What prospects for arms and missile control after the end of the INF Treaty?

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Introduction

In the last hours of the Cold War, the INF Treaty went down in history as the very first bilateral agreement to ban a whole category of weapons. The Treaty, signed in 1987 after almost a decade of negotiations, led to the United States and the Soviet Union eliminating surface-to-surface missiles with ranges of 500 to 5,500 km (intermediate-range nuclear forces, or INF). These missiles, which were then deployed in Europe and the Soviet Union, were regarded as particularly dangerous, as their short time of flight made any counterattack impossible to prepare. For this reason, the deployment of intermediate-range missiles in Europe (SS-20 by the Soviet Union and Pershing by NATO) had already triggered a vast popular protest movement on the continent.

Previously, the Strategic Arms Limitation Talks (SALT) had resulted in restricting the number of weapons deployed by the two superpowers. The SALT I and SALT II Treaties particularly laid down rules on the quantitative and qualitative development of ICBMs (ground-launched intercontinental ballistic missiles) and SLBMs (submarine-launched ballistic missiles).

Later, the arms control agreements signed by Washington and Moscow continued to focus closely on missile control. The Start I, Start II and New START agreements each defined volume limits for different categories of strategic missiles (ICBM and SLBM). Finally, in 1991, President Bush committed to eliminate a number of 'tactical' nuclear weapons in the "Presidential Nuclear Initiatives" (PNIs). In practice, short-range ground-launched and surface-vessel-launched ballistic or cruise missiles were withdrawn. President Gorbachev responded with a similar announcement the same year indicating, *inter alia*, the withdrawal of short-range naval systems and nuclear missiles previously launched by tactical aircraft.

Outside this bilateral framework, several diplomatic efforts focused on regulating missiles, regarded as potentially destabilising weapons due to their ability to travel very long distances in a short timeframe, their lethality, the difficulty in intercepting them and their capacity to carry weapons of mass destruction.

An international export control regime was therefore introduced in 1987 to stem transfers of missile technologies which could serve to deliver weapons of mass destruction. In 2002, The Hague Code of Conduct against Ballistic Missile Proliferation was adopted, setting out the non-

proliferation norms for this type of weapon for its signatories (93 at the time, 140 at present). The Code also supports a transparency regime in respect of ballistic missile deployments and doctrines, as well as test firing and space launches, to avoid any likelihood of confusion with an attack. This kind of confidence-building and reciprocal notice measures already existed bilaterally between the Soviet Union and the United States (the first agreement was signed in 1971) and was reproduced between India and Pakistan in 2005.

The arms control inherited from the Cold War is now experiencing a crisis. Several treaties have been challenged since 2003, and particularly the INF Treaty from which the United States and Russia withdrew in 2019. This event marked the end of a more than five-year-long dispute between Washington and Moscow over the compliance with the terms of the Treaty, since the US administration accused Russia of developing a cruise missile prohibited under it. In response, Russia denounced the antimissile systems developed in Europe as having a potential offensive capability, and therefore being prohibited by the INF. Furthermore, the main arms control instrument remaining, the New START Treaty, could be soon terminated since it is due to expire in February 2021. The Russian and US Presidents can agree to extend its term for five years, but no announcement has been made along these lines so far.

This context of decline coincides with a considerable deterioration in relations between major powers, especially between Russia and the United States, prompting States in recent years to reassess the nuclear factor in their doctrines, and to modernise or even diversify their arsenals. New systems are mentioned – dual-capable missiles, hypersonic missiles, non-strategic ballistic missiles and nuclear torpedoes, to name a few – and arms race dynamics can be seen. The disappearance of arms control instruments and the parallel development of new, potentially destabilising systems, particularly missiles, raise questions. Some believe “arms control without a treaty,” as phrased by an analyst, must now be envisaged.[1] Others consider it necessary to study new ways of regulating these weapons, with new restrictions, new methods and new formats. This note identifies the various proposals for arms control in a post-INF world, with a focus on missiles. It seeks to offer an analysis of diplomatic suggestions and non-State expert reports, putting the ins and outs of the various proposals into perspective and reflecting on their feasibility and prospects in the current context.

It consists of three parts. First, it examines the prospects of regulation of traditional missiles, such as intermediate-range strategic missiles and non-strategic missiles. Secondly, it looks at the suggested options for adapting arms control to the new strategic context. And lastly, it examines the proposals made to regulate missile technology innovations.

[1] Vince Manzo, *Arms Control without a Treaty. Risks and Options after New Start,* Deterrence and Arms Control Paper No. 1, IRM-2019-U-019494, CNA, March 2019.

1. Gridlocks of the current arms control systems

1.1. End of the INF Treaty

The INF Treaty is the first treaty to have banned a whole category of weapons for the two signing nations. Its violation[2] by Russia and then its termination by both parties could lead to the re-emergence of ground-based intermediate-range missiles in the European theatre of operations. Russia is actually believed to have deployed this kind of system already. United Nations Secretary-General, Antonio Guterres, has said that the end of the Treaty could mark the start of an arms race. However, for the moment it is difficult to forestall a massive development of this kind of weapon. In Europe, the United States will struggle to find allies prepared to host such missiles on their territory, and the same problem could arise in Asia. But this cannot be totally ruled out: Germany has clearly taken a negative stand on the issue, but Poland has left the door open to conventional missiles.[3] Budget cuts and capacity constraints in Russia could prevent major deployments, but a gradual increase in volumes of deployed weapons can be expected.[4]

In this context, regulating intermediate-range missiles is a logical priority with the dual aim of limiting the development of these weapons and restraining their operational deployment.

