UNIDIR NUCLEAR DIALOGUE SERIES
PAPER TWO

THE LOGIC OF NUCLEAR DISARMAMENT

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ACKNOWLEDGEMENTS

Support from UNIDIR core funders provides the foundation for all the Institute's activities. At UNIDIR, Lewis A. Dunn, John Borrie and Wilfred Wan managed the process of bringing this paper to publication. Design and layout by Eric M. Schulz.

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CITATION

Perkovich, George. 2020. "The Logic of Nuclear Disarmament", Geneva, Switzerland: UNIDIR. https://doi.org/10.37559/WMD/20/DDAC/02.

ABOUT UNIDIR

The United Nations Institute for Disarmament Research (UNIDIR) is a voluntarily funded, autonomous institute within the United Nations. One of the few policy institutes worldwide focusing on disarmament, UNIDIR generates knowledge and promotes dialogue and action on disarmament and security. Based in Geneva, UNIDIR assists the international community to develop the practical, innovative ideas needed to find solutions to critical security problems.

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FOREWORD

Virtually from the first days of the atomic age, national leaders, experts, and publics have grappled with how to prevent the devastation and loss of human life that could be brought about by nuclear weapons. Pursuit of nuclear disarmament to rid the world of nuclear arms and reliance on nuclear deterrence to prevent their use soon emerged as two approaches. Both approaches have been complemented by what became known as non-proliferation and, somewhat later, by bilateral and multilateral arms control. Over the decades, these evolving approaches have woven in and out of national and international efforts to deal with the existence of nuclear weapons. Many States have drawn on and adapted strands of all these approaches in formulating their national policies. How nuclear disarmament, nuclear deterrence, non-proliferation, and arms control have interacted has varied—at times being more cooperative, at times more confrontational.

More recently, there has been intensified and frequently contentious debate about how much emphasis to place on reliance on nuclear deterrence and on pursuit of nuclear disarmament in today's security environment. In parallel, there is mounting competition, deepening mistrust, and assertive nationalism among nuclear-armed States. New centres of power, major power rivalries, new technologies, and new domains of strategic competition are emerging. The risk of use of nuclear weapons, particularly from an escalating conventional conflict, is a cause of international concern. Long-standing bilateral and arms control efforts are ending or are endangered. And, for decades now, multilateral nuclear arms control and disarmament efforts have largely been at an impasse.

Renewed dialogue at many levels is urgently needed to address these dangers.

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In July 2020, UNIDIR initiated the Disarmament, Deterrence, and Strategic Arms Control (DDAC) Dialogue. Bringing together a small but diverse group of policymakers, experts, and civil society representatives on a not-for-attribution basis, it focuses on exploring the relationships and interactions among nuclear disarmament, nuclear deterrence, and strategic arms control in today's world. The initiative aims to help bridge today's nuclear divide and renew global cooperation by identifying shared goals and interests as well as opportunities to recraft strategic arms control in the twenty-first century and contribute to re-energizing the pursuit of nuclear disarmament. As such, it is intended to complement the Secretary-General's *Agenda for Disarmament*, launched in Geneva on 24 May 2018.

Launching the DDAC Dialogue amid the Covid-19 pandemic has created major obstacles to face-to-face meetings and international travel. It has led UNIDIR to experiment with new ways of promoting substantive, worthwhile expert interaction. To that end, this paper on the logic of nuclear disarmament represents the evolution of a bullet-point paper UNIDIR asked George Perkovich to prepare for the DDAC Dialogue. It sits alongside a companion piece by Tanya Ogilvie-White on the logic of nuclear deterrence. Together, these papers prompted brief, written comments from invited commentators and fruitful, subsequent discussion among all Dialogue participants at an online meeting on 30 September 2020.

We and the DDAC participants felt both these papers would be of broader, public interest in stimulating thinking about the relationship between nuclear disarmament and nuclear deterrence, to be augmented by other discussion papers and policy briefs the Institute is releasing from late 2020 as part of its ongoing nuclear dialogue series. As such, these papers are exploratory, not comprehensive, treatments of the themes they refer to. It should also be noted that the comments on each paper, reproduced at the end of each with permission of the commentators, were informal contributions that respond to earlier drafts rather than the latest, published versions. Nevertheless, these comments are included because they contain valuable insights into the dilemmas of nuclear weapons at the current time, including the breadth of perspectives involved.

Finally, we wish to thank the Institute's departing Director, Dr. Renata Dwan, for her key role in initiating and promoting the DDAC Dialogue, and for her important contribution to its discussions to date. We wish her the best in her future role at Chatham House.

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THE LOGIC OF NUCLEAR DISARMAMENT

WHO ARE NUCLEAR DISARMERS?

Advocates of nuclear disarmament—be they individuals or States—vary in their identities, visions, motivations and practical agendas. Most national governments advocate some form of nuclear disarmament, as seen by their participation in the Nuclear Non-Proliferation Treaty (NPT) as non-nuclear-weapon States and their support of the 2017 Treaty on the Prohibition of Nuclear Weapons. It is impossible to say how informed the global population is about nuclear issues and what policies a clear majority would favour. (Almost half of the global population lives in the nine nuclear-armed States; hundreds of millions more live in States that have extended nuclear deterrence relations with the United States. No one knows the distribution of informed opinion regarding nuclear deterrence and disarmament in all these countries.)

Some States and many citizens urge prohibition of nuclear weapons now; some as a longer-term goal. Some focus more on disarmament than prohibition. Some include security conditions—at national, regional and global levels—into their assessments of factors that make disarmament feasible. Some advocate unconditional disarmament. Some favour step-by-step approaches, believing that the process will need to be incremental. Some reject this approach as too slow. Some will not be satisfied until every weapon is dismantled—and will not credit States for meeting their disarmament obligations until then. Others believe that deep reductions to very low numbers would (minimally) meet their expectations.

WHY DO THEY ADVOCATE NUCLEAR DISARMAMENT?

As the identity and approaches of nuclear disarmament advocates vary, so too do the reasons they articulate for this goal. Among these reasons several are most common. They are presented in no hierarchical order here; different advocates would rank them differently.

NUCLEAR DETERRENCE COULD FAIL, AND THE RESULTS WOULD LIKELY BE CATASTROPHIC

There are multiple pathways to deterrence failure (and this multiplicity increases its probability).

In a war (or imminent war) a nuclear-armed State could conduct a surprise attack to destroy an adversary State and its capacity to launch nuclear retaliation. This scenario animated US and Soviet planning in the early Cold War. Whether or not it was realistic then, it is much less likely today.

However, new technologies could emerge that conceivably could enable a technologically advanced power to pre-emptively negate or largely degrade an opponent's nuclear deterrent. Technologies—digital or otherwise—could operate against space platforms vital for commanding and controlling nuclear systems, or breakthroughs in artificial intelligence and sensors could threaten the survivability of nuclear-armed submarines. This does not suggest an adversary would suddenly one day decide to try to destroy a competitor's nuclear deterrent, which if the attempt failed could trigger a nuclear retaliation. But technological breakthroughs could make big and rapid leaps in escalation of conflict more likely. As well, fear of such breakthroughs could drive arms racing and exacerbate instabilities among nuclear-armed States in ways that could undermine nuclear deterrence.

