and the humanitarian and environmental consequences of any further use of nuclear weapons, have all been discussed in great depth previously in many forums, and volumes of scientific and technical analyses are available. There is no lack of feasible concepts, ideas, measures and plans. What is missing, however, is the political will and determination to tackle the complex questions associated with accountability, control, transparency and verification of measures to disable and dismantle nuclear weapons and to achieve a world without nuclear weapons.

⁴⁹ NATO, 'The Alliance's Strategic Concept', 24 Apr. 1999, para. 63, <http://www.nato.int/cps/en/natohq/official_texts_27433.htm>.

⁵⁰ NATO, 'Deterrence and Defence Posture Review', 20 May 2012, paras 8–9, <http://www.nato.int/cps/en/natohq/official_texts_87597.htm>.

⁵¹ 'The Strategic Concept of Disarmament', Statement by Angela Kane, UN High Representative for Disarmament Affairs, Annual NATO Conference on WMD Arms Control, Disarmament, and Non-Proliferation, Split, Croatia: 6 May 2013.

When asked why physicists were able to invent nuclear weapons but politicians were hard pressed to control them, Albert Einstein replied: ‘Because politics is more difficult than physics.’⁵² This remains the crux of the problem—the science and technology already exists to dismantle and eliminate nuclear warheads and associated weapon-usable materials; what is lacking is the political commitment and engagement to realize a world without nuclear weapons.

The nuclear-weapon states have undertaken a legally binding obligation pursuant to Article VI of the NPT to disarm; however, they have not, and do not, engage in any meaningful multilateral discussion on nuclear disarmament in any forum other than the NPT review process, except for the bilateral Russia–USA track. The other nuclear-armed states absent any binding commitment are not accountable in any forum. Worse yet, divisions among the non-nuclear weapon states are at their worst since the NPT entered into force in 1970.

As noted above, the 1995 NPT Review and Extension Conference decided to extend the NPT indefinitely on the basis of the ‘Principles and Objectives for Nuclear Non-Proliferation and Disarmament’. This document contained certain measures contributing to nuclear disarmament such as the CTBT and a FMCT. As an aside, 2017 marks the 21st year since the CTBT opened for signature and it has yet to enter into force, and the 22nd year since the equivocation reflected in the Shannon Mandate on negotiating a FMCT was formulated.⁵³ This sorry situation speaks volumes about some of the obstacles standing in the way of nuclear disarmament.

As previously noted, the nuclear weapon states agreed in the Final Document of the 2000 NPT Review Conference for the first time on specified measures related to nuclear disarmament including transparency and irreversibility. And, in 2010, the Review Conference stumbled into agreeing on so-called ‘64 actions’, including 22 on nuclear disarmament (some of which in fact backtracked on the measures agreed in 2000). The failed 2015 NPT Review Conference featured some of the most uncivil discourse on nuclear disarmament ever witnessed.

Thus, while the non-proliferation pillar has been progressively strengthened over past decades, the nuclear disarmament pillar remains flimsy even as some 45 000 nuclear warheads have been retired—albeit under a cloak of secrecy and lack of transparency. Only by embracing creativity and showing leadership can we successfully put aside our differences and coalesce behind a common Darwinian goal: survival. Survival in its most basic sense also relates to nuclear weapons, as over the longer run unless we eliminate nuclear weapons there is a good chance they will eliminate us.

Transparency

What are the risks associated with nuclear weapons? What transparency measures exist and how should they be supplemented?

Transparency or openness refers to availability of information with the goal of greater accountability and increased public trust. Transparency also means providing sufficient information on military and security matters to instil confidence which is essential as the basis for developing the mutual trust required to successfully conduct any meaningful international negotiations, and to facilitate international monitoring and verification, thereby reducing the risk of conflict and promoting disarmament.⁵⁴

⁵² Quoted in TIME, 15 Feb. 2016, p. 28.

⁵³ Conference on Disarmament, CD/1299, 24 Mar. 1995, <<https://documents-dds-ny.un.org/doc/UNDOC/GEN/G95/610/27/PDF/G9561027.pdf?OpenElement>>.

⁵⁴ See ‘Public Guide to Department of Energy Openness Program’, <<http://www.fas.org/sgp/othergov/opendoe.html>>.

Transparency has been described as one of five norms for bilateral and multilateral arms control measures in addition to enforceability, irreversibility, verifiability and universality.⁵⁵ Traditionally, from the very beginning of the age of nuclear weapons through the cold war to the present state of uncertainty, secrecy has been a defining characteristic of nuclear weapons primarily in terms of technology but also doctrine. For understandable security reasons, technical information on nuclear weapons and weapon-usable material is subject to the highest levels of classification.

Nonetheless, over the past 25 years the veil of secrecy has been substantially lifted and a significant amount of information has been declassified and is available in the open domain. In the strengthened review process of the NPT, transparency has increased in salience and in the 2000 NPT Conference final document, one of the practical steps was ‘increased transparency by the nuclear-weapon States with regard to the nuclear weapons capabilities and the implementation of agreements pursuant to article VI and as a voluntary confidence-building measure to support further progress on nuclear disarmament’.⁵⁶ In 2010 the NPT states agreed that ‘nuclear disarmament and achieving the peace and security of a world without nuclear weapons will require openness and cooperation, and affirm[ed] the importance of enhanced confidence through increased transparency and effective verification’.⁵⁷

This was followed up in the 2012 PrepCom for the 2015 NPT Review Conference, at which the Non-Proliferation and Disarmament Initiative (NPDI) tabled a paper on transparency of nuclear weapons that called on the NWS to provide information on: (a) the number, types (strategic or non-strategic) and status (deployed or non-deployed) of nuclear warheads; (b) the number and, if possible, types of delivery vehicles; (c) the number and types of weapons and delivery systems dismantled and reduced as part of nuclear disarmament efforts; (d) the amount of fissile material produced for military purposes; (e) the measures taken to diminish the role and significance of nuclear weapons in military and security concepts, doctrines and policies; and (f) to continue discussions on definitions and terminology related to nuclear weapons.⁵⁸

Also in 2012, the New Agenda Coalition (NAC) proposed that ‘to further enhance transparency and increase mutual confidence, nuclear-weapon States should commit themselves to annually submitting accurate, complete and comprehensive reports on their nuclear arsenals, weapons-grade highly enriched uranium and plutonium stockpiles and production histories, in addition to material irreversibly removed from nuclear weapons programmes’.⁵⁹

At the 2013 NPT PrepCom the Group of Non-Aligned states (NAM) called for ‘clear and verifiable declarations by States of their stocks of nuclear weapons and nuclear-weapons-usable material and agreement on a multilateral mechanism to monitor reductions by nuclear-weapon States of their nuclear arsenals individually, bilaterally or collectively’.⁶⁰ The New Agenda Coalition called for a comprehensive scheme for

⁵⁵ See Rydell, R., ‘Nuclear Weapon State Transparency, the Nuclear Non-Proliferation Treaty, and the United Nations’, United Nations Headquarters, 22 Oct. 2013.

⁵⁶ 2000 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, Final Document, Volume I, NPT/CONF.2000/28 (Parts I and II), Step 9, p. 15.

⁵⁷ 2010 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, Final Document, Volume I, Part I, NPT/CONF.2010/50 (Vol. I), p. 24, F.i.

⁵⁸ Preparatory Committee for the 2015 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, ‘Transparency of nuclear weapons: the Non-Proliferation and Disarmament Initiative’, Working paper submitted by Australia, Canada, Chile, Germany, Japan, Mexico, the Netherlands, Poland, Turkey and the United Arab Emirates, NPT/CONF.2015/PC.I/WP.12.

⁵⁹ Preparatory Committee for the 2015 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, ‘Multilateral nuclear disarmament verification: Applying the principles of irreversibility, verifiability and transparency’, Working paper submitted by South Africa on behalf of Brazil, Egypt, Ireland, Mexico, New Zealand and Sweden as members of the New Agenda Coalition, NPT/CONF.2015/PC.I/WP.30.