Several proposals have been made in this vein, in addition to invitations to "multilateralise" the treaty which will be examined later.

First, some experts believe it is still possible to revive the INF by altering its scope and ensuring it only covers nuclear-armed intermediate-range missiles. This reorientation would take into account both Russia's and the United States' wish to have conventional intermediate-range ground-launched missiles, particularly in Asia and to counter the Chinese arsenal, which is very developed over these ranges. This is the recommendation made by Rose Gottemoeller, former NATO Deputy Secretary General, who mentioned the possibility of "Putting the N back in INF".[5] The verification methods used in the New START Treaty could effectively certify the absence of nuclear warheads from identified delivery vehicles.

Other views are that all intermediate-range systems should now be taken into account, including those deployed at sea, on mobile launchers or carried by bombers.[6] This concern is compatible with the idea of focussing solely on specifically nuclear missiles, because a large part of these missiles are conventional weapons regularly used in military conflicts

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[2] According to the US government but also all the NATO officials.
Statement on the Intermediate-Range Nuclear Forces (INF) Treaty issued by the NATO Foreign Ministers, Press Release (2018) 162, Brussels, 4 December 2018.

[3] Ulrich Kühn, "Between a rock and a hard place: Europe in a post-INF world", *The Nonproliferation Review*, 4 April 2019.

[4] Rachel Ellehuus, Quentin Lopinot and Ricklef Beutin "What Comes after a U.S. Withdrawal from the INF Treaty? The Case for a NATO Strategy", *Center for Strategic and International Studies*, 4 December 2018.

[5] Rose Gottemoeller, "NATO Nuclear Policy in a Post-INF World", Speech by NATO Deputy Secretary General Rose Gottemoeller at the University of Oslo, 10 September 2019.

[6] Alexey Arbatov, "A New Era of Arms Control: Myths, Realities and Options", *The Global Think Tank*, Carnegie Endowment for International Peace, 24 October 2019.

(Tomahawk, Apache, etc.) and the States that develop them would be unwilling to demonstrate transparency and even less willing to accept constraints on this type of system.[7]

Finally, one recommendation concerns the deployment of systems. It would consist in ensuring that previously prohibited missiles are not deployed in European theatres of operations and are subject to heightened transparency in their deployment zones.[8] President Putin is reported to have made this proposal in a letter addressed to NATO members. The North Atlantic Alliance did not respond favourably to the request for a moratorium on the deployment of systems, considering that Russia's refusal to admit the existence of operational INF-type missile battalions undermined the proposal's credibility.[9] Moreover, the US has always refused to negotiate an agreement that would authorise the deployment of intermediate-range missiles in Asia, as it would be particularly unwelcome among Washington's allies in the region.

While Russia would appear to be trying to score political points by leaving the door open to negotiation, Trump's administration has showed no sign of interest. Pentagon officials are now seeking to optimise the withdrawal from the INF by producing conventional systems that meet their operational needs.[10] The start of negotiations on intermediate ranges therefore looks very unlikely for the time being. For these arms to be regulated or banned again, they would no doubt be included in strategic weapons, a possibility occasionally mentioned in talks on the future of New START.

1.2. Uncertainty over the last strategic arms control agreement

The New START Treaty is due to expire soon and no decision concerning its extension has been announced so far. Since Russia said it would need at least six months to confirm an extension following an agreement by the US,[11] the regime now faces a high risk of ending permanently in 2021. Yet, many observers continue to hope for the agreement's continuation, integrating any necessary adjustments, not to redefine ceilings, but to revise the counting rules and verification system.[12]

The current Treaty is indeed criticised for failing to take into account all categories of strategic weapons developed by the two States, and particularly the new systems produced by Russia. Yet, under the Treaty's provisions, the new MIRVed ICBM called *Sarmat* can definitely be counted, along with the *Avangard* missile, a hypersonic vehicle combined with a ballistic launcher. This interpretation was confirmed by the Russian authorities[13] when they presented

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[7] Stéphane Delory, Emmanuelle Maitre and Jean Masson, "Opening HCoC to cruise missiles: A proposal to overcome political hurdles", *HCoC Papers*, no. 5, February 2019.

[8] Alexey Arbatov, op. cit.

[9] Michael Peel and Henry Foy, "NATO rejects Russian offer on nuclear missiles freeze", *The Financial Times*, 26 September 2019.

[10] Confirmation Hearing, Ryan D. MacCarthy, United States Senate Committee on Armed Services, 12 September 2019.

[11] Tom Balmforth, "Russia says it's already too late to replace new START treaty", *Reuters*, 1 November 2019.

