



Arms Control Idol: Ideas for the Future of Strategic Cooperation and Community

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About the Centre for Science and Security Studies at King's College London

The Centre for Science and Security Studies (CSSS) is a multi-disciplinary research and teaching group at King's College London that brings together scientific experts with specialists in politics, international relations, and history. CSSS forms part of the School of Security Studies at King's and draws on experts from the Department of War Studies and the Department of Defence Studies. Members of the Centre conduct scholarly and policy-relevant research on weapons proliferation, non-proliferation, verification and disarmament, nuclear security, space security and mass effect terrorism including the CBRN (chemical, biological, radiological and nuclear) dimension. In addition to academic staff, CSSS hosts masters and postgraduate research students, as well as visiting fellows and associates drawn from the academic, government, and business sectors. Our educational activities include contributions to the undergraduate and postgraduate offerings in the Department of War Studies, as well as professional development workshops for industry professionals.

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Haneen is an Obama Foundation Scholar and recently completed graduate studies in International Development and Policy from the University of Chicago. She is a former staffer at the National Assembly of Pakistan where she supported over 80 Parliamentarians to help inform better policy and legislation. Previously, Haneen led the only region-wide grassroots movement for nuclear non-proliferation in South Asia, working with thousands of young people to promote peace and a world safe from nuclear weapons. She helped develop a first-of-its-kind campaign strategy and volunteer recruitment, leadership and training program to bring the movement to local communities. Haneen is a 2020 N-Square Innovation Fellow and is serving the nuclear non-proliferation movement through global interfaith, multicultural and youth networks.

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Jon Tishman is a U.S. Army infantry captain currently assigned as a team leader with the 4th Security Force Assistance Brigade. Commissioned in 2008, Jon has deployed four times to Iraq and Afghanistan. During a brief break in service, Jon spent three years working as a military equipment sales manager in Australia. Currently completing his Master of Science in international relations, Jon looks forward to continuing his education next year when he enters studies for a subsequent degree.

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Johanna Trittenbach is a Research and Teaching Associate at the Kalshoven-Gieskes Forum on International Humanitarian Law at Leiden University in the Netherlands. Johanna is also engaged in civil society campaigning aiming at strengthening the international legal framework that regulates weapons systems. Her interests revolve around the protection of people that are affected by armed conflict. Specifically, Johanna researches and advocates for preventive prohibitions on the militarisation of emerging technologies, as well as compliance with existing disarmament and arms control regimes.

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Pranay Vaddi is a fellow in the Nuclear Policy Program at the Carnegie Endowment for International Peace. His current research is focused on developing future U.S. nuclear posture and arms control proposals, and Congress' role in arms control policy. A lawyer by training, Vaddi brings years of practical experience from his time at the U.S. Department of State, where he served as the interagency backstopping chair for New START Treaty implementation, and a member of New START and INF diplomatic delegations. He also aided in preparatory efforts and participated in the 2017 Strategic Stability Talks with Russia. Vaddi has testified before the House Committee on Foreign Affairs and before the congressional U.S.-China Economic and Security Review Commission.

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Preface



THE PAPERS IN THIS VOLUME ARE INTENDED TO START A WIDER CONVERSATION NOT ONLY AMONG THE NEXT GENERATION, BUT ALSO AMONG ESTABLISHED EXPERTS BOTH IN GOVERNMENT AND NON-GOVERNMENTAL ROLES



WYN BOWEN

Since its founding nearly 20 years ago, the Centre for Science and Security Studies at King's College London has been a leader in innovative research on nuclear weapons related policy and fostering the next generation of thought leaders in the field. In September 2020, this long tradition was continued when we hosted the first Arms Control Idol which included five early career experts from around the world. Interestingly, none of our finalists explicitly focused on nuclear weapons. This reflects the changing geopolitical and technological landscape, along with the next generation's interest in a wider set of issues beyond nuclear weapons, to include space, cyber and small arms. Their ideas should serve as a call to action for all nuclear scholars to think beyond traditional Cold War paradigms and to explore broader applications for arms control in this new environment. Indeed, these early career specialists are already leading the way in new thinking.

It is regularly said that arms control is in peril. The past decade has seen renewed great power conflict and distrust with existing institutions and practices. The five-year extension of the New START Treaty between the United States and Russia is an important positive development after the breakdown of the INF Treaty, among others. But New START may be the last agreement of its kind. Arms control remains a crucial tool for promoting international security and stability, particularly in reducing the risks of arms races and crisis escalation. But if arms control is to have a future, it requires new thinking and frameworks, particularly to incorporate emerging technologies, such as cyber, and more actors beyond the United States and Russia. The papers in this volume are intended to start a wider conversation about that framework not only among the next generation, but also among established experts both in government and non-governmental roles. The expert responses to these papers suggest opportunities to take the conversation forward.

I wish to extend my congratulations to the five finalists- Thomas Cheney, Jakob Hake, Haneen Khalid, Jonathan Tishman, and Johanna Trittenbach – and especially to our winner, Dr. Cheney, the first ever 'Arms Control Idol.' I commend all applicants for their creative thinking and dedication to arms control as a practice in promoting international security. We will need all these voices, and more, not only to work towards the ultimate goal of a world without nuclear weapons, but also to ensure we are doing everything we can to reduce strategic risks in the meantime.

It would also be remiss of me not to thank my colleague Dr Heather Williams and her fantastic team here at King's for coming up with the idea for such a fantastic event. Heather is a leading voice in the world of arms control and the work she tirelessly puts in to bring through the next generation is both commendable and essential. I look eagerly forward to the next iteration of Arms Control Idol!

