International Security Programme
Workshop Summary

Nuclear Deterrence Discourse: Knowledge, assumptions, uncertainties and policy implications

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Context

With the tenth Non-Proliferation Treaty (NPT) Review Conference (RevCon) currently scheduled for August 2021, the need for building bridges between different perspectives on nuclear weapons policies is widely recognized. Constructive and meaningful dialogue and a search for common ground are necessary to reinforce and advance the existing nuclear non-proliferation and disarmament regime.

There are serious divides within the international community on the best ways forward regarding nuclear non-proliferation and disarmament. While there is general motivation for – and interest within –states to engage in meaningful dialogue on nuclear non-proliferation and disarmament, how to approach and address these issues remain some of the biggest issues polarizing the nuclear weapons policy landscape. In fact, there is a broad spectrum of perspectives regarding (but not limited to): the security value of nuclear weapons; the practice of nuclear deterrence, its effectiveness, relevance and legitimacy; the conclusions that should be drawn from the knowledge of humanitarian consequences and risks of nuclear weapons; and how to approach nuclear disarmament. While these different perspectives may be difficult to resolve, a constructive conversation about some of these underlying issues is ultimately necessary for advancing nuclear non-proliferation and disarmament – and regional and international security more generally.

The workshop focused on addressing the inherent 'uncertainty' within the nuclear field. Some of the key questions addressed the uncertainties of nuclear deterrence as a strategy as well as the relationship between nuclear risk reduction and nuclear deterrence. Most participants highlighted the difficulty surrounding risks assessments and perceptions of nuclear weapons, as well as the balancing of competing risks, especially when major uncertainties and assumptions loom over how to address nuclear deterrence in light of the existing nuclear non-proliferation and disarmament regime.

Introduction

Chatham House convened a series of meetings as part of its project on deterrence perspectives in the 21st century. This project brought together a diverse range of perspectives from the nuclear weapons policy community and engaged them in a discussion around the highly-contested concept of nuclear deterrence.

This project featured several phases. In phase 1, Chatham House published essays examining four themes in contemporary policymaking in deterrence: 1) the underlying assumptions of deterrence, 2) extended deterrence, 3) emerging technologies and their impact, and 4) blurring the lines between conventional and nuclear deterrence. Simultaneously, Ambassador Alexander Kmentt with the Friedrich-Ebert Stiftung (FES), while on sabbatical at King's College London as Senior Research Fellow, examined the links between nuclear deterrence and the humanitarian approach to nuclear weapons.

Acknowledging the value and importance of partnership and cooperation in the nuclear field, Chatham House has partnered with Alexander Kmentt and FES and held two consecutive meetings on the subject:

Meeting 1: Bridge-Building in the Nuclear Disarmament Discourse: Nuclear Deterrence and Humanitarian Approach to Nuclear Weapons, London, 3 December 2019 (Track 2)

Meeting 2: Bridge-Building in the Nuclear Disarmament Discourse: Uncertainties in the Deterrence Discourse, Online (Brussels-based), 15-16 October 2020 (Track 1.5)

These collaborative projects have been supported by the Hiroshima Prefecture, Carnegie Corporation of New York, FES, and Ireland's Department of Foreign Affairs and Trade.

This is a meeting summary of the virtual track 1.5 meeting that took place in October 2020 (Meeting 2). The event was held under the Chatham House Rule.

In this meeting, invited participants, representing a breadth of perspectives and expertise, engaged in a discussion that explored how risks pertaining to nuclear weapons affect perceptions of nuclear deterrence.

Some of the questions addressed in the meeting include:

- What type of uncertainties exist in the nuclear deterrence discourse: what do we know, what do we think we know, and what do we not know about nuclear deterrence?
- Is nuclear deterrence a form of risk reduction?
- Is it possible to seek objective criteria for the risks of nuclear weapons explosions?
- Does a more concrete and scenario-based assessment of the humanitarian consequences of nuclear weapons use have the potential for changing the nuclear deterrence cost-benefit analysis?
- If, in the absence of a violent conflict between nuclear weapons possessors, it can neither be proven nor disproven unequivocally whether nuclear deterrence works nor whether a world without nuclear weapons would be safer or more dangerous, what policy conclusions should be drawn from this acknowledgement?

Uncertainties in the effectiveness of the nuclear deterrence posture

By clustering the deterrence discourse into groups of 'knowledge': 'what we know', 'what we think we know' and 'what we do not know', participants explored and questioned existing assumptions, the power of, and shared knowledge about nuclear deterrence. The starting point was the acknowledgement that much of what is claimed about nuclear deterrence is contested. As a concept, nuclear deterrence has existed since 1945. Strategic analysts and practitioners have written volumes and reflected extensively on its practice. Many of the assumptions underlying nuclear deterrence can be categorized under the label of 'what we think we know' rather than 'what we know' about nuclear deterrence.