⁶⁰ Preparatory Committee for the 2015 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, ‘Nuclear disarmament—Working paper presented by the Group of Non-Aligned States Parties to the Treaty on the Non-Proliferation of Nuclear Weapons’, NPT/CONF.2015/PC.II/WP.14.

transparency on nuclear weapon holdings, dismantlements, locations, nuclear doctrines, operational status and risk reduction.⁶¹ The members of the League of Arab States (LAS) also collectively called for transparency regarding nuclear weapons.⁶² The New Agenda Coalition followed suit.⁶³

At the 2014 NPT PrepCom calls for transparency were made by the NPDI, the NAC, the LAS and the NAM.⁶⁴ The USA submitted a fact sheet on ‘Transparency in the US Nuclear Weapons Stockpile’ that provided information in several categories on US nuclear weapons.⁶⁵

The reports of Main Committee I and Subsidiary Body 1 of the 2015 NPT Review Conference included calls for increased transparency, including a call on the nuclear-weapon states to provide annual reports starting in 2017 on:⁶⁶

- i. the number, type (strategic or non-strategic) and status (deployed or non-deployed) of nuclear warheads;
- ii. the number and the type of delivery vehicles;
- iii. the measures taken to reducing the role and significance of nuclear weapons in military and security concepts, doctrines and policies;
- iv. the measures taken to reduce the risk of unintended, unauthorized or accidental use of nuclear weapons;
- v. the measures taken to de-alert or reduce the operational readiness of nuclear weapon systems;
- vi. the number and type of weapons and delivery systems dismantled and reduced as part of nuclear disarmament efforts; and
- vii. the amount of fissile material for military purposes.

This is a reasonable reporting format for transparency, however, to this listing could be added:

- viii. the number, type and status (deployed or non-deployed) of non-strategic nuclear warheads on the territories of non-nuclear-weapon states;
- ix. the number and the type of delivery vehicles relating to item viii above; and

x. historical accounting of nuclear weapons deployed in foreign countries.

The New Agenda Coalition has already tabled a new working paper on transparency for the 2017 NPT PrepCom that adds information about ‘plans, expenditures and number of facilities related to the modernization of nuclear weapons’.⁶⁷ It is expected that other states will submit updated working papers on transparency at the 2017 NPT PrepCom in Vienna. While this is a laudable exercise, NPT states parties to date have

⁶¹ Preparatory Committee for the 2015 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, ‘Applying the principle of transparency in nuclear disarmament’, Working paper submitted by Brazil on behalf of Egypt, Ireland, Mexico, New Zealand and South Africa as members of the New Agenda Coalition, NPT/CONF.2015/PC.II/WP.26.

⁶² Preparatory Committee for the 2015 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, ‘Nuclear disarmament’, Working Paper submitted by Tunisia on behalf of the States members of the League of Arab States, NPT/CONF.2015/PC.II/WP.40.

⁶³ NPT/CONF.2015/PC.II/WP.27.

⁶⁴ See NPT/CONF.2015/PC.III/WP.9 and NPT/CONF.2015/PC.III/WP.10; NPT/CONF.2015/PC.III/WP.25; NPT/CONF.2015/PC.III/WP.11; and NPT/CONF.2015/PC.III/WP.15.

⁶⁵ NPT/CONF.2015/PC.III/16.

⁶⁶ 2015 NPT Review Conference, Subsidiary Body 1: Revised draft substantive elements, NPT/CONF/2015/MC.I/SB.1?CRP.1/Rev.1,<<http://www.reachingcriticalwill.org/images/documents/Disarmament-fora/npt/revcon2015/documents/SBI-CRP1-Rev1.pdf>>.

⁶⁷ Preparatory Committee for the 2020 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, ‘Strengthening accountability through enhanced transparency and measurability of the implementation of nuclear disarmament obligations and commitments under the Non-Proliferation Treaty’, Working paper submitted by Ireland on behalf of Brazil, Egypt, Mexico, New Zealand and South Africa as members of the New Agenda Coalition, NPT/CONF.2020/PC.I/WP.13, 24 March 2017, <<http://undocs.org/NPT/CONF.2020/PC.I/WP.13>>/>.

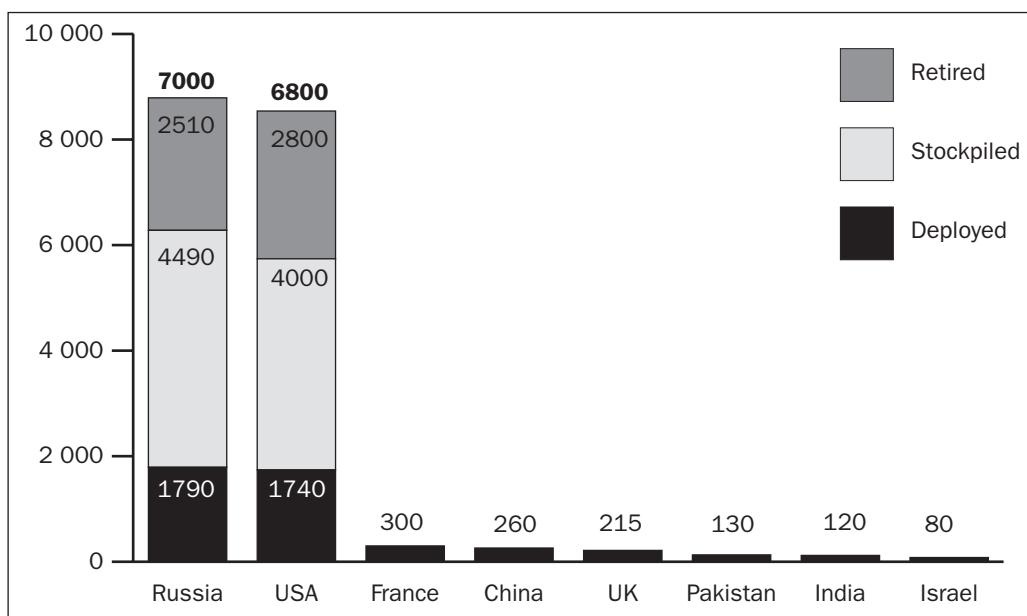


Figure 1. Estimated global nuclear warhead inventories, 2017

Note: North Korea has produced fissile material for 10–20 nuclear warheads and detonated 5 nuclear devices, but there is no known public information that show it has yet stockpiled operational nuclear warheads.

Source: Kristensen, H. K., Federation of American Scientists, ‘Estimated global nuclear warhead inventories, 2017’, updated 11 Jan. 2017.

not found efficient ways of assessing transparency measures. The allocation of ‘special time’ at Preparatory Committee meetings, and ‘subsidiary bodies’ and ‘interactive discussion sessions’ at review conferences, have not been utilized to review and assess reports and working papers. Furthermore, the chairs/presidents and their staff are so overburdened with the proliferation of working papers and reports that they do not have the time to study them in any detail and consequently to reflect some of the more practical or salient elements in their reports to the extent desirable.

Nuclear weapon risks

With regard to the specific risks associated with nuclear weapons, there is no better analysis than that of the report of the Global Zero Commission on Nuclear Risk Reduction entitled *De-Alerting and Stabilizing the World’s Nuclear Force Postures* that was launched and presented during the 2015 NPT Review Conference.⁶⁸ Chaired by the former Vice Chairman of the US Joint Chiefs of Staff, General James Cartwright, the Global Zero Commission included some 30 diplomatic and military experts drawn from nearly all of the nine states currently deploying nuclear weapons and was supported by more than 75 former national security experts and military commanders as well as senior political officials. The following description of the risks of nuclear weapons is drawn from the Global Zero Commission report:

- One-half of Russian and US strategic nuclear forces are maintained on continuous high-alert, of which nearly 1800 nuclear warheads remain on launch-on-warning status. The continued posture of both states to launch nuclear forces following the detection of incoming warheads

⁶⁸ Global Zero: A World Without Nuclear Weapons, *Global Zero Commission on Nuclear Risk Reduction: De-Alerting and Stabilizing the World’s Nuclear Force Postures*, Apr. 2015, <www.globalzero.org>. Cited with the permission of Global Zero.

but prior to the arrival of attacking warheads creates a significant risk of launching counter-strikes on false indications of enemy attack. False alarms have resulted in close calls for mistaken launch on numerous occasions. The nuclear modernization programmes underway in both Russia and the USA compound the risky launch-on-warning postures with more powerful new weapons systems.