Escalation from a conventional conflict, with initial limited use of nuclear weapons, is perhaps the most likely path to nuclear war today. There are no data on which to base probabilities that use of nuclear weapons could be kept limited. Nuclear war has never been fought (Japan did not have nuclear weapons with which to respond to the US atomic bombings in 1945). The Russian Federation, the United States, Pakistan, India and perhaps China are deploying forces that indicate interest in limited nuclear operations. Escalation could occur intentionally or inadvertently.

Many observers think inadvertent escalation of regional conflicts is the highest risk. Inadvertent escalation could have multiple sources:

- One State's leadership could misjudge an adversary's perceptions of the former's intentions and capabilities and mistakenly conclude that the latter will back down early in a militarized crisis.

- A State can misjudge its own capabilities in either direction—inflicting more damage on an adversary than intended and thereby causing the adversary to escalate, or inflicting less damage on an adversary than intended and thereby emboldening the adversary to escalate. (Both of these miscalculations could lead to de-escalation too!)

- Governments could misinterpret an adversary's intentions behind certain attacks, such as against conventional or dual-use assets, including command and control systems shared by nuclear and conventional forces. An attacker could be seeking to keep a conventional war limited but inadvertently harm a command and control system shared by the adversary's nuclear forces, causing the adversary's leadership to conclude that nuclear war is imminent.

- Technical malfunction could occur in multiple ways leading to inadvertent escalation. If an accident or malfunction occurred during mobilization or signalling exercises involving nuclear forces during crises, the effect could be highly escalatory.

Irrational leaders could start a nuclear war. Whether or not any purposeful use of nuclear weapons would be rational in a conflict, deterrence assumes a basic model of rational weighing of risks and benefits of actions in which decision makers place a premium on national survival and minimizing damage. But it is also possible that in one or more States a leader or leaders could initiate nuclear use according to a different calculus or even a pathological impulse that others would consider to be irrational.

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All the factors listed above can be combined to conclude that however salutary nuclear deterrence has been to date, circumstances are evolving to make it too risky (and unnecessary) to rely on nuclear deterrence going forward. This judgment is intensified by the possibility that use of nuclear weapons would escalate and be so destructive to human populations, economies, and the environment that the result would be a global humanitarian and environmental catastrophe. Many would say that such escalation is probable, not merely possible.

NUCLEAR DETERRENCE (AND CERTAINLY NUCLEAR WAR) IS WRONG OR IMMORAL

A second motivation for nuclear disarmament is the belief that nuclear deterrence (and certainly nuclear war) is wrong or immoral. It is immoral and illegal (arguably) *to threaten* to do something that would be wrong or illegal *to do*. Detonating nuclear weapons that indiscriminately kill large numbers of non-combatants would be wrong. Many believe that the difficulty of keeping nuclear use limited or confined to remote targets means that it is more reasonable than not to assess that the conduct of nuclear war would transgress international humanitarian law and morality.[1]

THE NPT'S DISARMAMENT OBLIGATION

Third, the Nuclear Non-Proliferation Treaty obligates the five nuclear-weapon States to unequivocally pursue the complete elimination of nuclear arsenals. (There is a less demanding variant explicated in the NPT, which is to pursue negotiations in good faith leading to nuclear disarmament). States and experts disagree on the specific legal, as opposed to political, obligations of the five nuclear-weapon States under the NPT. Moreover, India, Pakistan and Israel never signed the NPT, making their disarmament obligations even less clear.

Nevertheless, while the exact legal status of disarmament obligations remains debatable almost everyone agrees that the NPT and the broader non-proliferation regime are vital to peace and security among nuclear-armed States and the rest of the world. This is because proliferation would make the use of nuclear weapons more likely over time. The more dyads or triads of nuclear-armed adversaries that exist, the more probable that conflict will occur involving nuclear-armed States which could escalate to nuclear detonations that could devastate the belligerent States and the well-being of non-belligerents. The longer a few States insist that their security and global standing depend on retaining nuclear weapons, the more likely other States will seek such weapons. Proliferation upsets the global balance of power that the nuclear-weapon States (and others) think is important to preserve for their populations' well-being and for stability of the broader global system.

For all these reasons, preserving and strengthening the non-proliferation regime is important. If this requires fulfilling the 'bargain' to pursue the more equitable outcome whereby no State possesses nuclear weapons, then this outcome is in the interest of all to pursue.

FOR THE GREATER GOOD IN IMPROVING GREAT POWER RELATIONS

Finally, pursuing nuclear disarmament serves all the above purposes and, in addition, puts States on a pathway that leads to stabilizing relations among major powers. That is, progress towards nuclear disarmament will dialectally cause and reflect improvements of international security. States may not agree to take disarmament steps without progress in redressing underlying political or territorial disputes, but the perceived willingness to undertake verifiable arms control and disarmament steps can help to build political confidence. Conversely, many believe, nuclear arms racing will dialectally cause and reflect international insecurity. Moreover, nuclear disarmament could allow shifts of national resources to the pursuit of economic development, public health, and other social goods, as well as to alternative means of national defence.

1 Among many explorations of legal issues pertaining to nuclear weapons, see Valentin Jeutner, *Irresolvable Norm Conflicts in International Law*, 2017; Lt. Col. Theodore T. Richard, "Nuclear Weapons Targeting: The Evolution of Law and U.S. Policy", *Military Law Review* 224, 2016; Gro Nystuen, Stuart Casey-Maslen and Annie Golden Bersagel (eds), *Nuclear Weapons Under International Law*, 2014; Timothy J. Heverin, "Legality of the Threat or Use of Nuclear Weapons: Environmental and Humanitarian Limits on Self-Defense", *Notre Dame Law Review* 72:14, p. 1290; Richard Falk, "Nuclear Weapons, International Law and the World Court: A Historic Encounter", *The American Journal of International Law*, January 1997, pp. 64–75; John Burroughs, "Looking Back: The 1996 Advisory Opinion of the International Court of Justice", Arms Control Association, July/August 2016, https://www.armscontrol.org/ACT/2016_07/Features/Looking-Back-The-1996-Advisory-Opinion-of-the-International-Court-of-Justice.

WHAT ARE MAJOR ASSUMPTIONS OF NUCLEAR DISARMAMENT ADVOCATES?

Here too there is much variation. Among the most important and common assumptions are the following.

Some believe that nuclear deterrence is a) not necessary and/or b) has not been decisive in averting major war among nuclear-armed States. This cannot be proved or disproved in ways that convince everyone. More so than advocates of nuclear deterrence, disarmament advocates tend to be sceptical of the necessity and effectiveness of nuclear deterrence.

Whether or not one believes that nuclear deterrence has been necessary or effective, **many disarmers believe that security will not be diminished meaningfully during and after nuclear disarmament**. Some of them believe that relations among current adversarial States will have improved before they would agree to eliminate their nuclear arsenals, so that once they do agree and move to implement it, their security will not deteriorate. In other words, disarmament will move dialectically with improvements in political–security relations. This view depends somewhat on the belief that verification and compliance with disarmament commitments can be assured to a sufficient degree to promote stability.