Introduction and Acknowledgements

EMILY ENRIGHT AND HEATHER WILLIAMS

Arms Control Idol: Sparking Creativity about Strategic Stability

On September 15, 2020, the Centre for Science and Security Studies at King's College London hosted 'Arms Control Idol' – a competition among early career researchers to pitch their idea for a future arms control agreement. Recommendations ranged from legal tools to emerging technologies, including the winning pitch by Thomas Cheney for a ban on anti-satellite (ASAT) testing. This event came at a crucial time in arms control. The New START Treaty may be the last treaty of its kind between the United States and Russia. New technologies, such as hypersonic glide vehicles, along with rising actors, such as China, present challenges to traditional concepts of strategic stability. Responding to these developments will require new approaches to arms control and decades of commitment and creativity – Arms Control Idol is one effort to build toward that future.

The goal of Arms Control Idol was two-fold. First, we hoped to generate innovative and original ideas about the future of arms control in response to the rapidly shifting geopolitical and technological landscape. Second, we aimed to encourage a new generation of experts to engage with the political, legal and ethical challenges of arms control. In furthering these goals of fostering innovation and empowering a more diverse group of researchers, Arms Control Idol was designed to be as inclusive as possible. Applications were open to early career experts from around the globe, including those new to the field and recent graduates. The competition attracted applicants from Brazil, Canada, Germany, India, Italy, Pakistan, Poland, the United Kingdom and the United States. Furthermore, the project engaged international experts to serve as mentors and judges. Much of the success of the competition can be attributed to the diversity of perspectives, experiences, and vision of those involved.

The competition was inspired by the 'Policy Idol' competition held annually by the Policy Institute at King's College London, and was composed of two rounds. First, applicants submitted short, written policy pitches for a future arms control instrument. Pitches were then anonymised and scored against three criteria – creativity, clarity and consideration of different perspectives – by seven

international experts. The five highest-scoring applicants were then selected to participate in a live, virtual grand final, where they presented their policy proposal to a panel of five judges who are international arms control leaders. To develop their pitch from initial application to the final event, finalists were paired with an expert mentor to refine and polish their thinking and prepare for questions from the grand final judges.

The five finalists included Thomas Cheney (overall winner), Jakob Hake, Haneen Khalid (winner of the audience favourite prize), Jon Tishman (overall runner-up) and Johanna Trittenbach. The purpose of this collection is to capture their ideas to initiate a wider and more creative discussion about the future of arms control, and includes additional commentary from five established experts.

Thanks to the creativity and commitment of all participants, we can offer a vision for the future of arms control that is broad, thinking beyond nuclear weapons to incorporate emerging technologies; pragmatic, whereby smaller steps can lay the groundwork for more ambitious projects; and sustainable, including a diverse community of practitioners and experts, both inside and outside of governments, to continue to explore opportunities for arms control.

A Broader Approach to Arms Control

Because arms control is inextricably linked to the security environment, it will have to adapt to the unpredictability and uncertainty that define the current era. As noted by our finalists, arms control needs to address behaviours and interests, rather than just focus on weapons systems or capabilities. In short, states should not pursue arms control just for the sake of doing something, but rather in a tailored way to reduce risks and promote stability.

The rapid pace of technological change complicates states' strategic decisions, to include armament and disarmament, cooperation and competition. Future arms control agreements will have to incorporate new and emerging technologies, while also being flexible enough to adapt to a rapidly shifting technological landscape. They must also eventually incorporate multiple actors and therefore consider broader conceptualisations of

security, beyond traditional material factors that largely defined Cold War-era, bilateral strategic arms control.

Johanna Trittenbach's proposal for developing norms around new technologies is one excellent example of how this might be done. Trittenbach articulates a wide-ranging, norms-focused legal instrument for standardising how new weapons systems can be reviewed to ensure they are in compliance with international law. Noting the vital importance of humanitarian concerns – as opposed to traditional security considerations – or weapons development, Trittenbach's internationally-binding instrument would create the tools and incentives for collaboration and agreed standard-setting required to better regulate new technologies, while ensuring states can retain privacy and security.

Jakob Hake's proposed Cyber Convention on Critical Infrastructure and Nuclear Command and Control (C2) expresses a bold, multilateral vision for cooperation and mutual protection of vital state interests, promoting stability and trust in a complex technological environment. Recognising the need to manage escalation risks, and the interests of private, as well as public actors, his convention emphasises the fragility of the current cyber-military nexus and the need for predictability.

Redesigning Arms Control to Smaller Steps

Arms control often happens through small steps, some of which may have minimal noticeable impact but can build up over time. One criticism of arms control is that it does not impose any real constraints. States sign up to commitments that suit their interests and which they might have made anyway. But for some of our experts, arms control in the form of building norms and best practices can lay the groundwork for more ambitious efforts in the future and play an important role in risk reduction. Relatedly, many pitches for Arms Control Idol tended to focus on new mechanisms for arms control, such as starting small with non-nuclear capabilities then building up, or appealing to a wider set of actors beyond nuclear possessors.

This reflects the reality that nuclear weapons have never held a monopoly on arms control. Prior to the Cold War, states attempted to limit weapons ranging from biological weapons to battleships. In recent years scholars have begun to explore opportunities for arms control and emerging technologies. These technologies, such as cyber, often present technical and verification challenges and therefore require creative thinking to incorporate them into cooperative agreements. Nor does arms control necessarily require legally-binding agreements. Less formal confidence-building measures,

crisis communication channels, or informal agreements have demonstrated track records of success, such as the 1972 Incidents at Sea Agreement.

Thomas Cheney's ASAT test ban treaty offers one such idea for incorporating new technologies through confidence-building measures. His pitch testifies to the extreme risks generated by state behaviour in the near-Earth space environment, and elucidates a common vision for reducing security threats to vital space-based infrastructure. Building on the 1967 Outer Space Treaty, the ASAT test ban would curtail the ability of 'space powers' to destroy objects in space, thereby reducing the creation of dangerous space debris and sustaining the norm designating space as a peaceful commons.