- Despite the continued support for the validity of the doctrine of nuclear deterrence, the doctrine raises operational nuclear risks by encouraging actors to take an aggressive stance in efforts to intimidate and impress opponents and signal the credibility of both their intent and capability not only during a crisis but also in peacetime. The use of nuclear weapons in such strong-arm tactics as coercion and intimidation of an opponent are thus counter to a strategy aimed at minimizing operational risks.
- According to the 2015 Global Fissile Material Report published by the International Panel on Fissile Materials, the number of nuclear warheads reached a maximum total of over 60 000 in the 1980s.⁶⁹ Preliminary nuclear weapons data compiled by SIPRI for 2016 estimate that nine states possess over 15 395 nuclear warheads.⁷⁰ Russia and the USA account for nearly 14 700 warheads, with approximately 180 warheads in the UK, 300 in France and 260 in China. Israel is assessed to possess 100–200 while India, Pakistan and the DPRK are believed to possess 80–120, 110–20, and 6–8, respectively (see figure 1). As described by the Global Zero Commission, these nuclear weapons are part of complex and dynamic operations and nuclear war preparations whereby approximately 1000 nuclear weapons travel on combat patrol every day, and hundreds continuously journey between their combat alert sites and maintenance facilities.
- Nuclear missile attack early-warning teams in Russia and the USA maintain constant vigilance against incoming warheads. These personnel face the monumental task of urgently filtering and accurately evaluating all data received via surveillance sensors which can range from the launch of commercial satellites to volcanic eruptions and flocks of geese.
- Almost all nuclear-weapon possessor states prepare and practice detailed plans to employ nuclear weapons in combat in the event of hostilities. Russia and the USA routinely engage in intensive surveillance activities and square up to one another in close quarters including for instance submarines trailing each other, electronic warfare (EW) aircraft probe air defences for gaps, and fighter planes hang on the wings of opposing strategic bombers on practice bombing runs. European possessor states regularly perform practice bombing runs with nuclear-capable aircraft while the safety and security of nuclear-weapon storages remains a matter of concern.

As noted by the Global Zero Commission, the nuclear weapon activities described above run myriad risks in their daily operations, risks that compound during crises. Such risks include: deterrence failure if national survival is perceived at risk or under critical military exigencies, resulting in the deliberate or unintentional initiation of nuclear strikes; accidental detonations; unauthorized launches; and panic launches

⁶⁹ International Panel on Fissile Materials, *Global Fissile Material Production 2015*.

⁷⁰ Kile, S. and Kristensen, H., ‘World nuclear forces’, *SIPRI Yearbook 2016: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 2016), p. 610.

caused by false indications of incoming enemy warheads coupled to hasty decision timelines. The risks of cyberattacks are also increasing.

Further risks are emerging with the rapid development of advanced precision-guided conventional weapons that blur the distinction with low yield nuclear weapons, and platforms that deploy a mix of advanced conventional and nuclear weapons.

How can compliance with transparency measures be achieved and completeness of information verified?

At the 2015 NPT Review Conference, US Secretary of State John Kerry reported that the USA had reduced its nuclear weapons stockpile to 4717–85 per cent below its peak of the cold war. He further reported that over the last two decades 10 251 warheads had been dismantled and an additional 2500 warheads had been retired and were in awaiting elimination.⁷¹ The UK stated that it had reduced the number of warheads on each of its deployed ballistic missile submarines from 48 to 40, and the number of operational missiles on each of those submarines to no more than 8. The total number of operationally available warheads by 2015 amounted to no more than 120, and the UK to aimed to cap its overall nuclear warhead stockpile at 180 by the mid-2020s.⁷² France informed states parties that it possessed fewer than 300 nuclear warheads, zero non-deployed weapons, and all of its weapons were deployed and operational.⁷³ China noted that its nuclear arsenal was very limited in scale and was kept at the minimum level required for national security.⁷⁴

Russia stated that as of 1 March 2015, it possessed 515 deployed strategic offensive delivery vehicles with 1582 warheads attributed to them under the START Treaty; it reported that an aggregate 890 deployed and non-deployed launchers for intercontinental ballistic missiles (ICBMs), SLBMs and heavy bombers, and nearly 3500 nuclear warheads for non-strategic systems had been eliminated between 1988–91.⁷⁵

While this transparency in nuclear weapon holdings is welcome, there exist no means to verify these claims beyond bilateral verification arrangements under the New START agreement between Russia and the USA.

With regard to transparency, in December 1993, June 1994 and February 1996, US Secretary Hazel O’Leary of the US Department of Energy (DOE) announced the largest declassification of information in the history of the DOE. This information covered a range of data including the history of the US production and stocks of highly enriched uranium (HEU) and plutonium (Pu). Certain aspects of the US nuclear weapons stockpile also were declassified and in December 1994 the USA also declassified information on its nuclear explosions in a report entitled ‘United States Nuclear Tests: July 1945 through September 1992’. In that report, the USA informed that its total production of plutonium was 111.4 MT between 1944–94 when production was terminated. The current US plutonium inventory at that time was declared to be 99.5 MT—of which 12 MT had been removed from the total inventory comprising 3.4 MT expended in weapon tests, 3.4 MT in normal operating losses, and 2.8 MT in inventory differences (or material not accounted for). The USA planned to retain a strategic reserve of about 23 MT weapon-grade plutonium in roughly 7800 intact pits. In addition, the USA declared the locations of its plutonium stocks, waste sites

⁷¹ Remarks at the 2015 Nuclear Nonproliferation Treaty Review Conference, John Kerry, Secretary of State, United Nations, New York City, NY, 27 Apr. 2015.

⁷² 2015 Review Conference of the Treaty on Non-Proliferation of Nuclear Weapons: New York, 27 Apr.–22 May 2015, General Debate, Statement by the United Kingdom.

⁷³ Report submitted by France under actions 5, 20 and 21 of the Final Document of the 2010 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, NPT/CONF.2015/10.

⁷⁴ Implementation of the Treaty on the Non-Proliferation of Nuclear Weapons in the People’s Republic of China, Report submitted by China, NPT/CONF.2015/32.

⁷⁵ National report submitted by the Russian Federation, NPT/CONF.2015/48.

and inventory differences. In June 2012 the USA provided updated data and reported its current plutonium inventory as 95.4 metric tonnes (MT) marking a reduction of 4.1 MT between 1994–2009.⁷⁶

The USA also provided a historical report on its highly enriched uranium production, acquisition and utilization activities from 1945 through to 30 September 1996, as well as the locations of its HEU stocks. In 1996 the total US historical production amounted to approximately 860 MTU-235⁷⁷ with the-then inventory of 740.7 MTU HEU, containing 620.3 MTU-235, and provided data on the quantities of HEU at enrichment levels between 20 per cent and below 90 per cent, and above 90 per cent. Of the total HEU inventory, 562.9 MTU was set aside for national security (160 MTU for naval propulsion and weapons) and for non-national security (20 MTU for research reactors) while 177.8 MTU was declared surplus for down-blending and for disposal—17.4 MTU was reported to have been down-blended to yield some 290 MTU LEU for the American Assured Fuel Supply. Some 32 MTU-235 of HEU had been consumed in nuclear weapon tests and naval propulsion. Another 32 MTU-235 of HEU was sent to the UK for a research reactor and naval fuel. US production of HEU for weapons was terminated in 1964 and a total of 164 MT HEU was produced for naval reactors between 1962–92 for an estimated 600–750 reactor cores, with about 250 kilogrammes per core.⁷⁸