What we know about nuclear deterrence comes mainly from the body of literature on: a) the use of nuclear weapons in Hiroshima and Nagasaki; b) the analysis surrounding nuclear weapons testing; and c) analysing and inferring from historical reactions to nuclear deployments and crises. This knowledge rests on multiple disciplines, including physics, history, and psychology.

What do we know about the purpose of nuclear deterrence?

There is a widely-held assumption that nuclear weapons prevent large-scale wars and help promote strategic stability. This assumption mainly comes from the Cold War understanding of nuclear deterrence. Past crises (e.g. the Cuban missile crisis in 1962, tensions between India and Pakistan, the 1983 Able Archer military exercise) indicate that nuclear weapons did have tremendous influence and impact – even just as considerations – on crisis management, de-escalation and the course of subsequent actions, as well as the use of conventional weapons.

What do we know about the practice of nuclear deterrence?

The practice of nuclear deterrence rests on credibility and should be able to show the consequences of nuclear weapons use. For an actor to be credible, they rely on the ability to communicate resolve and capability to the adversary. Nuclear deterrence also requires credibility in the threat of response. The concept rests on mutual vulnerability and an actor's knowledge of survivability of its forces from a first strike. States possessing nuclear weapons have built their arsenals based on these analyses and projections. This calculation, however, is based on the assumption that states have the ability to base their judgments on a rational calculation; yet the psychology of each actor is bound to be different. When psychological factors such as perception come into play, not all actors share the same beliefs and understandings about nuclear deterrence. Threat perceptions may diverge and, ultimately, there is no absolute certainty that nuclear deterrence will work as intended. Assessments of what constitutes unacceptable damage may vary between different actors. It is therefore difficult to quantify the risks of nuclear threats, deterrence and use.

Nuclear weapons may well have a deterrent effect, but it cannot be said with certainty that nuclear weapons have had, or will have, that effect across different regions, contexts and time. These are basic and fundamental uncertainties. There is a shared knowledge that nuclear deterrence failure would be catastrophic. The two certainties that probably exist on nuclear weapons are, as Bernard Brodie said: 'that [they] exist and [their] destructive power is fantastically great'.[1]

What do we not know about nuclear weapons?

There are several uncertainties surrounding nuclear deterrence today as the Cold War assumptions are being contested. This uncertainty appears in a number of areas: firstly, there is no empirical database of deterrence failure and success, which is in essence a good thing for humanity[2] (failure would have been catastrophic) - but not that helpful for assessing the role of nuclear deterrence in the international system. It is also hard to prove that a large-scale war did not take place thanks to nuclear deterrence in the absence of a clear smoking gun, there are so many variables that have contributed to the longevity of large-scale war since 1946. Moreover, to conflate the absence of nuclear war with the success of nuclear deterrence may discount other possible explanations. Ultimately, much of what is put forward on nuclear weapons and nuclear deterrence is not necessarily wrong, but rather, based on assumptions that are contestable.

Under the NPT, states have made an 'unequivocally undertaking' to accomplish the elimination of nuclear weapons, but there are so many uncertainties around what a world without nuclear weapons would look like and how to reach this post-nuclear weapons world that the risks of disarmament are often perceived to outweigh the risks of the status quo.

Possible links between nuclear deterrence and nuclear risk reduction

For nuclear deterrence to work, there should exist a level of risk (real or perceived), without which nuclear deterrence would not be credible. Hence, risk is a critical component of nuclear deterrence.

[1] *The Absolute Weapon: Atomic Power and World Order* (1946), p. 52.
[2] Carl Sagan once said, 'The global consequences of nuclear war is not a subject amenable to experimental verification – or at least, not more than once… Maybe we've all made some serious mistake in the calculations, but I wouldn't want to bet my life on it." See Raphael T. J., April 2016, "How the threat of nuclear winter changed the Cold War", https://www.pri.org/stories/2016-04-05/how-threat-nuclear-winter-changed-cold-war

Depending on the actor, risks in the nuclear field may differ. These may include: risks of proliferation and tipping-point cascading; risks of nuclear instability and regional nuclear war; risks of nuclear coercion; risks of nuclear and strategic arms races as a result of political rivalry; risks that the nuclear taboo would be broken and that nuclear attack would be the only way to achieve goals; and risks of nuclear weapons use and nuclear response, among others.[3] Risk calculations include the politics of knowledge, expertise and counter-expertise, and is highly dependent on who calculates these risks and their respective strategic priorities, perceptions and threat assessments. Individual actors are asked to manage nuclear risks but the difficulty in doing this might also stem from the fact that these risks are endemic and embedded within the system.