Some believe further that the sole viable purpose of nuclear weapons is to deter the use of nuclear weapons by others, so that if all disarmed none would feel a legitimate need for these weapons. This is related to a belief that **the types of non-nuclear threats that would make the use of nuclear weapons justifiable have already faded from the world**. These beliefs rest in part on the assessment that major powers are extremely unlikely to commit the sorts of aggression that would start major wars because they are economically interdependent, or they have learned for history, or they can gain economic power and political influence at much lower risk and cost than by invading or attacking other countries. In other words, conventional or other non-nuclear capabilities are robust enough—or can and should be made robust enough—to deter the realistic threats confronting States today and in the foreseeable future. To invoke a common analogy, it is extremely unlikely, for various reasons, that a new Hitler will emerge and be able to mobilize a powerful State to commit the sort of aggression that Germany did in 1939. (Some officials and analysts share this view but argue that nuclear deterrence is a major reason why a new Hitler will not emerge and launch aggression.)

Even if non-nuclear deterrence of major aggression fails, the harm done by such aggression would not be as catastrophic and irreversible as the harm done through nuclear war. Nations —meaning governments and populations—would be better off eschewing nuclear war against such aggression and living to fight or revolt against an aggressor another day rather than running the risk of annihilation through nuclear war. (Some disarmers would acknowledge an exception for genocidal aggression: only that level of demonstrated threat would make it rational and justifiable to employ nuclear weapons with the attendant risks of escalation.)

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If there are weaknesses in these preceding assumptions, they are no weaker than the assumptions of those who believe that nuclear war can be fought and meaningfully won, or that limited use of nuclear weapons would in fact not escalate. Relatedly, some

argue that luck has helped prevent nuclear war thus far, but that sooner or later good luck will run out and the result will be catastrophic. The probability and consequences of nuclear war, taken together, pose a greater risk to humanity than do the probability and consequences of war due to a failure of a nuclear disarmament regime. (In my view this heuristic equation should be a focal point of dialogue and debate between champions of nuclear deterrence and of nuclear disarmament: which sort of disarmament regime would be least risky and which sort of nuclear deterrence 'regime' would be least risky? Which would be most risky? Which sorts of regimes are most probable in the near future? If risky deterrence or disarmament regimes are more likely than less risky ones, what can and should be done to correct this danger?)

WHAT ARE IMPORTANT UNCERTAINTIES IN THE CASE FOR NUCLEAR DISARMAMENT?

Does nuclear disarmament require that all nine current possessors of nuclear weapons cooperate and disarm at the same time? If one State refuses, will some number of the rest then refuse also? Four of the nine nuclear-armed States are not now party to the NPT—what process would need to be created to make them join disarmament? These rather obvious questions tend not to be asked, let alone answered, either by analysts or governments in international forums.

How should nuclear disarmament be defined?[2] No nuclear-armed State has presented a detailed prototype of what it would envision or require as the end state of nuclear disarmament—which capabilities would have to be dismantled, destroyed, monitored, etc., and which would be permissible to retain, under what conditions. Would disarmed States be allowed to retain missiles? Of which types, under which conditions? Would ballistic missile defences be allowed in the absence of nuclear weapons? (If so, how would they be regulated during the transition from today's nuclear competitions to the point when all States eliminate their ballistic missiles and nuclear weapons? Could ballistic missile defences mitigate concerns about cheating on a nuclear disarmament regime?) Would these States be allowed to retain space-launch vehicles and related programmes? If so, under what conditions? If not, how would the global economy and scientific research function? Would nuclear energy programmes be allowed to continue? Under what conditions? What must be done with fissile materials taken from nuclear weapons? What would be done with today's nuclear weapon laboratories, many of which conduct dual-use research and development? Would scientific and engineering research that could be essential for designing, building or maintaining nuclear weapons be allowed? If so, under what conditions would it be regulated and monitored?

How would nuclear disarmament—however defined—be verified? Who would pay for such verification? The initial obvious answer to this latter question is that the nuclear-armed States that are disarming should pay. But monitoring and verification would be needed in non-nuclear-weapon States too, probably in more demanding and costly ways than is the case today. (One reason is that many States will perceive the risks of proliferation break-out to be greater when no one is supposed to have nuclear weapons than the risks are when the

2 For two relatively detailed explorations of what a suitable nuclear disarmament regime would entail, see Toby Dalton and George Perkovich, *Thinking the Other Unthinkable: Disarmament in North Korea and Beyond*, Livermore Papers on Global Security no. 8, July 2020, https://cgsr.llnl.gov/research/livermore-papers; George Perkovich and James Acton, *Abolishing Nuclear Weapons: A Debate*, Carnegie Endowment for International Peace, 2009, https://carnegieendowment.org/2009/02/13/abolishing-nuclear-weapons-debate-pub-22748.

big powers have arsenals to deter or defeat proliferators.) How effective must verification be in order to make the world more secure under a nuclear disarmament regime than it is without one? Should there be new thinking and debate about the confidence levels required for verification, perhaps different from that which guided US–Soviet/Russian arms control agreements?

How would nuclear disarmament be enforced? This question is largely avoided by all sides in contemporary nuclear debates. If no specific enforcement regime would be envisioned or required, how would States be convinced to disarm? If enforcement is required, would the Security Council be the enforcement authority? If so, how would the problems posed by the veto be overcome? If the veto makes the Security Council inadequate for enforcing nuclear disarmament, what would persuade the five nuclear-weapon States with veto power to relinquish the Security Council's authority in this domain and agree to an alternative enforcement mechanism?

How will the nuclear age evolve with time? This question may seem frivolous and is impossible to answer with any confidence. But how one answers it can point to a policy agenda. Does each year without nuclear war strengthen the taboo against first-use of these weapons? Does this make the governments and populations of nuclear-armed States question whether they need these weapons any longer? Or, conversely, does the case for nuclear deterrence grow stronger with each year that passes without nuclear conflict; that is, nuclear deterrence is working, let it be? This argument, though, invites the question above regarding whether luck will eventually run out. It also neglects the important questions of how much is enough for deterrence and how much is too much in case deterrence fails? Can the necessary political, bureaucratic, and public–psychological conditions be created to motivate nuclear-armed States and alliances to make a final move from a few nuclear weapons to zero?

From the opposite direction, the question is whether each year in which States possess nuclear weapons increases the probability that nuclear weapons will be detonated, either purposefully or inadvertently/accidentally? This should then lead back to the questions at the end of the previous section: which sort of nuclear deterrence regime would be least risky and which sort of nuclear disarmament 'regime' would be least risky? Which would be most risky? What can and should be done to move toward the least risky and away from the most risky?

WHAT ARE THE MOST SALIENT MODES OF DISARMAMENT FAILURE?