In 2006, the UK provided a historical accounting of its HEU stocks and declared that it had produced and acquired 26.36 MTU-235 for military uses, expended 4.72 MT and had an inventory of 21.86 MTU-235 in 2002.⁷⁹

For its part, in 1994 Russian President Boris Yeltsin set up a commission to declassify information on the early history of the Soviet Union's nuclear weapon programme and the origins of Soviet strategic missiles. In 1996 Viktor Mikhailov, Minister of Atomic Energy of the Russian Federation issued a publication entitled 'USSR Nuclear Weapons Tests and Peaceful Nuclear Explosions, 1949–1990'. This 62-page document chronologically listed all 715 Soviet nuclear tests and peaceful nuclear explosions (PNEs). Information also was released on the approximate stocks of weapon-usable HEU and Pu. Incidentally, the first instance of previously classified information being provided on Soviet nuclear detonations to a Western audience occurred at a Symposium on Underground Nuclear Weapons Testing attended by my colleagues and I at the-then Canadian Centre for Arms Control and Disarmament in Ottawa on 21–26 April 1991.⁸⁰ The Russian Federation also reported down-blending 500 MTU-235 of ex-weapon-HEU to LEU and the transferral of the LEU to the USA under the 'Megatons to Megawatts' programme under the 1993 US–Russian HEU Purchase Agreement.⁸¹

⁷⁶ US Department of Energy, *DOE Facts: Declassification of the United States Plutonium Inventory and Release of Report*, 'Plutonium: The First 50 Years'; US Department of Energy, *Plutonium: The First Fifty Years: United States Plutonium Production, Acquisition, and Utilization from 1944 through 1994*, DOE/DP-0137, Feb. 1996; and US National Nuclear Security Administration (NNSA), *The United States Plutonium Balance, 1944–2009—An update of 'Plutonium: The First Fifty Years'*, June 2012; Cochran, T. B., 'US inventories of nuclear weapons and weapon-usable fissile material', Natural Resources Defense Council, 26 Sep. 1995; and US Department of Energy, *Tritium and Enriched Uranium Management Plan Through 2060*, Report to Congress, Oct. 2015.

⁷⁷ MTU-235 = metric tonnes of uranium U-235.

⁷⁸ US Department of Energy, *Highly Enriched Uranium: Striking A Balance—A Historical Report on the United States Highly Enriched Uranium Production, Acquisition and Utilization Activities from 1945 through 30 September 1996*, Jan. 2001; and Aftergood S. and von Hippel, F., 'The US Highly Enriched Uranium Declaration: transparency deferred but not Denied', *Nonproliferation Review*, vol. 14, no. 1. Mar. 2007.

⁷⁹ British Ministry of Defence, *Historical Accounting for UK Defence Highly Enriched Uranium—A report by the Ministry of Defence on the role of historical accounting for Highly Enriched Uranium for the United Kingdom's Defence Nuclear programmes*, Mar. 2006, <<http://fissilematerials.org/library/mod06.pdf>>.

⁸⁰ See Rauf, T., 'Cleaning up with a bang', *Bulletin of the Atomic Scientists*, vol. 48, no. 1, 31 Dec. 1992; and Brogden, P., 'Underground nuclear testing: the old arrogance remains', 14 Aug. 1991, *Science for Peace* (Canada), <<http://scienceforpeace.ca/underground-nuclear-testing-the-old-arrogance-remains>>.

⁸¹ <<http://nnsa.energy.gov/mediaroom/pressreleases/megatonstomegawatts>>.

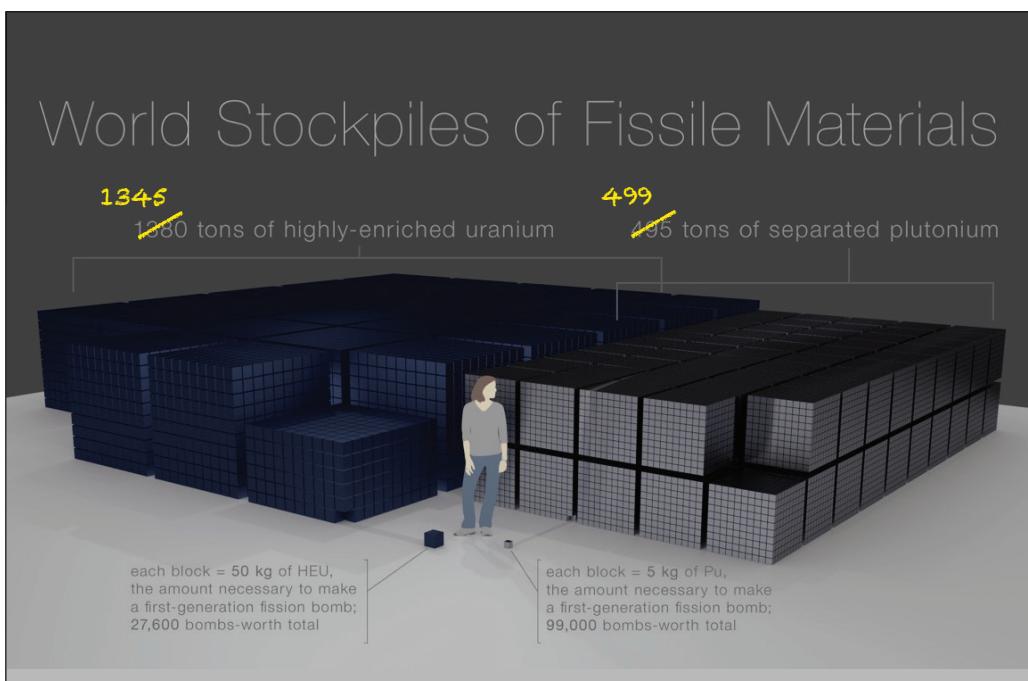


Figure 2. World stockpiles of fissile materials

Source: International Panel on Fissile Materials (IPFM). Used with permission of IPFM.

But why is all this information important? This data serves to highlight the point that a significant amount of declassified information is available that serves the purposes of accountability and transparency, but that non-nuclear-weapon states that demand more do not utilize the information already available, nor do they use the example set by the United States as a model for the other NWS to emulate.

At no point have non-nuclear-weapon states engaged with the nuclear-weapon states on the available data during the NPT review process, committee meetings or even during the time for interactive discussions under the strengthened review process to probe for additional explanations and information. Rather, general practice is either silence or one or two perfunctory questions after which sessions are adjourned for lack of discussion. So, what is the purpose and benefit of demanding more transparency but then not knowing what to do with it? In general, civil society experts are more adept and diligent in following up on data on nuclear weapons and materials than are delegations.

The 2015 Group of Governmental Experts on the FMCT could have examined the type of information highlighted here.⁸² This shows that the opposition to the inclusion of stocks in the negotiating mandate of an FMCT is based neither on science nor fact, but instead on sheer obduracy and obstructionism. It would behove the ‘expert preparatory group’ established pursuant to General Assembly Resolution 259 (2017) to review and assess the transparency data on nuclear-weapon-usable materials noted above to recommend methodologies for verification of existing stocks of weapon-usable nuclear materials under a FMCT—presently it is estimated that the global inventory of weapon-usable highly enriched uranium is about 499 tonnes and that of plutonium is about 1345 tonnes, sufficient for more than 125 000 nuclear warheads (see figure 2). A FMCT that ignores this weapon-usable material has little value.

⁸² United Nations, ‘Group of Governmental Experts to make recommendations on possible aspects that could contribute to but not negotiate a treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices’, Note by the Secretary-General, A/70/81, 7 May 2015, <<http://fissilematerials.org/library/gge15.pdf>>.