Different (and perhaps competing) tools and approaches have been used to eliminate these risks. These include economic, diplomatic and military means. There are certain nuclear risks for which nuclear deterrence is argued to be the best available means of management. However, nuclear deterrence presents its own inherent risks. For instance, what is the aggregate risk that stems from the practice of nuclear deterrence by the nuclear weapons states and the possible widespread/global consequences? Or what role does nuclear deterrence play in the area of grey zone activities and what are the risks in this context?

Risk reduction greatly depends on the type of risks that are being reduced. For example, in the context of risks of *deliberate* nuclear war, nuclear counter-threats could be seen as a form of risk reduction. But *ambiguity,* for instance, could increase the risk of *inadvertent* nuclear war. Furthermore, whether nuclear deterrence could constitute a risk-reduction measure also greatly depends on each individual state's own perceptions, situation and strategic relationships. States possessing nuclear weapons and their allies may be more prone to perceive, and perhaps accept, nuclear deterrence as a risk-reduction measure, whereas non-nuclear weapons states may not necessarily look at individual strategic relationships but instead at nuclear deterrence as a collective practice by states possessing nuclear weapons. Even within strategic alliances, such perceptions are not monolithic but inherently complex.

Addressing objective criteria for the risks of nuclear weapons explosions

While there are areas of certainty and uncertainty within the practice of nuclear deterrence, it is debatable whether there is a way to identify objective criteria for the risks of nuclear weapons use, even though the consequences of nuclear weapons use may well be well understood. Whether it is plausible, at all, to discuss such 'objective' criteria, depends on perceptions and arguments put forward by all members of the nuclear weapons community across the spectrum of positions, from nuclear deterrence advocates to sceptics.

The future use of nuclear weapons could be inadvertent, accidental, deliberate or unexpected, and the risks of each can be different in magnitude, such as low, medium or high. Each of these risks will be perceived differently by each actor – for which there will be competing approaches to address those risks and subsequently different desired outcomes. A scenario-based analysis may help to gather information and understanding in this area.

With regards to assessing the efficacy of nuclear deterrence, the criteria should include psychological and behavioural assessments. Facts and evidence about the risks of nuclear weapons use can come from the personal testimonies of victims and survivors, not only of a nuclear explosion but also those of all aspects of the nuclear chain leading to a nuclear explosion, including building and testing. Although these

[3] For a more comprehensive list and a detailed analysis on nuclear deterrence and risk reduction, please see Roberts B., 2020, "On "Adopting Nuclear Deterrence to Reduce Nuclear Risk," *Daedalus*.

testimonies are personal, they come from those directly facing the consequences of nuclear weapon explosions and must arguably be taken into account as part of the full range of facts and evidence. This consideration, however, leads to the questions of (1) whether the knowledge of nuclear explosions (including those for testing) has any bearing on the probability side of the risk equation – assuming that nuclear risks are a product of probability and consequences; and (2) whether this would bear any weight on how nuclear weapons and their associated risks are perceived in military settings (e.g. nuclear planning or targeting policies).

Ultimately, this reasoning may lead to subjective assessments, including individual perceptions, assumptions, the amount of knowledge available at the time of the assessment, and the overall context in which these risks are calculated. For instance, despite the fact that the Cuban Missile Crisis took place almost 60 years ago, some of the hard facts and evidence from the event have only started to emerge in recent years. It is even reported that back then those at the highest level of decision-making in the United States informing President Kennedy, who held the highest amount of information available at that time, had (highly) diverging calculations of risks, which subsequently resulted in different perspectives on the desirable outcome.[4] This historical event demonstrates that even those with the same knowledge at the time of the assessment, despite representing and acting in the interests of a single state, will draw different, and perhaps even competing, conclusions on nuclear risks calculations.

A set of objective criteria for risks of nuclear weapon explosions may include factors related to the 'probability' and 'consequences' of nuclear weapons use. Whereas past incidents and historical cases may also shed light onto the thinking around consequences, confidence-building measures (CBMs) could play a role in reducing the probability of nuclear weapons use. Putting consequences aside, probability can be assessed through different types of categories: a) probability of deliberate use, b) probability of accidental use, and c) probability of miscalculation that leads to use.

A mapping exercise could examine a number of questions: 'what increases risk?', 'what decreases risk?', 'what are the risks that are within human control?', and 'what are the measures that are not within our control?'