A world in which at least nine States know how to make nuclear weapons and retain at least some capabilities to do so could be unstable. The instability of such a disarmament regime would, of course, depend on how it is designed, including its verification and enforcement mechanisms. Theoretically, any crisis could create incentives for one or more actors to secretly or even overtly race to reconstitute nuclear weapons. Here again, though, the risk calculation would depend on the quality of the disarmament regime. Would fear of break-out motivate all capable States to hedge in ways that are less stable than if they retained minimal deterrents (which would have to be defined)? Might States that have not developed nuclear weapons become tempted to do so in a world where others have disarmed? (There is a counter-argument to this that confounds champions of nuclear deterrence and disarmament alike: the capacity to reconstitute nuclear weapons can itself be a deterrent, and if this deterrent failed it would be less dangerous than if deterrence with large arsenals fails, because many fewer weapons would exist to be detonated.)

Removing nuclear weapons could allow for major conventional war or the emergence of a hyper-aggressive aspirant for regional or global power. States with significantly greater non-nuclear military power would feel freer to attack their neighbours or other adversaries. For example, the Russian Federation could be less inhibited in coercing or attacking its neighbours, as could China be with its neighbours, and India with Pakistan. If US adversaries did not have nuclear weapons, its allies in Asia and Europe could be emboldened to take actions that the Russian Federation and China would bitterly oppose, those allies confident that in the absence of nuclear weapons the United States would be more likely to defend them if attacked by the Russian Federation or China. (This can be countered, again, by saying that if the Russian Federation, China, India or the United States moved to aggress others, then other former nuclear-armed States could reconstitute their nuclear arsenals quickly. At least the prospect of this should deter such aggression. However, this argument then invites the one immediately above about instability.)

Verifying and enforcing complete nuclear disarmament would be so difficult that someone would be bound to cheat.

Verifying and enforcing complete nuclear disarmament would be so difficult that someone would be bound to cheat. This worry cannot be dismissed, but corollary questions are more interesting and rarely asked. States may cheat or allegedly cheat, but then what? The inevitable ambiguity in some terms of a disarmament regime would make allegations of cheating likely, and therefore the need for dispute resolution mechanisms and political restraint in the whole process of verification, compliance questioning, and resolution. Would a cheater succeed in acquiring nuclear weapons? What actions by others could prevent this? How many weapons would the cheater acquire, with what sorts of delivery capabilities? Would the disarmament regime also have abolished ballistic missile defences? (If not, could such defences mitigate concerns about the most militarily significant forms of cheating?) Would the cheating State then conduct a major conventional attack or invasion on an adversary? Would it launch a nuclear attack without an invasion? Would the aggressed State or States lose the conflict and suffer major devastation? How would other States respond to a break-out from disarmament, including others that had eliminated nuclear arsenals?

Stepping back from these obvious modes of disarmament failure, **it is important to ask whether the risks (probability times consequence) of such failure are greater or less than the risks of failure of US–Russian, Indian–Pakistani, and US–Chinese nuclear deterrence competitions today and in the future?** As with disarmament regimes, it is important to assess relative risks of various types of nuclear arsenals, targeting policies, governance models, etc., in maintaining nuclear deterrence or in contributing to its failure. Much more needs to be done, too, to assess the consequences of deterrence failure (in order to assess overall risks). For example, the data and modelling capability needed to assess under what conditions exchanges of nuclear weapons would likely produce severe and lasting climatic effects—nuclear winter—have improved, but nuclear-

armed States have not conducted and publicly debated such studies in recent decades.[3] Should not this be done to help inform policy debates on the size, composition and targeting of nuclear arsenals? What obligations do nuclear-armed States have to assist others to deal with the consequences if nuclear exchanges would cause environmental and humanitarian catastrophe that would extend beyond the territories of the belligerent States? Are they prepared to meet these obligations?

WHAT IS THE RELATIONSHIP BETWEEN DISARMAMENT, DETERRENCE AND ARMS CONTROL?

This question, which is really several questions, is also is under-addressed.[4] The thoughts offered here are especially speculative.

One question is whether deterrence would be weakened (assuming it exists) as States moved from their current postures towards zero deployed nuclear weapons. A more neutral way of asking is, how would a transition from nuclear deterrence to disarmament occur?[5] Are there particular milestones in numbers of weapons, deployment/readiness practices, and political relationships that would likely be required to move from today's nuclear deterrence postures to disarmament? On the way towards zero, maintaining *nuclear* deterrence would depend in part on whether residual (smaller) arsenals were survivable against various kinds of nuclear, conventional and cyber attacks that could be mounted against them. Many champions of nuclear deterrence assert that it would become less stable than it is with larger arsenals. Others note how abnormally large current US and Russian arsenals are and point to the experiences of States with much smaller arsenals to suggest that significantly lower numbers would not intolerably weaken deterrence (and would reduce the destructiveness of war if deterrence failed).

A second question is whether and how deterrence could operate at zero. That is, if deterrence is effective, even necessary, why would it not be able to operate without nuclear weapons (especially as the know-how to rapidly build them will remain)? Or, does disarmament presuppose an end of the practice of deterrence? There are two points or questions here: how well would deterrence operate based on conventional, cyber, and other non-nuclear capabilities, and would the knowledge and residual capabilities that States would retain to make nuclear weapons serve as a non-weaponized nuclear deterrent? Arguably, at zero deployed nuclear weapons, the know-how that at least nine States possess to rebuild nuclear weapons could provide a measure of non-weaponized nuclear deterrence. The dynamics of

3 For a sample of studies of possible climatic effects of nuclear war, see A. Robock at al., "Climatic Consequences of Regional Nuclear Conflicts", *Atmospheric Chemistry and Physics* 7, 2007, pp. 2003–2012, www.atmos-chem-phys.net/7/2003/2007/v; O.B. Toon, R.P. Turco, A. Robock et. al., "Atmospheric Effects and Societal Consequences of Regional Scale Nuclear Conflicts and Acts of Individual Nuclear Terrorism", *Atmospheric Chemistry and Physics* 7, 2007, pp. 1973–2002, https://www.atmos-chem-phys.net/7/1973/2007/; L. Xia and A. Robock, "Impacts of a Nuclear War in South Asia on Rice Production in Mainland China, *Climatic Change*, May 2012, http://rd.springer.com/article/10.1007/s10584-012-0475-8; J. Reisner at al., "Climate Impact of a Regional Nuclear Weapons Exchange: An Improved Assessment Based On Detailed Source Calculations", *Journal of Geophysical Research: Atmospheres*, 13 February 2018, https://doi.org/10.1002/2017JD027331; J. Reisner, et al., Reply to Comment by Robock et al. (2019) on "Climate Impact of a Regional Nuclear Weapons Exchange: An Improved Assessment Based on Detailed Source Calculations", *Journal of Geophysical Research: Atmospheres* 124, 2019, pp. 12,959–12,962, https://doi.org/10.1029/2019JD031281.

4 An outstanding exception is Lewis A. Dunn, "The Strategic Elimination of Nuclear Weapons: An Alternative Global Agenda for Nuclear Disarmament", *The Nonproliferation Review* 24:5–6, 2019, pp. 401–435.

5 Harald Muller, "Icons Off the Mark", *The Nonproliferation Review* 20:3, 2013, pp. 554–555.

rebuilding nuclear weapons would depend on how a disarmament regime was designed, verified and enforced. This in turn raises arguments for and against the proposition that a nuclear-disarmed world would be less stable than one with extant arsenals because adversaries might each assume that, in crisis, the other is readying to rebuild.