[12] Alexey Arbatov, op. cit.

[13] "Foreign Ministry: Sarmat, Avangard systems may be included in New START treaty", *TASS*, 1 November 2019.

the system to inspectors in November 2019.[14] Some controversy remains over other long-range hypersonic missiles, particularly the *Khinzhal*.

Today, proposals for strategic arms control above all concern the extension of the New START agreement, an already ambitious goal in the short term. In the long term, or if the Treaty cannot be extended, several options have been suggested for its successor.

Several writers support the idea of a global regime imposing ceilings for all missiles with a range of more than 500 km. In this case, the US and Russia would have to choose the preferred type of weapon from among intercontinental and intermediate ranges.[15] The ceiling could be revised down in response to changes in the strategic context. The US administration has supported the idea of negotiating additional reductions since the ratification of New START, and it was reiterated in 2013 when President Obama suggested the two parties reduce their volumes of deployed strategic nuclear weapons by one third.[16] So there is reason to believe that whatever format it takes, a new agreement would reinforce the idea of further reducing the permitted limits.

However, Russia was extremely reluctant to announce any new reductions at the time, and still supports the same arguments today: to Moscow, reducing volumes of strategic weapons is no longer acceptable if some US arms categories are left out, particularly weapons supposed to undermine it strategic deterrence capability such as antimissile defence and conventional long-range strike systems.[17] The future of arms control in respect of strategic missiles therefore faces the problem of asymmetrical capabilities, and this issue is central to its ability to adjust to a new strategic environment.

1.3. The question of short-range missiles

The last category of missiles that is still regulated, albeit to a limited extent, is short-range missiles (less than 500 km). In 1991-1992, Presidents G.H. Bush, Mikhail Gorbachev and Boris Yeltsin adopted voluntary unilateral measures to limit deployed short-range nuclear weapons, often described as 'tactical'. These measures led to major reductions, representing approximately 50% of the deployed arsenal in the case of the United States, and 75% for Russia, according to official figures[18]. However, their non-binding nature raised questions and, since the 1990s, Russia's implementation of the commitments made in the PNIs has come under heavy criticism. In particular, some of the modernisation programmes underway are considered to concern weapons that should have been eliminated in 2000 under the PNIs (particularly potentially dual-use short-range missiles, such as the *Iskander*).[19]

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[14] Jospeh Trevithik, "U.S. Inspectors Have Examined Russia's Imminently Operational Hypersonic Missile", *The Drive*, 26 November 2019.

[15] Steven Pifer, "The future of U.S.-Russian arms control", *Report*, Brookings Institution, 26 February 2016.

[16] Amy Woolf, "The New START Treaty: Central Limits and Key Provisions", *CRS Report*, Congressional Research Service, 5 April 2019.

[17] Ibid.

[18] "Rossiia perevypolnila plany po sokrachtcheniiou iadernogo oroujiia", *RIA Novosti*, 6 June 2008.

[19] Isabelle Facon and Bruno Tertrais, "Les armes nucléaires "tactiques" et la sécurité de l'Europe", *Recherches & Documents*, FRS, no. 3/2008.

Although the non-binding nature of the PNI commitments prevents these discrepancies from being officially denounced, a growing number of experts are concerned about the differences between US and Russian volumes of non-strategic nuclear weapons. The US Senate agreed to ratify the New START Treaty in 2010 on the condition that the government seek to negotiate an agreement on non-strategic weapon reductions. This objective was also officially announced by President Obama.[20] However, no progress was made in this area and the proposals made with this in view are looking increasingly unrealistic in a context of visibly unmoving political red lines.

Some demands focus on transparency measures on arsenals, deployments and the status of weapons maintained by the two nations.[21] But Russia is very reserved in this area, seeking especially to preserve the ambiguity over the nuclear or conventional capability of a number of its systems, including the *Iskander*. Meanwhile, US transparency efforts are also facing fierce resistance: NATO countries hosting non-strategic nuclear weapons on their territory are reluctant to communicate on this issue for political reasons. Despite everything, some believe the voluntary commitments should be codified and a verification system should be considered to ensure effective implementation of the PNIs.[22]

A geographical approach underpins other proposals according to which NATO and Russia could agree to eliminate non-strategic nuclear weapons from the European continent. In reality, this would amount to checking the absence of nuclear weapons from bases located in a given perimeter and ensuring that they are stored outside operational bases in Europe for NATO and on the western perimeter for Russia.[23]

The negotiation of a reduction treaty poses an obvious problem: given the huge difference between the US and Russian non-strategic arsenals, any measure aiming to limit or reduce deployed volumes would result in Russia granting much bigger reductions. Finding equivalences would also be tricky: NATO is believed to have fewer than 250 nuclear gravity bombs deployed particularly at European bases, whereas Russia is thought to have a much more varied arsenal of some 1,800 weapons, consisting of air-to-surface missiles, submarine cruise missiles, ground-launched short-range missiles and surface-to-air missiles that can potentially be equipped with nuclear warheads.[24] Once again, one solution would consist of a framework treaty addressing all nuclear weapons with no distinction based on their range.[25] However, Moscow would no doubt be hostile to such a proposal, mainly because Russia is reluctant to disclose the nuclear or non-nuclear nature of a number of systems and would likely object to verification measures to clarify this point.