Perhaps one plausible approach would be to acknowledge that despite compelling evidence that the use of nuclear weapons would be catastrophic, we may never be able to measure precisely the probability of nuclear detonation – which constitutes an essential (*sine qua non)* component of the risk calculation. A more concrete scenario based assessment of the humanitarian consequences of nuclear weapons use does not necessarily impact on the assessment of risks. This tends to be determined by the policy preferences of different stakeholders of nuclear deterrence proponents or skeptics. It would nevertheless be worthwhile discussing what would be the changed consequences and risks parameters for changing the nuclear deterrence cost-benefit analysis. It is, however, possible to reflect on factors that could increase or decrease the probability of use, and how to decrease this probability while ensuring national security. Factors that could increase or decrease the probability of use may involve, for instance, the number of actors involved in the decision-making, nuclear targeting plans and their consistency with international law, nuclear weapon states' position toward and perception of international law – and how the latter plays into decision-making processes.[5]

[4] Ellsberg D., 2017, The Doomsday Machine, Bloomsburg Publishing, pp. 334 – 335.
[5] A leadership's contempt towards international law would indeed jeopardize the upholding of a rules-based international order and its existing frameworks, and thus increase tensions, which in turn could potentially lead to situations of miscalculation of stakes in a competition/conflict and subsequent escalation.

Policy implications

In the absence of a violent conflict between nuclear weapons states, the evidence as to whether nuclear deterrence works will be untested, nor whether a world without nuclear weapons would be safer or more dangerous. Given this, what policy conclusions can be drawn from the existing knowledge, assumption, uncertainties and limitations surrounding nuclear deterrence?

The above premise leads some states to continue their support for nuclear deterrence, arguing that the stability afforded by nuclear deterrence has provided a space for nuclear arms control. According to this view, nuclear capabilities, along with conventional deterrence and missile defence capabilities, are essential to preserving peace and the instances in which to consider nuclear weapons use should be minimal. The worsening of the security environment also has an impact on policy conclusions.

On the other hand, another conclusion drawn from this acknowledgment would rest on the need for a prohibition in international law of nuclear weapons possession and use, in light of the high uncertainty and inherent risks these weapons carry due to their catastrophic and possibly global consequences. For some states that do not possess nuclear weapons indicate that that they also have national security concerns but their approach to security involves cooperation and upholding international law. These countries point out that the UN Charter prohibits the threat of use of force.

One useful reflection would be to focus on the perceptions, interests and driving motives underpinning states' nuclear deterrence strategies. China, for instance, has long held the view that since nuclear conflict would cause such catastrophic humanitarian and environmental consequences, it is also the best way to deter nuclear use. This traditional view, however, has gradually evolved and shifted away from a strategy based on 'massive nuclear retaliation' to the need to respond to 'limited nuclear conflicts.' Maintaining credible nuclear deterrence has also been put forward in the context of emerging threats (e.g. space-based sensors and cyber capabilities).

Finding common ground to advance nuclear non-proliferation and disarmament is one of the keys to progress and that would require building trust, which has arguably been in deficit in the international community. Trust is not only required between states, but also between governments and their constituents, as well as trust in international decision-making processes within the UN and beyond. In addition, it may also be argued that stability and security conditions are necessary to lead to nuclear disarmament; based on which some states have laid the groundwork towards progress for a world without nuclear weapons through inter-state processes and initiatives.

Conclusions

One common element surfacing from these reflections relates to the need for meaningful engagement among states and in multilateral processes such as within the UN or the NPT. This, however, will very much be subject to states' willingness to engage in such discussions in light of new, potentially disruptive elements in the nuclear weapons policy landscape.

Technological progress in missile defence technologies, space-based strategic assets, offensive and defensive cyber capabilities and artificial intelligence, among other developments, all are potential risk drivers and have implications for how states perceive and practice nuclear deterrence today. In addition, there needs to be more understanding of how emerging technologies can offer opportunities for nuclear non-proliferation (e.g. tools for verification using big data). Such open dialogue could help reduce the risks of miscalculation, misinterpretation and the inadvertent escalation to nuclear war.

Going forward, it would be helpful to unfold questions around what constitutes ‘deterrence breakdown’ and how the nuclear community defines deterrence ‘failure’. Moreover, nuclear deterrence rests on the notion of ‘unacceptable damage’ and what is acceptable or unacceptable for whom.

It may be that nuclear weapons will be understood to have no clear purpose other than deterring those adversaries with nuclear weapons from carrying out nuclear attacks - the sole-purpose criterion. This, in itself, could pave the way for further progress in nuclear arms control and disarmament as then the rest of the edifice of nuclear deterrence would be dealt with by other forms of deterrence—conventional, cyber, economic etc. –and the nuclear-on-nuclear component could then be addressed through quite a different lens.