If nuclear disarmament would require a regime or agreed body and mechanism to enforce it, could that enforcement regime provide enough security that States would be willing to rely on it instead of their own nuclear deterrent (of whatever shape)? Some have suggested that this international enforcement regime would itself have potential resort to reconstituting nuclear weapons to deter or defeat a State that cheated on a disarmament regime.

The relationship between disarmament and arms control (or reductions) is even less frequently analysed. Some see arms control and reductions as steps in the more ambitious process of achieving nuclear disarmament. They are means to lower the destructiveness of potential war if deterrence fails, to stabilize competitions, to reduce costs, to signal non-aggressive intentions, etc. As such, they also make disarmament more possible. Others may be frustrated by the perception that the United States and the Russian Federation—the only two States that have negotiated nuclear reduction treaties—pursue arms control to manage perpetual competitive nuclear deterrence, rather than to advance towards nuclear disarmament.

Are there some types of arms control that would be especially helpful in speeding progress towards full elimination of nuclear arsenals, so that more attention should be focused on them? This question is rarely asked. If the explicit goal of arms control were to facilitate disarmament, would this change priorities? Would this goal make governments and populations of the nine nuclear-armed states (and allies) more or less likely to support arms control?

Some (probably a small number) want nuclear-armed States to pursue abolition as a measure of equity and fidelity to the NPT, but recognize that dismantling States' last 'few' weapons may require such a widely intrusive and limiting approach to managing all States' nuclear energy programmes, research and development activities, missile capabilities, space-launch programmes, export controls, etc., that the trouble and costs of doing so are not worth the marginal gains. These analysts would be satisfied with a complete end to nuclear arms racing and a deep reduction in the global inventory of these weapons. The perfection of complete nuclear disarmament should not diminish attention from the very good outcome of deep and comprehensive nuclear reductions and arms control.

Another connection between disarmament and arms control concerns verification. The kinds of verification and monitoring arrangements and techniques that States would require before they agreed to eliminate their arsenals could add confidence that intermediate stages of reductions would be more security-enhancing than would be the case using current verification arrangements. That is, by modelling requirements of nuclear disarmament, officials and independent analysts could contribute to nearer-term approaches to arms reductions.

CONCLUSION

The concerns that motivate interest in and demand for nuclear disarmament are formidable and deserve fuller and deeper address than they have received thus far in the policy deliberations of many States and international bodies. There are many reasons for the inadequacy of such deliberations to date, not least the recalcitrance of governments that now rely on nuclear deterrence. Ultimately, the risks of catastrophic nuclear war are too great to allow continued non-engagement with the questions raised here to be acceptable. Whether or not the risks of doing without nuclear deterrence and deployed arsenals are greater than the risks of persisting with these weapons and deterrence policies depends on the answers that informed and thoughtful people offer to such questions.

The risks of catastrophic nuclear war are too great to allow continued non-engagement with the questions raised here to be acceptable.

A COMPENDIUM OF COMMENTS ON THE LOGIC OF NUCLEAR DISARMAMENT

As part of UNIDIR's Disarmament, Deterrence and Strategic Arms Control Dialogue, the Institute invited written, informal comments from among the initiative's participants in advance of a by-invitation online interactive meeting held on 30 September 2020. The purposes behind inviting these comments were to create a focus on issues of substance in advance of the meeting, kick-start its discussion, and ensure that diverse viewpoints were covered.

As such, the comments that follow, with permission of the commentators, were offered in advance of the final version of the published logic of disarmament paper, which was revised in parts to reflect some of this feedback.

In addition, the commentators offered their viewpoints in their own personal capacities and should not be interpreted as necessarily reflecting their official positions or affiliations.

COMMENT BY MARCELO CÂMARA [1]

I commend George Perkovich for his thought-provoking text, which provides a good basis for the discussions in the UNIDIR Disarmament, Deterrence and Strategic Arms Control Dialogue.

These brief comments will not address the set of questions contained therein since most of them are of very complex nature and would require an in-depth inquiry. Therefore, I have limited myself to some general remarks related to questions that, in my view, are worth raising.

My first point is the way disarmament sometimes is articulated in the text. The heading 'Who are nuclear disarmers?' may give the impression that those who defend it are part of a minority in the international community when the opposite is the truth.

In fact, all United Nations main documents related to the question of nuclear weapons refer to nuclear disarmament as the ultimate goal to be achieved. Many resolutions passed both in the General Assembly and in the Security Council have made explicitly reference to nuclear disarmament and to the NPT. To the best of my knowledge, there is not a single document that advocates nuclear deterrence or arms control as lasting remedies to the concerns posed by nuclear weapons.

It is worth recalling that nuclear disarmament has not been only subscribed by the NPT community. The Final Document of the first special session of the General Assembly devoted to disarmament (1978), which is still today recognized as a seminal document by NPT parties and non-NPT parties alike, states in its paragraph 47 that "The ultimate goal in this context is the complete elimination of nuclear weapons".

In view of the above, I would argue that, at least formally, the United Nations main bodies and—indirectly all States that underpin them—are 'nuclear disarmers', having set up to that end a Disarmament Commission, a Conference on Disarmament, an Institute for Disarmament Research, etc. The mere existence of these forums attests to the wide acceptance of nuclear disarmament, despite the complexities and difficulties of its achievement.

My second point, in relation to the section 'Why do they advocate nuclear disarmament?', is that nuclear disarmament is for the NPT parties a legally binding obligation. In my view, Perkovich's text gave short shrift to this important dimension.

Norms make us safer. Understood as agreed patterns of behaviour, norms provide predictability of action. An actor or actors that indefinitely postpone the implementation of agreed norms sap the overall community's security thereby discouraging others to keep on doing their part.

As known, the obligation to disarm is inscribed in article VI of the NPT. Legally speaking, failure to implement it necessarily amounts to non-compliance. Granted, progress depends on the seriousness of all parties and not a single participant can achieve it alone. However, the political process that led to the NPT clarifies that article VI was conceived as part of a dynamic bargain to be implemented over time, erasing the distinction between nuclear-weapon States and non-nuclear-weapon States. Moreover, although no timeline was given

1 Marcelo Câmara is a senior official working on disarmament issues in the Ministry of Foreign Affairs of Brazil. The views expressed are his own.

for nuclear disarmament, the language of article VI ("cessation of the arms race at an early date") left a sense of urgency.

My third point relates to some assertions on nuclear deterrence. While conscious that the text's main focus is on nuclear disarmament, I think that the text does not sufficiently highlight the nature of nuclear deterrence when it makes reference to it. This could have helped to understand better the irreplaceable role of nuclear disarmament.

In this sense, I would suggest that, unlike conventional deterrence, which is based on the threat of denial, nuclear deterrence is predicated upon punishment with unacceptable damage, meaning mutual societal annihilation ('mutual assured destruction'). As a consequence of the destructive power of nuclear weaponry, nuclear deterrence threatens a very great number of the opponent's civilians, even if the nuclear weapons were not aimed at them. And the effects on civilians are not temporary but continues over long periods of time due to radiation effects. In rough terms, nuclear deterrence is a policy that is at odds with basic moral imperatives since its effectiveness hinges on causing mass slaughter or genocide.