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[20] "Remarks by President Obama and President Medvedev of Russia at New START Signing Ceremony and Press Conference", White House, 8 April 2010.

[21] Catherine M. Kelleher and Scott L. Warren, "Getting to Zero Starts Here: Tactical Nuclear Weapons", *Arms Control Today*, October 2009.

[22] Anne Finger and Oliver Meier, "Confidence-building on tactical nuclear weapons: What's on the table?", *Hamburger Beiträge zur Friedensforschung und Sicherheitspolitik*, No. 160, May 2013

[23] Pavel Podvig and Javier Serrat, "Lock them Up: Zero-deployed Non-strategic Nuclear Weapons in Europe", *UNIDIR*, 2017.

[24] Hans Kristensen and Matt Korda, "Tactical Nuclear Weapons", The Nuclear Notebook, *Bulletin of the Atomic Scientist*, vol. 75, no. 5, 2019.

[25] Steven Pifer, "After New START: What Next?", *Arms Control Today*, December 2010.

2. Adjusting arms control to a new environment

2.1. Including dual-capable missiles

One of the difficulties facing arms control is the dual nature of many kinds of weapons. In some countries (United States, France and the United Kingdom), the type of weapon carried has always been established. But some programmes have been accused of challenging this distinction, such as the US proposals to have conventional ICBMs or SLBMs, under the Bush administration. They were strongly rejected by Congress, which feared the destabilising nature of weapons whose nuclear or conventional impact cannot be determined at the time of the strike, and therefore abandoned.

Regarding Russia, a great many missiles have both a conventional and a nuclear capability in theory. This is especially true of air-to-surface missiles (Kh-101/Kh-102, Kh-55 and Kh-155), surface-to-surface (Tochka) and surface-to-sea missiles (RK-55). While there are sometimes two versions of the delivery vehicles, the outer features of the missiles are practically identical, which means the type of weapon cannot be distinguished when it is deployed or used. China is also concerned by this type of weapon, as it has a highly developed arsenal of short-, medium- and intermediate-range ground-launched missiles that are capable, in theory, of carrying nuclear or conventional warheads. Research on hypersonic technologies could further accentuate this phenomenon, since a number of systems can be adapted to nuclear or conventional weapons.

In the past, arms controls agreements have adopted different strategies to address this issue. The INF Treaty banned all the delivery systems, whatever their warhead, thereby avoiding the question of their intended use. The New START Treaty also limits ICBMs, SLBMs and strategic bombers independently of the weapons associated with them, but the Treaty also aims to restrict nuclear weapons as such, thus allowing verification measures on the type of re-entry vehicles. The PNIs primarily focus on nuclear weapons, but as they are not binding, it was not necessary to prove that missiles and weapons still deployed after the dismantling campaigns were indeed conventional.

In terms of short-range weapons, dual capability would appear to be a hindrance to arms control initiatives, be it the negotiation of treaties or transparency measures. While States may accept limitations on strategic arsenals or weapons intended for deterrence, they are averse to restraints on segments on which they depend for strikes on the ground. The decision to exclude cruise missiles from The Hague Code of Conduct, which requires signatories to notify their missile tests, results particularly from the States' refusal to promote transparency on conventional battlefield weapons.[26] For these capacities, one solution could consist of banning the deployment of nuclear versions at a number of sites. This kind of restriction could be relatively easy to check according to recommendations published by the UNIDIR.[27]

[26] Stéphane Delory, Emmanuelle Maitre and Jean Masson, op. cit.

[27] Pavel Podvig, Ryan Snyder and Wilfred Wan, *Evidence of Absence: Verifying the removal of nuclear weapons*, UNIDIR, 2018.

On longer ranges, and particularly strategic weapons, there are two possibilities. Either the negotiating parties consider that only nuclear missiles should be controlled and decide to exclude conventional missiles from the potential regime. This is the basic premise of Rose Gottemoeller's proposal, with verification measures inspired by the New START Treaty. But the distinction could also apply for a non-binding regime such as The Hague Code of Conduct against the proliferation of ballistic missiles, for which suggestions were made to focus primarily on missiles designed to carry weapons of mass destruction.[28]

Whether they are verified or declarative, such distinctions remain very problematic for countries such as China which bases its deterrence strategy on deployment opacity and relies particularly on an arsenal of dual-capable ballistic missiles.[29] This collocation of nuclear and conventional capabilities stems both from concern to simplify organisation, and potentially from the aim of protecting conventional missiles from a preventive adverse strike. While some writers appeal to China to cease this dual-capability policy, or, as a first step, to clarify the type of systems it deploys, they acknowledge the political and military hurdles that such proposals face.[30]

In addition to the issue of the dual capability of ballistic missiles, which is particularly visible in Asia, there is the question of cruise missiles and hypersonic carriers. Russia, notably, but also India and Pakistan have dual-capable cruise delivery systems. The United States, which develops a new nuclear cruise missile, the Long Range Standoff (LRSO), has clearly distinguished the type of weapons for the moment, but there are calls for a conventional version of this new long-range strike system.[31] In addition, the proposals to redeploy SLCMs, potentially similar to the former nuclear Tomahawks, maintain the possibility of dual weapons also featuring in the US arsenal. In fact, this question of dual capability, which is perceived as particularly destabilising, has prompted calls to ban nuclear cruise missiles.[32]

Moreover, countries like China or Russia have shown that they were potentially as concerned about precise, long-range conventional systems as nuclear systems. An agreement applying exclusively to nuclear versions could therefore be difficult to negotiate, particularly on strategic ranges.