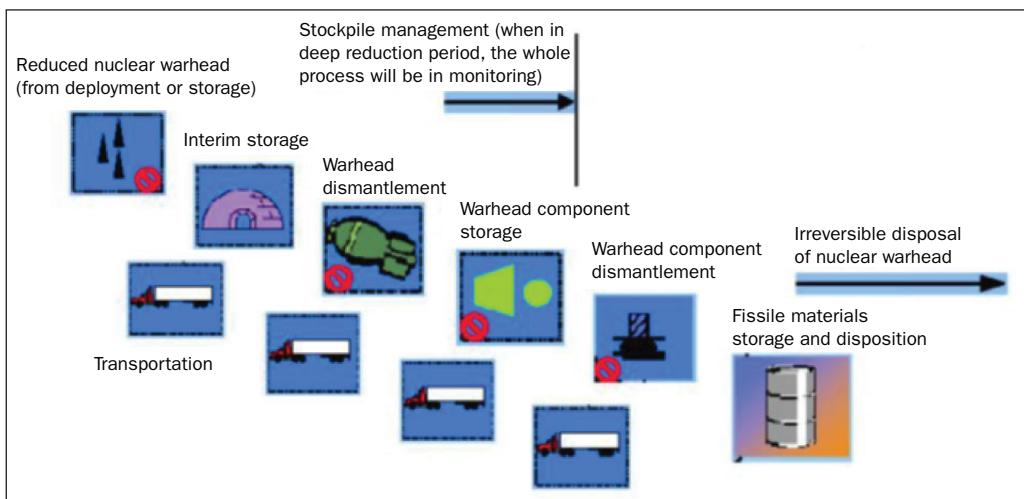


Figure 3. Nuclear warhead: chain of custody

Source: ‘Verification of Nuclear Disarmament’, Presentation by the United Kingdom, UK Working Paper Verification of Nuclear Disarmament, 2003.

Verification of transparency measures

Verification of transparency measures, in particular of nuclear warhead dismantling and elimination, remains a major challenge. There are both legal and practical impediments. Pursuant to Articles I and II of the NPT, it will not be legally possible to share classified nuclear weapons information that gets into the complex details of warhead design, fissile material shapes and isotopes, fuzing and firing mechanisms, and safety and security features among other details. From a practical perspective it is highly unlikely that nuclear-armed states will share nuclear weapon information with their counterparts due to military-strategic, as well as legal, reasons. The UK–Norway nuclear verification experiment is a case in point. More importantly, the UK–USA cooperation to address technical challenges in verification of nuclear disarmament that goes back more than a decade still faces differences of opinion on key technical matters, and the two sides have yet to agree on a methodology to characterize a nuclear warhead as such.⁸³ The ‘Joint US–UK Report on Technical Cooperation for Arms Control’ noted that ‘...the ability to strike a balance between information protection and information sufficiency is key to an effective monitoring and verification regime’ and further that a warhead dismantlement verification scheme would need to take into account myriad complex classification, legal, technological and access challenges.⁸⁴ The report, however, asserted that the monitoring and verification of nuclear warheads, their components and processes was feasible from a technical perspective, although due to the complexity of warheads and their associated processes, ‘[D]eveloping the necessary technologies and approaches to successfully monitor warhead dismantlement through its chain of custody will take time.’ Figure 3 demonstrates the complexity of the nuclear warhead chain of custody and thus the significant challenges in devising a practical and effective verification regime.

The complexity of the nuclear warhead lifecycle as shown in figure 4 also highlights the near insurmountable challenges of designing an effective international nuclear warhead dismantlement verification scheme that could be agreeable to the NWS,

⁸³ National Nuclear Security Administration (NNSA) and Aldermaston Weapons Establishment (AWE), ‘Overview of US and UK cooperation to address technical challenges in verification of nuclear disarmament’, 2 May 2014, <<http://nnsa.energy.gov/sites/default/files/nnsa/05-14-inlinefiles/2014-05-06%20Final%20US-UK%20Overview%20to%20Prepcom.pdf>>.

⁸⁴ Office of Nonproliferation and Arms Control (NPAC) and Ministry of Defence, *Joint US–UK Report on Technical Cooperation for Arms Control*, <http://nnsa.energy.gov/sites/default/files/Joint_USUK_Report_FINAL.PDF>.

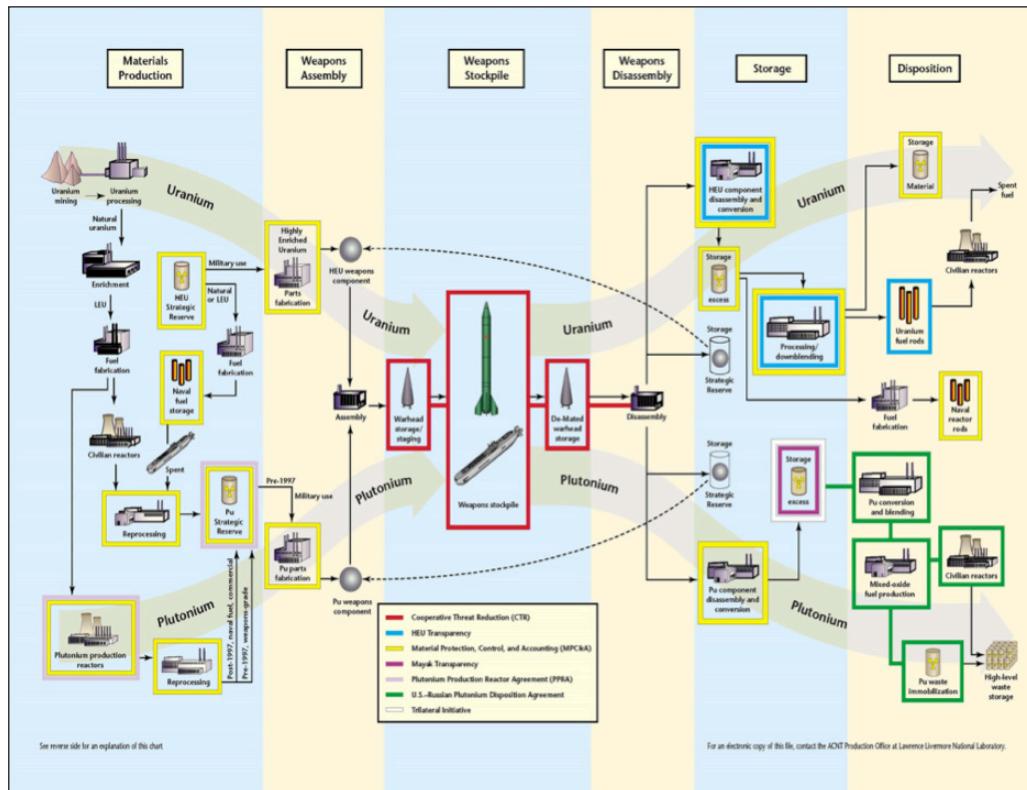


Figure 4. The lifecycle of a nuclear warhead

Source: US DOE, NNSA, Office of Nonproliferation Research and Engineering, Technology R&D for Arms Control, Spring 2001.

while preserving confidentiality of classified design information and preventing further nuclear proliferation.