The affirmation that nuclear deterrence has been to date 'salutary' is highly debatable. A common argument is that the absence of war between the United States and the Soviet Union during the Cold War has shown that nuclear deterrence works. The problem with this rationale is that it offers no evidence for the claim that there would have been a war if there were only conventional weapons, and so establishes no substantive link between the presence of nuclear weapons and the absence of war. Even if the nuclear weapons were, for arguments sake, the ultimate guarantors of peace in the Cold War, one should argue whether a peace resting on the thin ice of 'mutual assured destruction' was 'salutary'. A sober assessment should also take into account the long-standing effects to human health and environment of nuclear tests, which were deemed to be necessary for the maintenance of nuclear deterrence.

My last comments revolve around the very useful points and questions in the final sections ("What are important uncertainties in the case for nuclear disarmament?", "What are the most salient modes of disarmament failure?" "What is the relationship between disarmament, deterrence and arms control"). In order to address them, it would be useful to take stock of past experiences that successfully tackled other weapons of mass destruction (e.g., the Biological Weapons Convention and Chemical Weapons Convention). I would also draw the attention to reports of Groups of Governmental Experts on a fissile material treaty and nuclear disarmament verification. Specifically on the latter, initiatives such as the International Partnership on Nuclear Disarmament Verification, have significantly contributed to a better understanding of the verification challenges in the context of a nuclear-weapons-free world.

COMMENT BY SOCORRO FLORES LIERA [1]

While George Perkovich's paper is broad in its approach towards explaining the logic for nuclear disarmament, it focuses on why disarmament is difficult to achieve and ends looking more like a subtle critique of the advocates of nuclear disarmament than a food-for-thought paper on the rationale to achieve a world without nuclear weapons. The paper identifies issues, uncertainties and assumptions that are relevant within a comprehensive discussion on Disarmament, Deterrence and Strategic Arms Control. However, it leaves out essential elements pertinent to a meaningful dialogue:

It is difficult to categorize States into neatly bundled disarmament identities, visions, motivations and practical agendas. For example, while for some prohibition might be an imperative to achieve a world free of nuclear weapons, for others there may be different paths leading to the same result. Recognizing that reality would avoid the false dilemma of prohibition versus graduality, which is sometimes portrayed as an incompatibility between the Treaty on the Prohibition of Nuclear Weapons, the Nuclear Non-Proliferation Treaty, or other international frameworks, instead of seeing them as complementing each other.

More weight should be given to the fundamental ethical considerations that sustain nuclear disarmament and that were the reason why the first resolution ever adopted by the United Nations in 1946, established as an urgent objective, was the prohibition and elimination of nuclear weapons from national armaments. Since then, many steps have been taken, including the adoption of legally binding instruments, but limited results achieved.

In a way, the paper seems to couple almost symmetrically nuclear disarmament with nuclear deterrence. This approach is questionable as a number of actors have expressly said that they should be decoupled so as to understand the inherent catastrophic consequences of nuclear weapons by themselves without being dressed up in conceptual jargon.

We can discuss the steps, and steps within steps, needed to achieve nuclear disarmament, but the reality is that we are facing a deep trust deficit, because the nuclear-weapon States assumed legally binding commitments and have been elusive in honouring them, always reinterpreting and pushing them forward. It seems that the nuclear-weapon States are not willing to disarm and continue to rely heavily on nuclear deterrence. New military doctrines, programmes of modernization of nuclear weapons, and a more aggressive narrative at the highest levels show that we are moving backwards.

It is in this sense that the debate on the conditionality of nuclear disarmament enters into play. When the nuclear-weapon States condition the advancement of nuclear disarmament on the security conditions that they are themselves eroding, and recognize a role for nuclear weapons in strategic stability, they are acting against previously agreed common agreements. In this context, meaningful and productive discussions may only start when nuclear-weapon States unequivocally recognize their obligations and show in practice the willingness to meet them. The lack of trust among nuclear-weapon States and their allies and non-nuclear-weapon States is so deep that rebuilding it requires political work.

The paper conceptualizes security from an exclusive perspective of States, which seems to imply the legitimacy of nuclear deterrence. However, throughout the existence of the United

1 Socorro Flores Liera is Ambassador for Disarmament at the Permanent Mission of Mexico to the United Nations Office in Geneva, Switzerland. The views expressed are her own.

Nations, and particular after the end of the Cold War, conceptualization of international security has been seen through a wider lens that puts the main focus on human security. This conceptualization has had necessary manifestations in disarmament, through the adoption of international instruments the fundamental vision of which is the protection of individuals.

This has been complemented by an evolving international humanitarian law, where it follows as recognized by the International Court of Justice that the threat or use of nuclear weapons would generally be contrary to the rules of international law applicable in armed conflict, and in particular the principles and rules of humanitarian law. However, as we have broadened our understanding of the catastrophic consequences of nuclear weapons since that 1996 opinion, there are grounds to consider that there might be full certainty that any threat or use of nuclear weapons would be contrary to this legal framework, given their direct or reverberating effects.

The use of nuclear weapons in warfare, which would indiscriminately kill large numbers of non-combatants, not only would be wrong, it would also be illegal. Given the catastrophic consequences of the detonation of nuclear weapons either by mistake, accident or with intention, and the fact that their use violates international humanitarian law, there is no situation than can justify resorting to them. Deterrence is, from the view of most non-nuclear-weapon States, a form of use, and that implies willingness to harm. A nuclear war cannot be won and must never be fought. And, from the point of view of the ones that have legally decided not to pursue the nuclear-weapon option, and thus, not to pose any security threat to the world, an important part of the debate gravitates around lack of justification for the existence of nuclear weapons, and not understanding the failure to pursue paths towards their elimination.

Undoubtedly there will be challenges to achieving nuclear disarmament, as it will necessarily need political commitment and complex technical undertakings. However, it would not be useful to frame these challenges as uncertainties, this terminology seems to question the viability of nuclear disarmament itself. South Africa is a successful example of nuclear disarmament. It includes verification, irreversibility and dismantling. Nuclear-weapon-free-zones are another example of political willingness to ensure a stable non-nuclear-weapon security environment.

Nuclear weapons have been qualified as immoral by the majority of Members States at the General Assembly, given their nature, the threat they pose and the catastrophic consequences of an eventual detonation. Sixty out of 194 States rely on nuclear deterrence which means that two-thirds of the members of the international community do not believe that deterrence is effective and are forced to live under threat. In that community, 184 States do not have nuclear weapons.

The NPT itself is the Bargain. The indefinite extension of the NPT relied on a set of obligations assumed by all parties. There is no need to create a new bargain. Recognition and identification of actions that will help to implement obligations should be the main focus of the work ahead, and the nuclear-weapon States will have a special responsibility to demonstrate how they envision the end state of nuclear disarmament with concrete and tangible actions to achieve that.