2.2. Beyond bilateralism

In the United States and Russia, critics of the arms control regime inherited from the Cold War stress the anachronism of thinking solely in terms of bilateral agreements when new strategic competitors are emerging at the global and regional levels. In Congress, several legislators

[28] Stéphane Delory, Emmanuelle Maitre and Jean Masson, op. cit.

[29] Tong Zhao and Li Bin, "The Underappreciated Risks of Entanglement: A Chinese Perspective", *Entanglement: Chinese and Russian Perspectives on Non-nuclear Weapons and Nuclear Risks*, Carnegie Endowment for International Peace, 8 November 2017.

[30] David Cromer Logan, "Drawing a line between conventional and nuclear weapons in China", *Bulletin of the Atomic Scientist*, 5 May 2015.

[31] Rachel Cohen, "House lawmakers keep pushing for conventional LRSO despite Air Force opposition", *Inside Defense*, 1 May 2018.

[32] Andy Weber and Christine Parthemore, "Cruise Control: The Logical Next Step in Nuclear Arms Control", *Journal for Peace and Nuclear Disarmament*, 23 October 2019.

have therefore made proposals demanding China's inclusion in any new agreement.[33] The White House also supports this prospect.

But is a multilateral arms control treaty possible? In 2007, Russia attempted to multilateralise the INF Treaty, with the United States' support, but to no avail. China, France and the UK showed no interest in the proposal. Regarding strategic weapons and a follow-on agreement to New START, the arsenals are still considerably different in volumes. For States to agree to join the United States and Russia in such talks, asymmetrical reductions or thresholds favourable to the smallest powers (including China) would no doubt be necessary. These powers would not agree to reduce their stockpiles of either intermediate-range or intercontinental weapons, whilst this major numerical imbalance with Washington and Moscow remains.[34]

In this context, some believe that China's inclusion, in particular, must be very gradual, starting with risk reduction measures (dialogue, crisis management tools) and with the emphasis on prior notice of missile tests.[35] China has made several proposals, but they are difficult to reconcile with the official policy of the United States. They propose in particular that the three nations agree on a non-destabilising anti-missile defence policy, create a no-first-use agreement in respect of nuclear weapons and think about how the counting and verification methods of bilateral arms control agreements can be adapted to the Chinese context.[36] Whereas Russian experts and President Putin seem quite sceptical about the possible pathways for trilateral negotiations,[37] US officials are still very vague about the form that tri- or multilateral arms control agreements could take.[38]

The prospects of trilateral control on strategic and intermediate-range missiles therefore look poor. On short ranges, they are even weaker, particularly as China does not appear to have this kind of system. Finally, as regards emerging missiles and particularly hypersonic glide systems, a purely bilateral negotiation for this category of weapons, which will be addressed at a later stage, has been considered inappropriate. Even though the three powers develop substantially different systems, the stages of advancement are much more similar than in other areas. Several proposals have therefore been made to regulate these weapons in a trilateral context, including on the basis of asymmetrical formats.[39]

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[33] H.R.2707 – New START Treaty Improvement Act of 2019, introduced in the House of Representatives on 14 May 2019.

[34] Alexey Arbatov, op. cit.

[35] Frank Rose, "Bringing China into the fold on arms control and strategic stability issues", *Order from Chaos*, Brookings, 25 September 2019 or Frank O'Donnell, "Launching an Expanded Missile Flight-Test Notification Regime", *South Asian Voices*, 10 October 2019.

[36] Wu Riqiang, "Trilateral arms control initiative: A Chinese perspective", *Bulletin of the Atomic Scientist*, 4 September 2019.

[37] Vladimir Putin, "Plenary session of the Eastern Economic Forum", Russky Island, Primorye Territory, 5 September 2019.

[38] George Perkovich, "What's in it for China? A Beijing Insider's Surprising Insight on Nuclear Arms Control", *Commentary*, Carnegie Endowment for International Peace, 30 July 2019.

[39] Heather Williams, "Asymmetric arms control and strategic stability: Scenarios for limiting hypersonic glide vehicles", *Journal of Strategic Studies*, vol. 42, no. 6, 2019

2.3. Envisaging asymmetrical measures

One of the challenges linked to the current strategic environment is the lack of symmetry between the strategic competitors' arsenals. Consequently, they do not feel threatened by the same weapons and want mutual constraints on different systems.