On 4 December 2014, US Under Secretary of State for Arms Control and International Security Rose Gottemoeller announced a new initiative to develop tools and technologies in the quest to reduce and eliminate nuclear weapons. The initiative, named the International Partnership for Nuclear Disarmament Verification (IPNDV), was intended to channel expertise from both nuclear-weapons and non-nuclear weapon states to address the complex challenges involved in the verification of nuclear disarmament.⁸⁵ Following its inaugural meeting in March 2015 in Washington, the 29 countries engaged in the Partnership and the European Union agreed to form three working groups to inform closer study on verification issues that exist at all stages of the nuclear weapons lifecycle, to build capacity and explore solutions to fundamental nuclear monitoring and verification challenges:

- Working Group One tasked with ‘Monitoring and Verification Objectives’ and chaired by Emanuele Faruggia of Italy and Piet de Klerk of the Netherlands will consider objectives for different phases of weapons elimination, the types of information and criteria needed to determine whether those objectives are being met, and the specific areas of expertise and resources required to support future work.
- Working Group Two on ‘On-Site Inspections’, chaired by Rob Floyd of Australia and Marek Sobotka of Poland, will draw lessons from existing on-site inspection regimes and assess the applicability of fundamental on-site inspection principles to possible future verification efforts. The

⁸⁵ US Department of State, International Partnership for Nuclear Disarmament Verification (IPNDV), <<http://www.state.gov/t/avc/ipndv/>>.

group will explore the knowledge and training inspectors and staff might require to do their jobs effectively, and to manage on-site inspections to ensure they provide effective verification and monitoring while meeting national security and non-proliferation requirements.

- Working Group Three on ‘Technical Challenges and Solutions’, chaired by Jens Wirstam of Sweden and Kurt Simeon of the US, will work to identify practical solutions to technical challenges related to nuclear warhead verification, including methods for nuclear warhead authentication, establishing and maintaining chain of custody, and authenticating necessary data and equipment. The group will survey existing efforts and technology and consider how parties can approach and overcome these challenges without revealing proliferation-sensitive information.

While all these are worthwhile exercises, given the enormous technical and security challenges of designing a credible and robust verification regime of nuclear warhead dismantlement and elimination it is likely that many years will elapse before the problems can be resolved, if at all. A more practical way forward could be for each of the nine nuclear-armed states to follow the South Africa model in which they dismantle their own nuclear warheads and make available records for international verification, and place all nuclear material from dismantled warheads irreversibly under international verification.

Nuclear Risk Reduction

What mechanisms should be put in place to provide assurance for reliable, safe and secure control over nuclear weapons, and how would such mechanisms reduce the risk of accidental, mistaken, unauthorized or intentional nuclear weapon detonations?

Reducing the risks created by nuclear weapons has been high on the global agenda for decades. These risks include, but are not limited to, accidental detonation whether by accident or design; systems failure; political or military miscalculation or adventurousness; and terrorist use. In recognition of the risk of accidental launch of nuclear weapons, the USA and the USSR set up the ‘Presidential hot line’ in 1963 in the aftermath of the Cuban missile crisis of October 1962.

The concept of ‘nuclear risk reduction’ was first proposed by a working group co-sponsored by US senators Sam Nunn and John Warner in the mid-1980s. The working group envisaged the creation of Nuclear Risk Reduction Centres (NRRC) as a means of lessening cold war tensions between the USA and the USSR. This concept of risk reduction was discussed at the November 1985 Geneva Summit between US President Ronald Reagan and USSR General Secretary Mikhail Gorbachev. The ‘Nunn–Warner Working Group’ concept was further developed in late 1985 and 1986 in meetings between US and Soviet experts. On 15 September 1987 US Secretary of State George Shultz and USSR Foreign Minister Eduard Shevardnadze signed the Nuclear Risk Reduction Center Agreement signed in Washington, DC. Two NRRCs established the first direct communications link between the two capitals since the hotline. The NRRC Agreement established the exchange of ballistic missile launch notifications, and under the 1987 Intermediate-Range Nuclear Forces (INF) Treaty, the NRRCs also were tasked to exchange messages related to INF Treaty inspections, eliminations and conversion activities and maintained a comprehensive database on missile launches.⁸⁶

⁸⁶ See History of the NRRC, <<http://www.state.gov/t/avc/nrrc/c26272.htm>>.

Cooperation between Russia and the USA to deal with the so-called Y2K (year 2000) problem, or ‘millennium bug’, led to the establishment of the Joint Strategic Stability Centre (JSSC) at Peterson Air Force Base in Colorado during the year 2000 transition period.⁸⁷ This was followed in June 2000 by a ‘Memorandum of Agreement Between the United States of America and the Russian Federation on the Establishment of a Joint Center for the Exchange of Data from Early Warning Systems and Notifications of Missile Launches’ (JDEC MOA) to minimize the consequences of a false missile attack warning and prevent the possibility of a missile launch caused by false warnings.⁸⁸ Reportedly, the JSSC was discontinued after the millennium bug was no longer a concern in 2000. Establishing a new version of the Joint Strategic Stability Centre by the USA and Russia has become an urgent need given the rapidly deteriorating strategic relationship between the two countries in order to reduce the risk of nuclear weapon accidents by resuming direct communications on global ballistic missile and civilian rocket launches. Such a centre should provide reports through the NPT review process.

De-alerting

Despite the end of the cold war a quarter of century ago, many hundreds of nuclear weapons deployed on land and at sea remain on ready-to-launch status on high alert. The international conferences on the humanitarian consequences of nuclear weapons in 2013 and 2014 have highlighted the near misses during the cold war when a number of nuclear weapons launches were narrowly averted. For example, a 29 April 2014 report by the Royal Institute for International Affairs (Chatham House) entitled *Too Close for Comfort: Cases of Near Nuclear Use and Policies for Today*, described 16 incidents in which there was a higher than expected probability of nuclear weapons launch due to human or systems error, accident or misjudgement.⁸⁹ The principal finding of the Chatham House report was that the probability of inadvertent launch of nuclear weapons is not zero, that in reality the probability is higher than generally believed and therefore the risks of nuclear weapons deployment remain unacceptably high.

With regard to reducing the risks posed by nuclear weapons, in 2007 four senior US statesmen, Sam Nunn, Bill Perry, George Shultz and Henry Kissinger recommended that ‘Changing the Cold War posture of deployed nuclear weapons to increase warning time and thereby reduce the danger of an accidental or unauthorized use of a nuclear weapon’.⁹⁰ They maintained that doing so would reduce the risks of a nuclear first strike and increase time for decision-making. The Global Zero Commission on Nuclear Risk Reduction report launched during the 2015 NPT Review Conference on *De-Alerting and Stabilizing the World’s Nuclear Force Postures* made a compelling case for terminating the cold war-era practice of keeping nuclear weapons on ‘hair-trigger’ alert or launch-ready status.⁹¹ The report issued a number of recommendations, chief among which was the need for an agreement between the USA and the Russian

⁸⁷ See ‘US-Russian Strategic Stability Cooperation Initiative’, *Arms Control Today*, 6 Sep. 2000, <<https://www.armscontrol.org/print/747>>; and Becker, E, ‘US and Russia agree on joint defense against Y2K debacles’, *New York Times*, 28 Oct. 1999, <<http://www.nytimes.com/1999/10/28/world/us-and-russia-agree-on-joint-defense-against-y2k-debacles.html>>.

⁸⁸ <<http://www.state.gov/t/isn/4799.htm>>.

⁸⁹ See Royal Institute for International Affairs, ‘Too close for comfort: cases of near nuclear use and policies for today’ (RUSI: London, 29 Apr. 2014), <<https://www.chathamhouse.org/news/2014-04-29-nuclear-near-misses-too-close-comfort#sthash.wLQitI4B.dpuf>>.

⁹⁰ Shultz, G. P. et al., ‘A world free of nuclear weapons’, *Wall Street Journal*, 4 Jan. 2007, <<https://www.wsj.com/articles/SB116787515251566636>>.

⁹¹ Global Zero, *Global Zero Commission on Nuclear Risk Reduction Report: De-Alerting and Stabilizing the World’s Nuclear Force Postures*, Apr. 2015, <http://www.globalzero.org/files/global_zero_commission_on_nuclear_risk_reduction_report.pdf>.