Jon Tishman's pitch advocates a nested, iterative approach to agreements, and proposes that states build up from modest arms control measures targeting 'tactical' capabilities, rather than looking exclusively at strategic weapons. His proposal for an agreement prohibiting the proliferation of anti-tank missile systems to non-state actors exemplifies the value of starting from a position of mutual benefit, and gradually developing trust between competitors over time in the pursuit of larger strategic arms control goals.

A Sustainable Arms Control Community

A consistent theme across the Arms Control Idol pitches was the desire to make arms control sustainable, either explicitly or implicitly. This applied to ideas relating to nuclear weapons and disarmament, along with more modest ideas about emerging technologies. Interestingly, while our five finalists all considered issues of emerging technologies, the majority of pitches applied specifically to nuclear weapons. This observation suggests early career experts may have had less exposure to ideas of arms control and emerging technologies. Indeed, 'traditional' ideas of bilateral strategic legally-binding arms control continue to dominate many arms control discussions. Scholars and academics, in particular, can do more to encourage broader thinking about arms control and equip students with tools for doing so.

Haneen Khalid's proposal provides an excellent example of how this knowledge-sharing might be achieved. She presents a vision for 'model arms control negotiations', similar to Model UN exercises, held by and amongst young leaders and practitioners. Instituting such exercises, particularly in important formal settings such as at Review Conferences of the Nuclear Non-Proliferation Treaty, would address the need for skills development, as well as greater diversity and inclusivity, amongst future leadership cohorts. Khalid reimagines participation

not only in terms of state actors, but individual actors as well. Her idea for model arms control negotiations recognises the important contributions of early-career experts to key debates, and advocates for building their skills and experience in formal, meaningful settings.

Overall, the strongest pitches for Arms Control Idol combined existing ideas with new ones, applying common techniques in new ways or devising new techniques to apply to age-old problems. The demand for ‘innovation’ in arms control, heightened by concerns about rapidly multiplying threats and increasing complexity, can be intimidating for young experts who are still building their skills and expertise, and who are often plagued by ‘imposter syndrome’. The strength and diversity of the pitches we received, however, demonstrated that innovation does not always require breaking down existing structures and starting over again – innovation can, in fact, be equally powerful (and possibly more feasible) when modest and thoughtful. Many of the applicants described their ideas as ‘jumping-off points’ or foundations for more ambitious future agreements, noting the value of adaptivity, reflexivity and scalability in building the best tools to make lasting change.

Acknowledgements

From the outset, a goal of this project was to involve as many people as possible from diverse backgrounds, regions, perspectives, sectors and age ranges. We were astounded and grateful for the positive response we received, which was a testament to the need for fostering more creative and diverse thinking about the future of arms control. First and foremost, we are grateful to the Carnegie Corporation of New York for giving us creative license to experiment with a new format and invite in new voices to arms control dialogue, and for their continued support for our research.

At King’s College London, the Centre for Science and Security Studies (CSSS) team provided invaluable support throughout this process, especially the Centre’s Co-Directors Christopher Hobbs and Matthew Moran. Special thanks go to Wyn Bowen, Head of the School for Security Studies, for not only introducing us to the Policy Idol format, but also for hosting and chairing the final event itself. We are also grateful to Benedict Wilkinson and Sarah Rawlings of the King’s Policy Institute for sharing their insights and experience of the annual Policy Idol competition, which they created and launched with great success in 2015.

Numerous experts contributed to this process at various stages, including our final judges Li Bin, Evgheniy Buzhinsky, Bonnie Jenkins, Marjolijn van Deelen, and Renata Dwan, along with Alexandra Bell, Elaine Bunn, Lyndon Burford, Duyeon Kim, Amelia Morgan, Tanya Ogilvie-White, Tom Plant, Ed Read, Alexandra Stickings, Pranay Vaddi, and Tong Zhao who served as judges, mentors and advisors in various capacities. Our thanks go also to our colleagues at CSSS, Erin Connolly, Isabel Lucio and Hannah Mulvey, for their invaluable technical and organisational support throughout the project. Jamie Kwong stepped up, as always, to provide creative ideas, solutions and support from start to finish.

Finally, we are grateful to the dozens of applicants who sent in their pitches for Arms Control Idol. Many of these were incredibly sophisticated and well-developed – we encourage everyone to keep working on these ideas. Our finalists – Thomas Cheney, Jakob Hake, Haneen Khalid, Jonathan Tishman, and Johanna Trittenbach – were incredibly engaged throughout the process, and we are most grateful to them for their commitment to these issues and patience with the entire process. If these are the future leaders of arms control, as we believe they are, then we all should have cause for optimism.

Time for an ASAT Test Ban Treaty

THOMAS CHENEY

The principle of ‘peaceful use’ of outer space is under increasing threat,¹ particularly given the proliferation of so-called ‘counter space capabilities.’² Societies and economies have become dependent on space-based applications, from weather satellites to Global Navigation Satellite Systems (GNSS) and global telecommunications. The Armed Forces of the G20, in particular, have similarly come to rely on space-based systems for communications, intelligence gathering, navigation and weapons targeting. This has inspired efforts to develop anti-satellite weapons to ‘disrupt’ and ‘degrade’ the space-based capabilities of armed forces. The most common example of these weapons is the ‘kinetic kill’ system which impacts and physically destroys the target satellite. As objects in orbit travel at over 24,000 km/hr, even a relatively small mass has tremendous destructive capability. While, as a recent Secure World Foundation report argues, it may be the case that ‘kinetic’ anti-satellite weapons (ASATs) would not be the primary weapon of choice for military operations,³ the physical destruction of space objects through ASAT testing does threaten the sustainability and security of space activities (including, space-based arms control efforts).