To take this specific feature into account, some authors stress the need to negotiate asymmetrical agreements, a possibility already outlined during the Cold War but still very unusual in arms control. Agreements could particularly introduce asymmetrical reductions or ceilings, or even put different weapons systems or domains in the balance.[40]

Within this framework, the easiest suggestion is undoubtedly the creation of a single ceiling for nuclear weapons. Under such an agreement, nations could choose the ranges and types of weapons according to their requirements, provided that they remain below a total threshold.[41]

Echoing what has appeared as a Russian demand in recent years, others suggest linking offensive and defensive capabilities, in an updated version of the SALT/ABM framework. In the current context, the United States could consider accepting limits on their anti-missile defence systems in return for verified reductions in Russian stocks of non-strategic nuclear weapons.[42] Outside a legally binding framework, such schemes could be adopted as confidence-building measures: Russia could therefore demand more transparency on its weapons of concern (anti-missile batteries deployed in Europe, for instance) in exchange for information about potentially dual-capable systems.

Combining separate capabilities in the same agreement will no doubt be a necessary effort if new arms control measures, particularly in the field of missiles, are envisaged in the short or medium term. However, several obstacles will have to be factored in. First, this kind of agreement can be difficult to sell to elected representatives who may refuse to set in stone an inferiority in a given segment. Furthermore, any regime that purely and simply bans certain weapons for certain players, like the NPT, would meet with strong opposition as being inequitable. Finally, this kind of agreement could be criticised by the allies of a nuclear power whose interests and priorities differ.

One of the solutions put forward to politically reassure the partners concerned consists in inserting an element of flexibility into any agreement or treaty so that capabilities can be adjusted if the strategic context changes.[43] Since the major powers are rather pessimistic about the future of their relations, this flexibility could foster non-binding measures and adaptable instruments. The governments in power today in China, the United States or Russia seem barely interested in the prospect of abandoning comparative advantages for good. However, given the lack of confidence between partners and the repeated violations of

[40] Ibid.

[41] Richard Weitz, "Need for Novel Arms-Control Approaches", *Yale Global*, 19 July 2019.

[42] Heather Williams, "Strategic Stability, Uncertainty and the Future of Arms Control", *Survival*, vol. 60, no. 2, April-May 2018.

[43] Heather Williams, "Asymmetric arms control and strategic stability: Scenarios for limiting hypersonic glide vehicles", op. cit.

previous agreements, an agreement devoid of strong verification measures could be rejected in Washington,[44] but also in Moscow and Beijing, where the official policy is to support legally binding treaties.[45]

3. Adapting arms control to new weapons

3.1. Arms control and hypersonic missiles

Beyond the strategic context, technologies are evolving, and also affect the prospects of arms control. One of the most intensely discussed missile innovations is the development of hypersonic systems. Although only China, the United States and Russia currently have advanced programmes in this area, governments and experts both say there is an urgent need to think about arms control agreements before a real hypersonic arms race breaks out.

Officially, the German government is at the forefront with its Foreign Affairs Minister calling for a reflection on the impact of new missiles on strategic stability.[46] Berlin is funding a research initiative called "Missile Dialogue Initiative" aiming to promote technical reflection on new missile technologies.

A report published by RAND Corporation in 2017 is a benchmark in this area.[47] It recommends fighting the proliferation of hypersonic technologies by adopting strict export control directives on both systems and their components at trilateral level (China, United States, Russia) and multilaterally. According to the authors, there was a ten-year window of opportunity for negotiating such agreements at the time. However, while France, in particular, has stated its ambitions in hypersonic technology, it would now seem very complicated politically to prevent the development of these technologies outside the three countries already testing them. Export control regimes have also showed their limits, especially in the “missiles” segment (MTCR) where local production capacities can be used to circumvent commercial restrictions in many cases.

As a result, many authors note the difficulty of imposing technical constraints on hypersonic missile development programmes. The technologies studied in this area vary greatly, as do the strategic objectives. Today, some hypersonic missiles are designed to carry nuclear weapons, others conventional weapons, and some could be suitable for both kinds of warhead. Given the surge of interest and pride they are triggering among States developing

[44] The 2018 Nuclear Posture Review insists on the fact that future arms control agreements must be "verifiable and enforceable", Nuclear Posture Review, February 2018, p. 16.

[45] "Debating Proposals on Common Principles to Ensure Outer Space Security, First Committee Delegates Call for Adoption of Legally Binding Treaty", GA/DIS/3557, General Assembly First Committee, Seventy-first Session, 15th Meeting (AM), 19 October 2016.

[46] "Slaying the Dragon – We must address arms control", Message from Federal Foreign Minister Maas, 14 February 2019.