Federation to immediately eliminate ‘launch-on-warning’ from their operational strategy along with a phased stand down of high-alert strategic forces, starting with the removal of 20 per cent of each country’s nuclear forces off launch-ready alert within one year and the remaining 80 per cent within 10 years. Another key recommendation was the proposal for a longer-term global agreement for all nuclear-armed states to refrain from placing any nuclear forces on high alert. The Commission noted that an international ‘de-alerting’ agreement could greatly mitigate the manifold risks of nuclear weapons launch, including from computer error, cyber-attack, accidental release, unauthorized ‘insider’ launch, false warning of enemy attack and crisis nuclear decision-making. This report was endorsed by former US Senator Sam Nunn, former US Secretary of Defense William Perry, and former British Secretary of State for Defence Des Browne.⁹²

The Commission further recommended that all nuclear-armed states implement policies that ensure the highest priority for survivable nuclear forces and associated command systems to reduce dependence on early launch, launch on warning, or ‘use or lose’ strategies—and all non-survivable or vulnerable nuclear forces should be eliminated during force modernization and through arms reduction negotiations whenever possible. It is highly regrettable that at least five of the nine nuclear-armed states are modernizing their nuclear forces without reducing dependence on high-alert systems, or are pursuing nuclear forces that lower the threshold for use including systems that blur the operational differences between nuclear and conventional weapons.

The full list of recommendations produced by the Commission cannot be detailed here, but a number of salient proposals are noted below that would be beneficial if undertaken by the Russian Federation and the USA as well as the other NWPS and for engagement with the NNWS:

1. Fleet ballistic missile submarines (SSBNs), form the second strike capabilities of the five NWS. The movements of these SSBNs remain a highly guarded secret. To reduce nuclear risks, SSBN deployments should not be at forward locations as that reduces the flight times of their nuclear-armed ballistic missiles to reach the territory of the other side in less than 30 minutes;
2. Reformulate nuclear war plans (emergency war orders) to eliminate launch-on-warning procedures;
3. Implement a specific phased plan to decrease the attack readiness of individual legs of strategic nuclear forces to 24–72 hours (the time required to re-alert) until a total stand-down can be achieved over a period of approximately 10 years under a fast-track option;
4. With regard to warheads of non-strategic systems destroyed since the 1987 INF Treaty; undertake data exchanges, confidence-building visits to former air force and naval storage sites to ensure that non-strategic nuclear weapon systems (NSNW) are not available for quick re-deployment; exchange information on current locations, types and numbers of NSNWs; transparency on NSNW modernization plans; separate NSNW warheads from delivery vehicles and keep them de-mated, and transfer NSNWs to centralized storage sites;
5. Exchange declarations on missile defence programmes; and
6. Russian and US experts should work jointly to design, test, demonstrate and validate de-alerting methods and associated verification procedures;

⁹²‘Statement of NTI Board Members Regarding Global Zero’s Report, “De-alerting and Stabilizing the World’s Nuclear Force Postures”, 4 May 2015, <<http://www.nti.org/newsroom/news/statement-nti-board-members-regarding-global-zeros-report-de-alerting-and-stabilizing-worlds-nuclear-force-postures/>>.

to compare and share assessments of the risks posed by their current strategic postures, including the cyber risks to the integrity of nuclear command, control, communications and early warning networks; to jointly assess the risks of the nuclear forces programmes of other nuclear-armed states and propose remedies including confidence-building measures and de-alerting.

Given the risks of accidental nuclear war, the NWPS should initiate discussions on the conceptual framework for a multilateral agreement on de-alerting nuclear forces. This could be done in a phased manner starting with the Russian Federation and the USA, followed by trilateral discussions involving China, and separate discussions by Russia and the USA with India and Pakistan, and with Israel. With regard to the DPRK, the only feasible course seems to be direct US engagement with the DPRK within the framework of a restructured Six-Party Talks. Furthermore, pending their removal, stationed US nuclear forces in Western Europe assigned for NATO defence should not be deployed beyond the existing five states—Belgium, Italy, Germany, the Netherlands and Turkey—as bringing NATO nuclear forces to the borders of Russia would lead to increased crisis instability and heightened nuclear risks.

Concluding themes

We are living in dangerous times, a new cold war has begun, dialogue between Russia and the USA on further nuclear arms reductions is at a standstill, nuclear-armed states are modernizing their nuclear forces, and international fora on nuclear arms control have been stalemated for years. In this context, one might recall the despatch from London by the renowned American newscaster Edward R. Murrow, in the spring of 1940, as the clouds of war were gathering over Europe, when he was referring to British Prime Minister Neville Chamberlain, in which Murrow reported, ‘The people here feel the machine is out of control, that we are all passengers on an express train traveling at high speed through a dark tunnel toward an unknown destiny. The suspicion recurs that the train may have no driver!’⁹³

This observation foreshadowing the darkest period in recent human history is also prescient as regards our uncertain and precarious nuclear present and future in the absence of nuclear disarmament. It is now clear that like furies emerging from Pandora’s box, the lethal technology of atomic weapons has spread uncontrollably from the very dawn of the atomic age, each and every state possessing nuclear weapons has benefitted from foreign hands in the development of their respective arsenals and nearly all of them have assisted in one way or another other NWPS. Fanciful justifications were advanced, for example, US President Truman said that the ‘atom bomb was no “great decision”. It was merely another powerful weapon in the arsenal of righteousness’. The British Prime Minister in deciding to develop nuclear weapons said that the UK must be a ‘top dog’ and ‘eat at the top table’. French Prime Minister Guy Mollett, in the wake of the ill-considered and disastrous French–UK invasion of Egypt in 1956 in response to President Nasser’s nationalization of the Suez Canal, said ‘there was France standing naked’ and ‘no one came to her aid’, in justifying his decision to make atomic weapons. China’s leader Mao Tse Tung reportedly referred to ‘paper tigers’ and ‘running dogs of capitalism’ in justifying his go-ahead for the nuclearization of China. Pakistan’s Prime Minister Zulfiqar Bhutto promised that his country folk would ‘eat grass’ and make nuclear weapons in response to India going nuclear. Indian scientists radioed Prime Minister Indira Gandhi that the ‘Buddha was

⁹³ Cited in Reed, T. C. and Stillman, D. B., *The Nuclear Express: A Political History of the Bomb and Its Proliferation* (Zenith Press 2009), inside cover.

smiling' on the successful detonation of a nuclear explosive device in 1974. Not to be outdone, the-then IAEA Director General Sigvaard Eklund prepared a telegram to Homi Bhabha, the father of the Indian bomb, congratulating India as a developing country on having mastered the science and technology of nuclear weapons—fortunately the telegram was intercepted by Assistant Director General David Fischer and never despatched!

On the plus side, five nuclear-weapon-free zone treaties are in force covering some 110 states, as well as Mongolia, and 184 non-nuclear weapon states are party to the NPT. Not including those NNWS that are party to nuclear-armed alliances and defence arrangements, there number some 150 NNWS that base their security on means other than nuclear weapons. These states have the responsibility to take determined action to promote nuclear disarmament and ensure the elimination of nuclear weapons by utilizing all the diplomatic levers in their possession. To date, they have not done so, but rather they continue to engage in well-intentioned but results-deficient discourse at NPT review meetings and in other fora.

A radical paradigm shift is needed. The international system of today is still based on the premises of a world that existed in 1945 when the United Nations formally came into being: the five nuclear-weapon states occupy the permanent UN Security Council seats and each has a veto, while many of the governing structures of international organizations bear the hallmarks of a colonial world that ceased to exist nearly half-a-century ago. Today, the majority of states are in the developing world—the global South—and they are structurally disenfranchised: for example, in the Security Council as noted above and in the 35-seat IAEA Board of Governors some 20 seats are controlled or influenced by Western countries—a built-in majority.

Furthermore, the 150 or so NNWS referred to above continue to passively accept the argument tendered on behalf of the five NATO NNWS that host nuclear weapons on their territories that such deployment was 'grandfathered' when the NPT opened for signature. Tenuous as that argument might be, it challenges common sense that the 150 NNWS docilely continue to accept this argument: even if one accepts that 'stationed nuclear weapons' were grandfathered in 1968, there is no reason at all that such grandfathering continue in perpetuity. The NNWS could change this situation and starting with the first PrepCom for the 2020 NPT Review Conference in Vienna reach a determination that stationed nuclear weapons are contrary to the purpose and objectives of the NPT and call for the removal of all stationed nuclear weapons; this issue could also be taken up at the IAEA General Conference and Board of Governors in the context of compliance with comprehensive safeguards agreements pursuant to the NPT.