It is difficult to envisage, except on the most extreme sides of proponents of nuclear disarmament and nuclear deterrence, that arms control has no role to play in the necessary process towards achieving nuclear disarmament. However, it should necessarily be framed as, and its actions geared towards, the achievement of that goal. It is difficult to recognize the relevance of arms control while its aim is not disarmament, but rather the recalibration of deterrence parameters with more advanced and powerful weapons. We cannot wait for a nuclear catastrophe to take action on nuclear disarmament. The world cannot afford it.

COMMENT BY FAN JISHE [1]

George Perkovich's paper provides a thoughtful analysis of the logic of nuclear disarmament. Here I want to add one more point with regard to the question of why we should pursue nuclear disarmament—there is no longer any military option justified for nuclear weapons, and most military options could be achieved with advanced conventional weapons.

In the last three decades, the end of Cold War and the economic globalization have transformed relations among most States, especially the major powers. There is no more existential threat, no more ideological camps, and literally there is no more division of the world into two groups of States. Most disputes are solvable, and there are many non-military tools that could be used to reward or punish a perceived adversary, such as economic or financial sanctions and tariffs. Most of sovereignty-relevant disputes have been put on the shelf, and military invasion rarely occurs. Even though military invasion might occur, there is no necessity for weapons of mass destruction. Nuclear weapons, because of their non-discriminatory and mass-killing nature, are no longer usable.

Most military options could be achieved with conventional weapons. In the 75 years since the end of the Second World War, many States have fought with each other for different reasons, but nuclear use has not been involved in any of those military conflicts. Even though the nuclear-weapon States were once stuck in a most difficult security situation, they refrained from using nuclear weapons. Much progress has been made with the revolution in military affairs, especially the weaponry, and precision-guided conventional ammunitions can do most of the jobs once supposedly assigned to nuclear weapons. What is more, advanced conventional weapons can minimize collateral damage, if a military conflict were to take place.

Most nuclear-armed States maintain a large investment in military expenditures, and their conventional-weapon capabilities are good enough to safeguard their sovereignty and national interests. Given such circumstances, it is no longer justifiable for nuclear-armed States to keep their nuclear weapons. If the nuclear-armed States, especially the five NPT nuclear-weapon States, do not pursue nuclear disarmament, then it will not be reasonable and convincing to dissuade other States from developing nuclear capabilities, especially a latent nuclear capability.

In addition, if the nuclear-weapon States are to disarm their nuclear weapons, their military alliances may not be fundamentally affected, since conventional deterrence could work for allied States as well. Furthermore, if nuclear disarmament can be achieved, resources no longer needed for maintaining nuclear arsenals could be used to strengthen conventional deterrence.

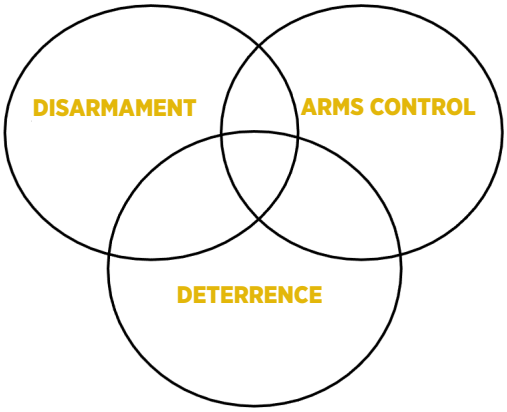
1 Fan Jishe is a Professor at the Institute for International Strategic Studies at the Party School of the Central Committee of the Chinese Communist Party, based in Beijing. The views expressed here are his own.

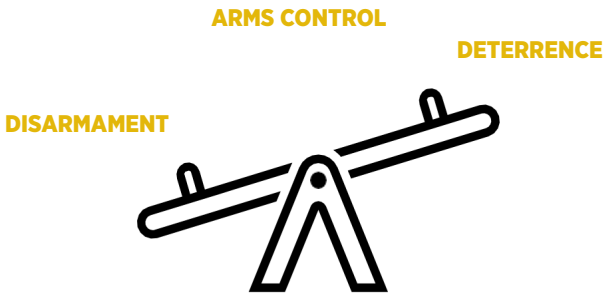
COMMENT BY REBECCA HERSMAN [1]

George Perkovich's paper lays out a series of questions and factors that must be addressed and resolved in developing a strategic concept or 'logic' of disarmament. They are excellent and quite thorough points, but I think there is a more basic, underlying philosophical divide across disarmament communities that must be unpacked and addressed in order to account for the various perspectives on these issues. To (over)simplify, I suggest that there are two basic disarmament camps with alternative, even competing, philosophies.

Traditional disarmers generally believe there can be a measure of coexistence between disarmament, deterrence, and arms control even when there are areas of philosophical divergence—envision a three-way Venn diagram that has a 'sweet spot' where reduction or risk management measures could occur. Its largely an evolutionary model.

Radical or 'New Age' disarmers see disarmament and deterrence as fundamentally at odds and incompatible, a largely zero-sum game in which 'arms control' becomes accommodating measures co-opted by either side.





DIVERGENT VIEWS—PROCESS VERSUS OUTCOME

- Traditional disarmers see value in the process, especially in terms of physical or tangible results.
- Radical disarmers see procedural approaches as largely stalling tactics, and prefer to focus on final outcomes and then work backwards.

DIVERGENT VIEWS—SOURCES OF NUCLEAR RISK

- Traditional Disarmers hold step-by-step/process-oriented views that are generally informed by a perception that, as long as nuclear weapons exist, there is a role for 'responsible' nuclear-weapon States to balance, moderate and influence in ways that reduce overall risks.
- Radical Disarmers, and a growing proportion of disarmers generally, believe that the United States (and, to a lesser extent, the United Kingdom and France) is a primary source of nuclear risk—no less dangerous than other nuclear-armed States and in, some cases, more so.

1 Rebecca Hersman is Director of the Project on Nuclear Issues, and Senior Advisor on the International Security Program, of the Center for Strategic and International Studies in Washington, D.C. The views expressed are her own.

DIVERGENT VIEWS—NUCLEAR DETERRENCE

- Traditional Disarmers hold that deterrence is not necessarily antithetical to disarmament as long as the trajectory is downward. The inherent logic of deterrence may not be doubted but sufficiency and vulnerability are debated. Debate is centred around the utility of deterrence and its risks even as the underlying motivations behind deterrence-based security concepts are not really questioned.
- Radical Disarmers hold that deterrence is a bankrupt and illegitimate security concept. It is a tool to perpetuate a global order divided between haves and have-nots—in other words it principally exists as a cover for the power dynamics that allow the lives of the many to be in the hands of a few.

DIVERGENT VIEWS—THE FUNDAMENTAL 'CHARACTER' OF DISARMAMENT

- Traditional Disarmers hold that disarmament is primarily a 'physical' experience more about destroying or eliminating 'things' in verifiable ways, highly dependent upon technical capability. Threat reduction then is a valuable, interim state, and disarmament commitments without clear and verifiable confidence in physical reductions have little value or credence.
    - Details in defining disarmament are about how far upstream elimination needs to go (e.g., infrastructure) and how to deal with dual use capabilities (e.g., delivery systems).
- Radical Disarmers hold that disarmament is more 'philosophical' experience. With a philosophical commitment to disarmament the physical details will work themselves out or simply be less important. A growing proportion see disarmament more in terms of strategic intent and that, if a State genuinely decides that forgoing nuclear weapons is in their strategic interest, then that is more important than physical capabilities (especially dual-use or upstream) and the symbolic value of destruction is as important as any physical value of actual reductions.