[47] Richard H. Speier, George Nacouzi, Carrie Lee and Richard M. Moore, *Hypersonic Missile Nonproliferation. Hindering the Spread of a New Class of Weapons*, Rand Corporation, 2017.

them, any ban on hypersonic missile research and development programmes would seem difficult.[48]

Some proposals are therefore more modest. Some views are that Washington, Moscow and Beijing could agree on ceilings for deployed hypersonic weapons, or attempt to ban certain types regarded as particularly destabilising, along the lines of the INF Treaty.[49] The delivery of nuclear weapons by hypersonic glide vehicles could be banned.[50] Others would like to restrict the development of technology by banning tests of this kind of system, a ban that should be easy to verify.[51] If a formal treaty were not possible in the immediate future, confidence-building measures would be a first step. To limit the risk of strategic instability, the three nations could demonstrate transparency by sharing information about the weapons' range and capabilities and implement protocols to differentiate hypersonic missiles carrying conventional warheads and those carrying nuclear warheads. Probably to score political points on the international stage, President Vladimir Putin has said he is open to this type of discussion.[52]

Nonetheless, in the foreseeable future, the three States could seek to develop a strategic lead over their competitors and therefore refuse all limitation. Hypersonic missiles could therefore be controlled exclusively under the New START Treaty, if it is extended. Several hypersonic glide systems, like Russia's Avangard, are developed to be launched by ICBMs which are counted under New START.

The status of the Kinzhal air-to-surface missile is more debatable as it depends on the range of the bomber selected to carry it. Today, the assigned aircraft (MiG-31 Foxhound) is apparently not considered a strategic bomber under the Treaty (capable of flying over more than 8,000 km without refuelling or associated with a long-range nuclear cruise missile). If the Russian armed forces deployed the Kinzhal on other aircraft in future, the question of their inclusion could be settled diplomatically by talks between the two States within the New START Treaty Bilateral Consultative Commission (BCC), a body specially designed to deal with New START interpretation issues.[53]

In parallel, hypersonic missiles could fall within the ambit of multilateral transparency measures. In the same way as New START, today the Hague Code of Conduct already concerns vehicles whose flight is mainly ballistic. Several States support initiatives aiming to enhance the Code by explicitly broadening the obligations to glide vehicles, as well as to cruise missiles and interceptors linked to anti-missile defence systems.[54]

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[48] Mark Gubrud, Rajaram Nagappa and Tong Zhao, "Test ban for hypersonic missiles?", *Bulletin of the Atomic Scientists*, 6 August 2015.

[49] Michael T. Klare, "An 'Arms Race in Speed': Hypersonic Weapons and the Changing Calculus of Battle", *Arms Control Today*, June 2019.

[50] Patrick Smith, Countering Russia's Hypersonic Weapons with Arms Control Agreements, *American Security Project*, 6 September 2019.

[51] Mark Gubrud, Rajaram Nagappa and Tong Zhao, op. cit.

[52] Vladimir Putin, op. cit.

[53] Ibid.

[54] Katarzyna Kubiak, "Missile control: it's not rocket science", *Policy Brief*, European Leadership Network, 27 June 2019.

3.2. Limitations on other missile categories?

Other missile categories are raising questions and prompting calls for more regulation, notably long-range cruise missiles. There have long been calls to expand the spectrum of the HCoC in order to require the same degree of transparency for cruise missiles and ballistic missiles.[55] On a more formal level, Switzerland and Sweden submitted a proposal to the United Nations in 2016 asking the States to initiate a process to reduce risks relating to nuclear-capable cruise missiles with a view to banning this kind of weapon.[56] Given that several equipped States (including France and the United States) rely on this kind of weapon for their nuclear deterrence strategy and cannot easily replace them, these proposals have little chance of materialising in the current context.

When President Putin made the news in 2018 by drawing up an inventory of the new arms under development in Russia, including some with unusual characteristics, proposals were made to ban systems considered "exotic". Some suggested pursuing a ban of submarine drones carrying nuclear warheads. Unlike equivalent surface-to-air models, the ban would be relatively easy to verify since their deployment conditions are similar to those of SLBMs.[57] These weapons, which rely heavily on artificial intelligence, are not at all central to the strategies of the States that develop them, but they do trigger a number of fantasies, particularly in the mass media. Others note that Russia could grant concessions in respect of nuclear-powered missiles,[58] feeling that Moscow might just develop them as a possible "bargaining chip."[59] This technology demonstrated its limits in August 2019 when a *Burevestnik* missile explosion killed seven engineers.

Finally, some proposals still call for limiting or even banning anti-satellite weapons, which are seen as a cause of the accelerating space arms race. Regulating these weapons involves a number of difficulties, already identified by the Reagan administration in the 1980s: in 1987, a report indicated the challenge of identifying such weapons and implementing a verifiable regime.[60] Since then, the United States, on the one hand, and China and Russia, on the other, have disagreed on how to counter the development of military systems in space. Russia and China are in favour of a Treaty "aiming to prevent an arms race in space", but it does not include ASAT weapons deployed on earth. Washington says the Treaty would be impossible to verify and contrary to its interests. Given the difficulties of implementing a legally binding regime, some believe that banning ASAT test launches could be a first step forward.[61] Such an initiative would above all centre on kinetic and particularly ballistic weapons with a potential

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[55] Stéphane Delory, Emmanuelle Maitre and Jean Masson, op. cit.

[56] Nuclear Armed Cruise Missiles. Submitted by Sweden and Switzerland, UN document A/AC.286/WP.39, 10 May 2016.

[57] Alexey Arbatov, op. cit.