Some recommendations can be made regarding of ways forward and the shape of the world's nuclear future. In April 2009 in Prague, a novice US President, Barak Obama, mused on moving toward a world without nuclear weapons, noting that 'the cold war has disappeared but thousands of those weapons have not. In a strange turn of history, the threat of global nuclear war has gone down, but the risk of a nuclear attack has gone up... So today, I state clearly and with conviction America's commitment to seek the peace and security of a world without nuclear weapons... This goal will not be reached quickly—perhaps not in my lifetime'.⁹⁴ Although this was not the first time that a world leader had committed to global nuclear disarmament—Gorbachev and Reagan did so abortively at Reykjavik in October 1986—nonetheless, President Obama renewed hope. President Obama could not deliver on the expectations he had raised globally and towards the end of his term in office in 2016, the USA was contemplating

⁹⁴ Remarks by President Barack Obama, Hradčany Square, Prague, Czech Republic, 5 Apr. 2009, <<http://www.acronym.org.uk/old/archive/docs/0904/doc10.htm>>.

a \$1 trillion nuclear enterprise modernization covering strategic bombers, fleet ballistic missile submarines, land- and sea-launched intercontinental ballistic missiles, long-range standoff nuclear air-launched cruise missiles and re-engineered nuclear warheads. The Russian Federation and China too are modernizing their nuclear enterprises to keep pace with the USA, and India and Pakistan are engaged in an unrestrained nuclear arms build-up.

In conclusion, some recommendations can be made regarding of where do we go from here and what is our destination? The advent of the ‘ban treaty’ negotiations provides an unusual opportunity to formulate a vision for the delegitimization and elimination of nuclear weapons, to ensure that the nuclear disarmament commitments under the NPT and its review process in 1995, 2010 and 2015 were not cruel hoaxes, to empower the NPT review process for 2020, and to come up with workable provisions for the disarmament of nuclear weapons and their total elimination to put an end to the aberration of the to-date 70-year age of nuclear weapons by the summer of 2045, the 100th anniversary of the Trinity Test at Alamogordo.⁹⁵

What can be done?

1. Address nuclear weapons in their totality—nuclear warheads are what matters, the units of account. The aggregation of tactical and strategic nuclear weapons will lead to the awareness that ‘a nuclear warhead is a nuclear warhead’. It is nuclear delivery systems that are defined by Russia and the USA as strategic (long-range bombers and intercontinental ballistic missiles) or as non-strategic/tactical (i.e. delivery systems with ranges below intercontinental). Nuclear warheads can only be strategic—the yield is immaterial, as detonation of any warhead would be catastrophic. And, now dial-a-yield (variable yield nuclear warheads) are being developed and deployed, rendering any distinction meaningless between a small or large warhead.
2. De-alert ready to launch nuclear weapons and Russia and the USA need to put in place a new Joint Strategic Stability Centre—this centre should provide regular reports within the framework of the NPT review process.
3. Devise new strategic concepts recognizing that nuclear deterrence is no longer a viable security doctrine. New security paradigms can holistically address three nuclear dangers—existing arsenals, non-proliferation and the risk of nuclear terrorism—and shift commitments and security arrangements towards security without nuclear weapons leading to nuclear disarmament.
4. Complete the unfinished business of the CTBT by engaging with the eight states whose signature or and/or ratification is pending—and require CTBT accession by non-NPT states seeking NSG membership.
5. Review the past transparency measures on nuclear material holdings by the USA and utilize these as a basis for promoting transparency and accountability for weapon-usable nuclear materials.
6. Irreversibly place all nuclear material from dismantled warheads under international monitoring and verification—this could be accomplished under a FM(C)T that includes stocks.
7. Update the Shannon Mandate for the negotiation of a FM(C)T by including existing stocks of weapon-usable nuclear materials within its scope.
8. Assess and review the reports on their implementation of Article VI and related 1995, 2000 and 2010 commitments submitted by the NWS to

⁹⁵ Target date proposed by Doyle, J. E., ‘Why eliminate nuclear weapons?’ *Survival*, vol. 55, no. 1 (Feb./Mar. 2013), p. 29.

the NPT review process with a view to promoting engagement on nuclear weapon issues.

9. On verification of nuclear disarmament, the experience until now has been on verification of limitations and destruction of delivery vehicles pursuant to the INF and START agreements but not on verification of dismantling and destruction of nuclear warhead—as such, as a practical measure, it would be productive to promote discussion on unilateral dismantling of warheads by the NWPS and on placing irreversibly the nuclear material from dismantled warheads under international monitoring and verification.

10. As the survivors of the atomic bombings of Hiroshima and Nagasaki fade away and the victims of radiological injuries caused by nuclear weapons testing largely remain unrecognized, the leaders and populations of today are blissfully unaware of the catastrophic humanitarian and environmental impact of nuclear weapons leading to increased bellicosity and risk taking in international relations as well as dysfunctional diplomacy in international fora—which makes resumption of results-oriented engagement between the NNWS and NWPS all the more important and urgent.

11. At the 2020 NPT Review Conference, states parties should develop and agree on the essential principles for nuclear disarmament through effective measures to be implemented over the next 25 years to achieve the elimination of nuclear weapons by 2045.

What is the appropriate vehicle for negotiations on nuclear disarmament? Is it the ‘ban treaty’? Does the NPT reflect mainly the interests of only the five NWS regarding non-proliferation thus relegating nuclear disarmament to a lesser priority? Furthermore, can the NPT obligations be extended to cover non-Treaty states which possess nuclear weapons? The reality is that the NPT is the only multilateral forum where the NWS are legally obligated to address nuclear disarmament, and is the only multilateral forum where they in fact in recent times (since 1995) have felt pressured to explain their nuclear policies—the NWS have stubbornly refused to engage multilaterally in other forums. Thus, it is no surprise that the NWS were not present at the 2013/2016 OEWGs and the ‘ban treaty’ negotiations.

Critics claim that the ‘ban treaty’ negotiations will undermine the NPT, create confusion regarding implementation of the NPT and/or ‘ban treaty’ negotiations, or lead to defection from the NPT to the ‘ban treaty’ by NNWS. None of these criticisms stand up to scrutiny. A “ban treaty” cannot undermine the NPT, as it would be a different international legal instrument that is directed only at prohibiting nuclear weapons as its sole purpose. Whether or not there is a ‘ban treaty’ has no legal implications for the NPT, as all NPT states parties will remain obligated to implement *all* provisions of the Treaty (including Article VI). The charge that NNWS, out of frustration over the pace and extent of nuclear disarmament, would abandon the NPT and join the ‘ban treaty’ and thus their IAEA safeguards agreements would terminate. Logically, if there is no contradiction between more than 110 NNWS being parties simultaneously to the NPT and NWFZ treaties, there can be no contradiction or confusion between the NPT and a ‘ban treaty’.

By way of concluding, it is instructive to recall the remarks of General Lee Butler, the last Commander of the US Strategic Air Command (SAC), made at a speech in Ottawa, Canada, on 11 March 1999, who cited WWII General Omar Bradley:

We live in an age of nuclear giants and ethical infants, in a world that has achieved brilliance without wisdom, power without conscience. We have solved the mystery of the atom and forgotten the lessons of the Sermon on the Mount. We know more about war than we know about peace, more about dying than we know about living.

Yet, the final word should go not to a General, nor to a diplomat, but to a school child at the United Nations kindergarten in New York who said that she could not understand ‘why a country that makes atomic bombs would ban fireworks but not atomic bombs?’ The challenge for nuclear arms control diplomats is to provide a convincing answer to this child’s question.

About the author

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