Conducting an anti-satellite weapon (ASAT) test is becoming something of a rite of passage for space powers; the United States, the Soviet Union/Russian Federation, China and now India have all deliberately destroyed their own satellites in order to ‘test’ an ASAT capability (or to demonstrate that they have such a capability). This is a deeply troubling trend. Space debris is a critical threat to the space environment and ASAT tests, particularly China’s 2007 test, have increased the amount of dangerous debris in the space environment and intensified physical threats to space-based objects and infrastructure. Further proliferation of ASAT tests could lead to a catastrophic cascade scenario that would

render the near-Earth space environment effectively unusable.⁴ There is growing support for active space debris mitigation and even removal of inactive space objects. The intentional destruction of space objects, especially for the purpose of weapons testing, is at odds with the best practices of responsible space actors.⁵

The Pitch: An ASAT Test Ban Treaty

States should thus adopt an ASAT Test Ban Treaty. While this is a modest proposal in comparison to other ‘space arms control’ notions, it is more plausibly achievable.⁶ It is also uniquely verifiable; one of the biggest issues for arms control in outer space is that, given the physics of orbit, virtually any object could potentially be used as a ‘weapon.’ Indeed, the term ‘weapon’ is ill-defined in international law, in any context.⁷ Additionally, as Jeffrey Lewis at the James Martin Center for Nonproliferation Studies notes, ASAT is a mission, not a technology⁸ – an important perspective given that a dedicated ASAT system is not a prerequisite for an ASAT capability.⁹ This was shown by the United State’s ‘Burnt Frost’ operation which used a standard missile defence interceptor with a software change to allow it to intercept the satellite.¹⁰ This operation demonstrated that, though the United States maintains that it does not have an operational ASAT system, the US can readily acquire an ASAT capability by modifying an existing missile defence interceptor.¹¹

Critically, the destruction of an object in orbit is hard to hide, and to factually dispute. This makes it a good basis for building a more comprehensive arms control regime for outer space. Focusing on satellite destruction enables a clear, identifiable breach of the regime’s terms. Furthermore, space debris impacts all space actors, and its production through destruction of objects in orbit should be avoided by any ‘space power’, especially in ‘peacetime.’

Arms control in outer space is not unprecedented. U.S. President Lyndon Johnson considered the 1967 Outer Space Treaty (OST)¹² to be an arms control treaty first and foremost.¹³ Article IV of the OST prohibits the placement, although not the transit, of weapons of mass destruction in outer space. This provision built on the Partial Test Ban Treaty (PTBT) which banned nuclear explosions of any kind in outer space, as well as in the atmosphere and underwater.¹⁴ A significant motivation



FURTHER PROLIFERATION OF ASAT TESTS COULD LEAD TO A CATASTROPHIC CASCADE SCENARIO THAT WOULD RENDER THE NEAR-EARTH SPACE ENVIRONMENT EFFECTIVELY UNUSABLE.



for the inception of the PTBT was concern for the damage to the environment caused by the testing of nuclear explosive devices.¹⁵ Damage caused to orbiting satellites by high-altitude nuclear testing prompted the ban on nuclear explosions in outer space in the PTBT.¹⁶ Therefore while concern for the ‘space environment’ may not be a traditional driver for arms control it is not without precedent, particularly in outer space.

Risk Reduction: Managing Space Competition and Debris

An ASAT test ban does not necessitate the renunciation of ASAT capability itself, merely its testing. Such a test ban is therefore a good first step in reducing risks, and one that would prevent the creation of more harmful space debris. An ASAT test ban treaty would be useful in clarifying the meaning of relevant provisions of the Outer Space Treaty, both in peace and war times. While it is true that the Outer Space Treaty is ‘silent on the subject of conventional weapons’ and none of the provisions explicitly prohibit anti-satellite weapons, there are potentially relevant provisions.¹⁷ Article IX requires that states have ‘due regard’ for the ‘corresponding interests’ of other States in outer space. It also requires that states endeavour to avoid the ‘harmful contamination’ of outer space and avoid ‘harmful interference’ with the activities of other states. Further, as Michael C. Mineiro has written, ‘it is important to note that Article IX does not distinguish between military and civilian activities, therefore the requirements of Article IX apply fully to military activities in space.’¹⁸

There is also a question as to how the liability imposed by Article VII would apply to damage caused by an ASAT test. Article VII imposes liability on a State for danger caused by launching an object into outer space. Additionally, the vagueness of the terms ‘space object’ and ‘outer space’ as used in the Outer Space Treaty provides a potential ‘loophole’, whereby, arguably, an ASAT capability is not interpreted as a ‘space object’ as it does not go into orbit. The lack of a legal definition of ‘outer space’ could add to this confusion. An ASAT test ban treaty could provide clarity on these issues; indeed, it may be necessary to do so for the purpose of enforcement of any test ban as defining the scope of application is an important aspect of enforcing a treaty.

The motivation for an ASAT test ban treaty need not rest purely on concern for the space environment itself; protecting the space environment is important for state and international security. Space debris is a threat to all users of outer space, not just commercial and civil users. It poses a significant threat to national security,



AS WE GRAPPLE WITH AN INCREASINGLY DEBRIS-RIDDLED ORBITAL ENVIRONMENT, AN ASAT TEST BAN TREATY WOULD REPRESENT A POSITIVE FIRST STEP TO PROTECTING OUTER SPACE.



particularly for the United States given its dependence, as W. Matthew Wilson says, ‘upon the ability to use space for unobstructed national security purposes.’¹⁹ This threat is particularly relevant given the role that military space assets can play in deescalating potential conflicts, whether through nuclear early warning systems or by providing reliable information and intelligence to decision makers in crisis situations. Therefore, whether from the perspective of a state’s ability to make war, or its ability to make the decisions necessary to avoid making war, space plays an increasingly important role. This means that protecting the space environment is essential for the security of the international community. As we grapple with an increasingly debris-riddled orbital environment, an ASAT test ban treaty would represent a positive first step to protecting outer space.