COMMENT BY GAUKHAR MUKHATZHANOVA [1]

1. George Perkovich's paper is an interesting and comprehensive topography of motivations for nuclear disarmament advocacy and of the questions that the pursuit of nuclear disarmament might raise in terms of international security and stability.

2. Next to a detailed treatment of motivations based on doubts about the reliability of nuclear deterrence, the argument for nuclear disarmament on the basis of morality and legality of the weapons gets a rather brief mention. Under point 2 of the "Why do they advocate nuclear disarmament?" section, the argument that "nuclear deterrence is wrong or immoral" could be further unpacked:
   - The use of nuclear weapons, intentional or accidental, would have devastating humanitarian consequences, and no State has the capacity to respond adequately and to manage the consequences of a nuclear detonation.
   - Coordinated international efforts (direct State-to-State cooperation or through international organizations) would also be insufficient to prepare for or manage the consequences of a nuclear detonation.
   - (Here, there could potentially be a debate about whether the above is true in all circumstances and for any nuclear detonation; the United States reportedly was interested in discussing response and preparedness ahead of the 2014 Humanitarian Impact Conference in Vienna, and some analysts have subsequently argued that there is some space for bridge-building in the response/mitigation discussion.)
   - Some argue that the use of nuclear weapons (and by extension their possession) would be wrong because it would indiscriminately kill civilians, as the paper notes. However, the argument also goes further: human suffering caused by nuclear weapons detonation is so horrible that these weapons should not be used on *anyone*, combatant or not—that would address the counter-arguments that there might be cases where the impact of the use of nuclear weapons would be limited only to combatants (the 'use against troops/military targets in a remote area or at sea' scenario that comes up in discussions now and then).

3. Under point 2 of the "Why do they advocate nuclear disarmament?", the NPT-related argument could be simplified:
   - Continued possession of nuclear weapons and the absence of progress in disarmament negotiations constitute a breach of commitments under article VI and outcomes of several Review Conferences, which undermines the NPT regime and threatens to weaken other States' commitments to upholding it.
   - Arguments that nuclear weapons are essential for the security of several States increase the appeal of nuclear weapons for others.
   - Combined, the above two factors make further nuclear proliferation more likely and effective responses to it more difficult, which then leads to increased risk of use of nuclear weapons.

1 Gaukhar Mukhatzhanova is Director of the International Organizations and Non-Proliferation Program at the James Martin Center for Nonproliferation Studies, and is currently based in Vienna, Austria, at the Vienna Center for Disarmament and Nonproliferation. The views expressed are her own.

4. The question of whether deterrence can operate at zero highlights an unfortunate and rather wide-spread conflation of deterrence generally with *nuclear* deterrence specifically. Certainly, the concept of deterrence predates nuclear weapons, and there is an argument to be made that conventional deterrence, especially extended (e.g., defence of US allies), is more credible and thus more effective in a world where the use of nuclear weapons is (mostly) taboo.

5. Further questions? To take the discussion further, one might examine if there is a strong correlation between the main argument a State or entity puts forward for nuclear disarmament and the preferred method or path for getting to zero (and if getting to actual zero is really a shared goal). For instance, are those who argue that nuclear weapons are unequivocally illegitimate due to their effects inevitably less patient about more gradual approaches? Are those most concerned about deterrence failure due to technological factors and the risk of accidental use likely to be satisfied with advances in safety, de-alerting, etc., without a clear vision for actual disarmament? And what, then, are the implications for the disarmament–deterrence dialogue?

COMMENT BY RAKESH SOOD [1]

It is important to begin with a clear definition of 'nuclear disarmament'. In simple English, it is the elimination of nuclear weapons and of the nuclear threat. Defining it in terms of processes of 'nuclear prohibition or non-proliferation' or 'incrementalism or reductionism versus abolition' or 'justified as guarantors against genocide or other extreme eventualities' only obfuscates the basic message.

For guidance, we can look at the Chemical Weapons Convention (CWC), often cited as a global disarmament agreement backed by an international verification regime. The CWC prohibits use (making it prohibitionist), undertakes to destroy chemical weapons over a long period while placing them under international supervision at one go (both abolitionist and incrementalist), shuts down chemical weapon production sites (eliminationist), prohibits acquisition and transfers of chemical weapons and related know-how (non-proliferationist)—in short, it is a chemical weapons disarmament treaty.

A common definition of 'nuclear disarmament' is necessary so that we are all clear about the objective that we want to achieve. Then we can talk about how to get there, review past efforts of arms control and non-proliferation and where these have fallen short, and assess what new approaches are desirable and feasible and in what kind of time frame.

And if we cannot reach a common definition of 'nuclear disarmament' then let us acknowledge it and discuss more modest objectives. It would bring clarity to our thinking and conviction to the outcome of our deliberations.

I believe there is a fundamental inconsistency between nuclear deterrence and nuclear disarmament (using the CWC definition) because if one or more States possess and rely on nuclear weapons for their security, sooner or later these will be used. If preventing use could be guaranteed with 100% success, we would not be having this discussion. Therefore, strengthening deterrence can lengthen the fuse, introduce safeguards against miscalculation, and reduce the risk—but not eliminate the risk of possible use of nuclear weapons.

Does this mean that this is not a desirable objective? Certainly not. But then let us not label it 'nuclear disarmament', because doing so is counterproductive as much of our historical experience of arms control and non-proliferation reveals.

If only we could be certain that nuclear deterrence has ensured the nuclear taboo since 1945, we would be more sanguine about the way forward. But we know that 'sole purpose', no-first-use, and even 'non-use' are not equivalents to nuclear disarmament.

Is 'deterrence' only meaningful as 'nuclear deterrence'? Does this mean that only nine States that possess nuclear weapons will exercise 'existential nuclear deterrence' even as others are placed at a disadvantage? These are valid questions for which 'verification' and 'technology' will hold answers which we can explore together.

1 Ambassador Rakesh Sood is a Distinguished Fellow at the Observer Research Foundation in New Delhi, and a former Indian diplomat. The views expressed are his own.

THE LOGIC OF NUCLEAR DISARMAMENT

Most of the world's governments advocate some form of nuclear disarmament, although we are far from achieving a nuclear-weapon-free world. Advocates of nuclear disarmament—be they individuals or States—vary in their identities, visions, motivations and practical agendas. The reasons they articulate for nuclear disarmament also vary. In this discussion paper, as part of UNIDIR's Disarmament, Deterrence and Arms Control Dialogue, George Perkovich outlines who disarmers are, what kinds of goals they seek, some common reasons for advocating nuclear disarmament, as well as critiques and possible failure modes of disarmament. This, and his subsequent treatment of the relationship between disarmament, deterrence and arms control, form the backdrop for brief responses from a range of informed commentators.

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