[58] Pavel Baev, "Russian Nuclear Modernization and Putin's Wonder-Missiles. Real Issues and False Posturing", *Russie. Nei. Visions*, IFRI Notes, 115, August 2019.

[59] Joseph Trevithick, "Russia Says Its Own New Weapons Are Exempt After Accusing U.S. Of Violating Nuclear Arms Deal", *The Drive*, 16 January 2019.

[60] The U.S. Anti-satellite (ASAT) program, a Key Element in the National Strategy of Deterrence, President of the United States, May 1987.

[61] Subrata Ghoshroy, "An anti-satellite test ban is urgently needed", *Bulletin of the Atomic Scientists*, 19 April 2019.

anti-satellite function, whose tests could easily be detected by States' intelligence services.[62] Others suggest adopting a sort of code of conduct to govern ASAT tests as a first step before negotiating a formal treaty banning the destruction of orbiting objects.[63] Among the guidelines considered, nations could undertake not to create space debris, to do testing at low orbit and to give notice of it.

These proposals suffer from the same difficulties as those involved in hypersonic missiles: the history of arms control has shown that it is hard to avoid the development of weapons still being improved, insofar as each party hopes to derive a strategic advantage from them. It is therefore highly unlikely that they will be formalised as the context stands at present.

Agreements integrating anti-missile defence facilities may have slightly better prospects. Russia has clearly been in favour of them for many years.[64] They would require an asymmetrical negotiation on different types of weapons and a significant policy change in Washington where this is currently a very political topic and one considered non-negotiable by the Republicans.[65] While there would be no question of reviving the ABM treaty, several concessions could be contemplated. For example, restricting deployments in a given theatre of operations, or restricting interceptor technology developments could feature among the options. Confidence-building measures could be negotiated on system characteristics, in order to prove that interceptors are not offensive weapons.[66]

Conclusion

The end of the INF Treaty put the breakdown of the arms control regime, already noticeable for at least a decade, in the media spotlight. Against this backdrop, current prospects for arms control are very bleak, particularly in the area of missiles, which were the main object of agreed regulation throughout the Cold War. The extension of the New START Treaty is now jeopardised and its expiration would mark the complete disappearance of legally binding bilateral agreements between the United States and Russia.

This situation reflects both cyclical and structural difficulties. First, the current circumstances are not propitious to arms control agreements. The Trump administration and a large part of the Republican Party have little time for what they regard as pointless American concessions. In their opinion, nothing should stand in the way of the global role played by the United States. This is particularly true in respect of Russia, which it accuses of having violated its

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[62] Alexey Arbatov, "Arms control in outer space: The Russian angle, and a possible way forward", *Bulletin of the Atomic Scientist*, vol. 75, no. 4, 2019.

[63] Daniel Porras, "Anti-satellite warfare and the case for an alternative draft treaty for space security", *Bulletin of the Atomic Scientist*, vol. 75, no. 4, 2019.

[64] Austin Long, Russian Nuclear Forces and Prospects for Arms Control, Testimony presented before the House of Representatives Committee on Foreign Affairs, Subcommittee on Terrorism, Nonproliferation, and Trade, RAND Corporation, 2018.

[65] Statement of Paula A. Desutter before the House Armed Services Subcommittee on Strategic Forces INF Treaty Withdrawal and the Future of Arms Control, 26 February 2019.

[66] Corentin Brustlein, "The Erosion of Strategic Stability and the Future of Arms Control", *Proliferation Papers*, no. 60, IFRI, November 2018.

undertakings. The view is that any new agreement would be rewarding Moscow for its bad behaviour, and that Washington would bear the weight of the negotiated restrictions alone. This fear is fuelled by the precedent of the INF, but also by the poor relations between the two powers.

Beyond these political and diplomatic factors, challenges related to the current situation make the emergence of a new arms control framework a complex affair, particularly for missiles. The bilateral format is contested by both Russia and the United States, with a considerable number of stakeholders now wondering whether bilateral undertakings are appropriate while other nations, especially China, continue to build up their arsenals. The increasing asymmetry between arsenals further complicates reflection on potential new agreements. In these circumstances, the two sides cannot find an acceptable compromise. Whereas Russia calls for re-imposing restrictions on the development of anti-missile defence architectures, Washington is more concerned about dual-capable weapons. In the meantime, they each remain focused on improving their own weapons, in an action-reaction cycle, rather than looking for solutions to preserve a sense of security.

The prospect of a future "without a treaty" is therefore no doubt the most plausible. However, it does not necessarily mean there would be no regulation. It has thus been noted that if New START is not extended, the US and Russia could continue to implement a number of transparency measures, such as publishing volumes of deployed weapons by category, and exchanging notices on system transfers, state of alert modifications and major exercises. To a certain extent, these measures could continue to be verified by extending the mutual inspection regime. The two nations could also commit to comply with the New START thresholds, even if the Treaty is not officially extended. With China, restraint measures could include recognition of mutual vulnerability to the other's nuclear arsenal, and introduce protocols for sharing information about their respective arsenals, new weapons in the pipeline, and the strategic relationship overall.[67]

[67] Vince Manzo, op. cit.