Finally, even if the so-called ‘space powers’ do not pursue an ASAT test ban treaty, there is value in the rest of the world clearly opposing ASATs. ‘Grassroots’ efforts led by smaller states and civil society groups have had success in other areas of arms control (such as the Arms Trade Treaty, the Convention on Cluster Munitions and the recent Treaty on the Prohibition of Nuclear Weapons). In a space context, such advocacy could help to drive norms and create a moral environment in which the ‘space powers’ feel reluctant, even unwilling, to destructively test ASATs. Such an effort would help to move space arms control forward, reduce space debris, and enable the preservation of the ‘peaceful use’ of space.

Conclusion

Space debris represents an increasing threat and hazard to the conduct of operations in the Earth’s orbital environment, whether those operations are scientific, commercial, civil, or military. In such an environment it is destabilizing to intentionally destroy space objects. Therefore, an ASAT test ban is necessary. Such a measure could pave the way for future arms control initiatives in outer space. As Michael Krepon and Christopher Clary have said, ‘the weaponization of space is not inevitable.’²⁰ An ASAT test ban would be an important part of ensuring that that remains so, and of protecting the usability of the space environment.

- 1 While military activities in Earth orbit are not prohibited and only weapons of mass destruction are specifically prohibited, the Outer Space Treaty and UN General Assembly Resolution 1962 do have a clear preference for the peaceful uses of outer space, and stipulate that space activities should be conducted in the interest of maintaining international peace and security. Further, the UN Charter applies in outer space and limits the range of non-peaceful activities that states may lawfully conduct. See also the Prevention of an Arms Race in Outer Space Resolutions. Stipulating that space is intended to be a domain of peaceful activity is not to declare it a sanctuary or free of military activity.
- 2 See generally – Brian Weeden and Victoria Samson (eds), *Global Counter Space Capabilities: An Open Source Assessment* (Secure World Foundation 2020) Accessed: https://swfound.org/media/206970/swf_counterspace2020_electronic_final.pdf
- 3 *Ibid*, Executive Summary, ix.
- 4 Commonly known as ‘Kessler Syndrome’ – see: https://en.wikipedia.org/wiki/Kessler_syndrome
- 5 The phrase ‘responsible space actors’ has been used during sessions of the Legal Subcommittee of the Committee on the Peaceful Uses of Outer Space, including specifically relating to ASAT testing during the 2019 session (Report of the Legal Subcommittee on its Fifty-Eighth Session’ 2019, UN Doc A/AC.105/1203, para 181. Accessed: <http://unoosa.org/oosa/en/ourwork/copuos/lsc/2019/index.html>), and has been used generally to refer to adherence to the set of space law treaties, norms and non-binding agreements that govern activities in outer space, responsible states adhere to, and ensure their nationals adhere to, this loosely defined collection of norms. See: Chapter Three of Christopher D. Johnson (eds) *Handbook for New Actors in Space* (Secure World Foundation 2017), Accessed at: https://swfound.org/media/205710/handbook_for_new_actors_in_space_2017_web2.pdf for a discussion of the range of behaviours that constitute ‘best practice of responsible space actors’.
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Time for an ASAT Test Ban Treaty

EXPERT COMMENTARY: ALEXANDRA STICKINGS

Arms control in the context of space has multiple potential benefits. It can increase the safety, security and sustainability of orbit, reduce the likelihood of space-based conflict, promote responsible behaviour in space and promote dialogue between interested parties. With much activity in space difficult to observe, and with attribution and intent difficult to prove, the transparency that can come from arms control agreements can help to build trust and confidence. This in turn can reduce the risk of a miscalculation and the possible resulting military escalation and could also provide opportunities for de-escalation. For space-centred arms control to be successful, it needs to be based on shared interest (such as the protection of the space environment) and not be detrimental to other space actors (such as commercial companies).

Thomas Cheney's submission touches on a number of these areas. It seeks to:

- increase stability in the space environment by restricting the testing of potentially destructive weapon systems (kinetic anti-satellite missiles), preventing the creation of harmful debris and potentially reducing the ability of states to use such a capability in a time of crisis;
- provide some agreement on detail and definitions in what is a confusing conversation regarding 'weapons' in space; and
- promote dialogue, and through that trust and confidence, by envisaging this as a first step to building relationships that can then be used to develop broader accords covering other counterspace capabilities.

It equally has several of the indicators for a successful agreement. It:

- seeks to identify a shared interest, in this case preventing the proliferation of space debris that is a risk to all spacecraft, regardless of ownership;
- is based on reciprocity, as it applies equally to all parties; and
- is deliberately designed not to impact on the security of other parties by denying them assets that support their national security.

As the submission notes, while such an agreement may not have the support of the major space powers,

support for it from other interested states, particularly those with significant space assets, can promote a culture of responsible behaviour in space. This can lead to confidence between states, upon which further agreements covering other capabilities can build, as well as positioning those who do not abide by the agreement as going against an agreed moral position.

There are, however, some potential challenges to the uptake and implementation of a kinetic ASAT test ban treaty. With debris creation being one of the main concerns of this capability, the 2007 Chinese test, which created thousands of long-lasting pieces of debris, is often highlighted as particularly irresponsible. The more recent Indian test of 2019, conducted at a much lower altitude, did not have a similar outcome in terms of debris creation, and so, as well as not receiving the same level of international condemnation, was in some quarters referred to as a 'responsible' ASAT test. It is therefore possible that there could be pushback against an all-encompassing agreement in favour of one that would allow for tests at lower altitudes. The Russian tests of 2020 also pose a question, as they tested only the missile capability and did not come into contact with a spacecraft; how would a test ban treaty deal with circumstances such as this?

A second challenge concerns the fact that kinetic ASATs are the most obvious 'weapons' within the counterspace capability spectrum, and therefore those least likely on which an agreement could be made. It is therefore possible that more ground could be gained through focusing on other capabilities more associated with non-kinetic disruption or denial of space assets, such as rendezvous and proximity operations, which are more likely to have the backing of the larger space powers as well as the commercial sector, adding weight to any agreement.

Finding some common ground and creating agreements that limit harmful practices in space is essential for global security. Given the stalling of discussions through the Conference on Disarmament, there is some hope in the UK-led initiative through the United Nations on responsible norms of behaviour, which could, in time, lead to an agreement on the testing of kinetic ASAT capabilities.

A Cyber Convention on Critical Infrastructure and C2

JAKOB HAKE

In July 2015 the UN's Group of Governmental Experts on Developments in the Field of Information and Telecommunications in the Context of International Security published a consensus report that laid out norms for responsible state behaviour in cyberspace. One of the identified norms was that '[a] state should not conduct or knowingly support ICT [information and communications technology] activity... that intentionally damages critical infrastructure or otherwise impairs the use and operation of critical infrastructure to provide services to the public'.²¹ However, this norm has failed to restrain state behaviour against such targets in cyberspace.

Despite the risks and potential damage posed by cyber-attacks, cyber-arms control has proved elusive. Efforts to draw up treaties like those for nuclear weapons limiting specific systems are unlikely to be effective for 'cyberweapons'; the challenges for such approaches have been well documented and are intensified by issues such as the lack of internationally agreed definitions of key concepts and the intangible nature of 'cyberweapons'.²² However, this does not mean that arms control in cyberspace is impossible. Practitioners should take a broad conceptual and practical approach and move away from weapons-oriented models, and instead focus on actions and targets.²³ Additionally, cyber-arms control efforts should focus on the nature of cyber risks and deemphasise the importance of the structure and architecture of an agreement.²⁴ Due to the limited international agreement on fundamentals such as definitions for key cybersecurity concepts, finding commonly agreed risk areas for states could be a valuable first step for cyber-arms control.²⁵



CYBER-ARMS CONTROL EFFORTS SHOULD FOCUS ON THE NATURE OF CYBER RISKS AND DEEMPHASISE THE IMPORTANCE OF THE STRUCTURE AND ARCHITECTURE OF AN AGREEMENT.



The Pitch: A Cyber Convention

My proposal is a convention that requires states to make a political commitment not to use their cyber capabilities against two targets:

1. Civilian critical infrastructure; and
2. Nuclear command and control.

The serious potential impact of cyber-operations against these two types of targets present mutual incentives for all states to refrain from this kind of operation and encourage others to do likewise, making an agreement more feasible.

Civilian critical infrastructure can be interpreted broadly. Overlapping sectors considered to comprise critical infrastructure by different states can be identified by some commonalities, but there are also notable differences.²⁶ While it would be possible to create a list of specific critical infrastructure targets, some would probably be excluded which could lead to their misidentification as legitimate targets for cyber-operations. Therefore, civilian critical infrastructure should be thought of as sectors, facilities and organisations that are crucial for the effective, secure and safe function of society. A strong humanitarian case, as well as the national security case made by this paper, can be made for refraining from attacking these types of targets, particularly in the context of the global Covid-19 pandemic.

Including the second area of restraint obligations in the Cyber Convention, restraint from targeting a state's nuclear command and control (C2) process, will reduce worst-case scenario thinking on the part of a state's adversaries and competitors, while also reducing the risk of accidents and escalation. Nuclear systems' vulnerability to cyber-attacks was first recognised in the 1980s, and has increased with the integration of more complex software and networks.²⁷

America's 'left of launch' capabilities, to include cyber, are intended to disable an adversary's nuclear weapons before they are launched. While the intended targets of the 'left of launch' capability seem to be North Korea and Iran, the secrecy around this issue means the capability is also of concern for Russia and China.²⁸ Some scholarship

suggests that 'left of launch' capabilities reduce Russian and Chinese security and strategic planning and its continued presence in US strategy is likely to encourage these states to develop similar capabilities.²⁹ Additionally, the US 'left of launch' capability raises the risk of nuclear accidents or unintended outcomes, due in part to the obscurity of the intended effects of malware and the risk of third party actors carrying out false flag operations.³⁰ A declared commitment to refrain from 'left of launch' type operations specifically, and any cyber-operations against nuclear C2 more broadly, will help to reduce these risks and build confidence between nuclear weapons states.

Although a committee or mechanism for attribution could be created to monitor violations of the Convention, this would likely prove politically unfeasible, and subsequently is best excluded from the Convention's design. Instead, signatories should create a group of independent experts from the private sector who could provide support to states whose critical infrastructure is targeted by a cyber-operation, but requesting this support would not create or constitute a legal obligation. The Convention should also call on private sector companies to explicitly declare that they will not support states targeting civilian critical infrastructure or C2, acknowledging the role of the private sector in cyberspace. By including private sector actors in a separate role, the Convention provides a conceptual middle-ground between states who believe private actors should play a role in cyberspace governance and those who believe they should be excluded from it.

Negotiation of the Convention's text should be open to all states, but the European Union is well placed to take a leading role, as it has increased its cyber-diplomacy engagement in recent years and has expressed support for similar measures.³¹ The EU may also be seen as a neutral actor in the context of increased geopolitical rivalry between the US, Russia and China. Although its recent increased efforts in cyber-attribution inspire scepticism about the extent of its neutrality, the EU nonetheless has the influence and diplomatic resources to bring the major powers together to consider the Convention.

Risk Reduction: Increasing Transparency and Decision-Making Time

Cyber-operations against critical infrastructure and nuclear command and control carry significant risks. In the summer of 2017 WannaCry ransomware wreaked havoc across the internet affecting over 200,000 users in 150 countries, and forcing the UK's National Health Service to turn patients away.³² Microsoft attributed



THE CYBER CONVENTION ON CRITICAL INFRASTRUCTURE PROVIDES ISSUE-SPECIFIC STARTING POINTS FOR CYBER-ARMS CONTROL, AND WILL FACILITATE PUBLIC SAFETY THROUGH ITS PROTECTION OF CRITICAL SYSTEMS.



this attack to the Lazarus Group, which is alleged to have ties to the North Korean government.³³ The malware used an exploit known as 'EternalBlue' developed by the US National Security Agency which facilitated its rapid spread between computers.³⁴ While the overwhelming majority of 'cyber-attacks' do not have impacts of such magnitude, this case illustrates the serious disruptive and even destructive impact 'cyberweapons' can have. Prohibiting state actors from conducting these types of operations will not eliminate attacks on civilian critical infrastructure entirely due to the prevalence of non-state actors in cyberspace, but it could contribute to a reduction in risk and the non-proliferation of state-developed tools.

Incidents in cyberspace also have the potential to contribute to military escalation between states. The risks of escalation are worsened by the covert nature of cyber-operations and the difficulty of determining the intentions behind them. The incorporation of new technologies such as artificial intelligence into strategic and state-based cyber-operations could further increase the risk of accidents or escalation, including by reducing decision times. For nuclear weapons, the potential costs of these risks of accidental escalation and reductions in decision times are extraordinarily high. By clarifying state strategies and prohibiting certain cyber-operations, the agreement could reduce or remove the ambiguity of some operations, helping to reduce the above outlined risks. In the case of an incident where a nuclear weapons state's nuclear C2 is malfunctioning, the Convention's successful implementation could provide reassurance that this is not due to a deliberate state-based attack, reducing the risk of the affected state launching its own nuclear weapons.

This Cyber Convention should therefore be appealing to Russia, and more particularly China and India, due to the value these states assign to declaratory policy. For the United States, the chief benefit of membership of this Convention would be the prevention of rivals from developing the capabilities to target its own nuclear C2. Given the collapse of some nuclear arms control agreements such as the INF Treaty, this could instil much-needed international confidence, trust and

predictability, particularly as the United States continues to update its nuclear arsenal.³⁵ It would equally be advantageous if Convention signatories were to commit to keeping their nuclear and conventional C2 systems separate, further reducing the noted risks. States could build on the Convention by discussing what exactly constitutes nuclear C2.

Conclusion

My proposal aims to strengthen international security by prohibiting cyber-operations against civilian critical infrastructure and nuclear command and control systems. Prohibiting attacks against the former will ensure the effective functioning and safety of society from potentially disruptive attacks. By consensus, the international community must designate this type of operation as unacceptable, a designation which will

increase in value as more states develop offensive cyber-capabilities. By committing states parties not to target nuclear command and control, the Convention will clarify state strategies, reduce worst-case scenario thinking and the risk of escalation and accidents, thereby helping to build confidence between nuclear-armed states. For private sector companies, the Convention provides an opportunity to demonstrate their independence from government, which could improve consumer and government confidence in their autonomy.

Cyber-operations constitute a challenging issue but this proposal considers key perspectives, and offers concrete first steps to address the difficulties posed. The Cyber Convention on Critical Infrastructure provides issue-specific starting points for cyber-arms control, and will facilitate public safety through its protection of critical systems.

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A Cyber Convention on Critical Infrastructure and C2

EXPERT COMMENTARY: TONG ZHAO

This proposal on a cyber convention to protect critical civilian infrastructure and nuclear command and control (C2) systems is an excellent effort that aims at addressing an important problem. Despite the potentially catastrophic consequences of launching cyber attacks against critical civilian infrastructure, these types of cyber attacks continue to take place. The international community should not wait for a Chernobyl-type incident to really pay attention and take necessary efforts to deal with such risks.

The proposed Convention would help turn the 2015 UN Group of Governmental Experts recommendation into something more concrete. It would help raise awareness and build norms so that state and nonstate entities could carefully reevaluate their existing practices and policies regarding, for example, how to decide which types of cyber tools to develop, and how to ensure they won't be exploited by malign actors or cause damage to civilian critical infrastructure. The Convention would prompt governments to ask themselves questions such as, does it make sense to develop cyber technologies to target each other's satellites? The COVID pandemic reminds us how reliant we are on critical civilian infrastructure and how important it is to protect it from deliberate attacks including those through cyber means.

The risks associated with using cyber technologies to target a nuclear-armed country's nuclear C2 system are also serious, but this has been widely appreciated by decisionmakers. There are numerous ways in which a state that has detected evidence of cyber infiltration in its nuclear C2 system can misunderstand the scale, scope, severity and intended objective of the detected cyber operation, especially during a crisis when decision time is short and the capacity to thoroughly scan the system, collect information, evaluate damage, attribute sources and assess intention is quite limited. The risk of misunderstanding leading to unnecessary

conflict escalation, including nuclear escalation, cannot be overlooked. Such risks probably have not been thoroughly examined and understood by military planners and political decisionmakers. The Convention proposal can help raise awareness and prompt governments to address such risks seriously before incorporating such capabilities into military strategy.

The proposal makes important efforts to maximise the Convention's operational feasibility. It makes clear that it is a political commitment and not legally binding; it highlights the challenges of drafting a common list of critical civilian infrastructure; it avoids the trap of assigning the responsibility of conducting attribution of cyber-attacks to state actors; and it also gives the private sector a role to play. But even if relatively independent experts from the private sector are tapped to help investigate cyber attacks upon request, questions remain about whether the country or the company that runs the specific critical civilian infrastructure project would be willing to allow external experts to access key design and operational information and thus to effectively carry out the investigation. How this can be worked requires more thought.

Additionally, emerging experts may want to better define the term 'cyber-operations', which the Convention is supposed to prohibit. Should cyber-operations here include activities that only seek to collect information and intelligence? How can such surveillance activities be distinguished from cyber-operations that seek to do damage? It would also be helpful to think about the hard issue of how to bring in countries like Russia and China, who have traditionally questioned the legitimacy of international initiatives that are not sponsored by the UN, or countries like North Korea who reportedly have been actively carrying out the type of cyber-operations to be prohibited by the Convention. Some further analysis on the practicality of separating nuclear and conventional C2 systems would also be quite useful.

Including the Future Generation in Arms Control

HANEEN KHALID

The fraying of arms control agreements poses a threat now and for future generations. In an era of climate change, a global pandemic, and heightened nuclear risk, we must look to the future to find hope and plant seeds for a system that makes us truly safer. States with nuclear-armed missiles pointed at each other may have trouble building trust and cooperation, which will be necessary in order to find long-term solutions and coordinated policies in response to these transnational issues. Young people should get involved in arms control and build expertise at every stage of the arms control process to better prepare them to assume leadership on these issues. Many of them are unaware of the causes and consequences of arms races. They do not see the negotiations between states as directly impacting them and their quality of life. This needs to change and opportunities for wider participation in the arms control process will help.

The Pitch: Model Arms Control Negotiations

Given the importance of involving future generations in the arms control process, this paper proposes developing Model Arms Control Negotiations. These would be designed similarly to popular Model United Nations conventions, which are educational and widely attended around the world. Model Arms Control Negotiations should be held in collaboration with key arms control bodies, international youth groups, and negotiating parties to promote immersive learning for students and early career professionals and leaders in related fields. This might include students and practitioners of security and defence policy, diplomacy, law, or others who, through participating in Model Arms Control Negotiations, will be equipped to address the complexity and technical, political, and economic nuances of negotiations, particularly in the event of a crisis. This will create opportunities for generating and exchanging new ideas, and collaborative and imaginative thinking in the arms control field. As an outcome of these simulations, participants will be given an opportunity to report on their observations and learnings, and create parallel recommendations for arms control to be distributed with respective government officials or multilateral negotiating teams.



YOUNG PEOPLE SHOULD GET INVOLVED IN ARMS CONTROL AND BUILD EXPERTISE AT EVERY STAGE OF THE ARMS CONTROL PROCESS TO BETTER PREPARE THEM TO ASSUME LEADERSHIP ON THESE ISSUES.



A Model Arms Control Negotiation initiative would help broaden the scope of communication between negotiating teams and encourage accountability to the future, as they think about the weighty impacts of their decision-making and effects on future generations in the event of a nuclear crisis. This experience would help next generation leaders to understand and practice the nuances of diplomacy, and to think beyond the interests of their own country or region, and how they might interact or converge with the interests of others, particularly in the event of a worldwide crisis with political, economic, and environmental repercussions. It will provide them an opportunity to consider how their interests will be interpreted by others and might be addressed in the event of a conflict. In this way, the initiative will also provide a pipeline between seasoned and new voices through immersive learning to strengthen and build long term foundations of international security and to think through crisis response in a more detailed and nuanced way. By implication, it will invite them to think about ways and means to avert such an immense crisis and the negotiations and diplomatic efforts needed to make our world safer, and their part in the process as emerging leaders in their fields. Arms control efforts can address these concerns at different levels.

Risk Reduction: Promoting New Ideas and the Next Generation of Leaders

A Model Arms Control Negotiation would be particularly timely as a contribution to risk reduction efforts in the context of the NPT. Specifically, the Model Arms Control Negotiation can be held as a side event at the Nuclear Non-Proliferation Treaty Review

Conference (RevCon), currently scheduled for August 2021. The RevCon brings together the international community to explore opportunities to reduce risks associated with nuclear weapons. This would be an ideal opportunity to bring together rising leaders in related fields to be a part of a simulation on nuclear crises and to gain exposure to experts in the field. This may encourage them to think further about the urgency of risk reduction and arms control, by discussing and exploring in depth both the process and the potential outcomes of arms control negotiations. Through the simulation, they would consider and debate response options in the event of nuclear escalation and potential use, understanding and weighing some of the real time decisions countries and leaders may consider. The cohort would be provided with orientation and mentorship ahead of the exercise to best prepare them with background knowledge needed to successfully negotiate at this event. Through this process, rising experts would be provided an important opportunity to think about the complexity of a nuclear altercation and the importance of acting now to make our world safer through arms control agreements, and the importance of moments like the RevCon to drive momentum.

Participating experts and emerging leaders would be selected with an eye towards regional and ethnic diversity, to make for a truly international experience to reflect the scope of the nuclear issue itself. Drawing on a mix of educational and professional backgrounds would also help think through the various political, economic, policy, scientific, environmental as well as humanitarian aspects of the outcomes under negotiation. Participants' personal commitment towards making our world safer would also be an important criteria along with demonstrated skills in change-making, imaginative problem-solving, and leadership. It is hoped that the connections built through this joint exercise will promote knowledge sharing and understanding across disciplines and geographical regions on crucial issues that concern us all, and develop a base for further research, study, and policy suggestions or analysis outlined through a resulting report. It will also lay the foundation for further exercises to potentially be held alongside other important negotiations and diplomatic efforts to address transnational threats, similar in magnitude or complexity to a nuclear disaster. In short, this exercise will open connections and channels of communication between rising international leaders pertaining to common threats and risks that may become more urgent over time.

Held in partnership with civil society organizations, such an NPT side event will recruit international participants to represent 20 nuclear and non-nuclear states, incorporating youth voices. It will provide an opportunity to bring in representation from different

partnerships with youth groups already working in the nuclear security space, such as the Comprehensive Test Ban Treaty Organisation (CTBTO) Youth Group or United Nations Office of Disarmament Affairs (UNODA) youth initiatives, as well as those new to this issue or working on parallel problems such as climate change and environmental disaster that might have a natural interest. Hopefully this will also be another way to promote cross-disciplinary thinking and partnerships to address complex and multifaceted international issues. To conduct the simulation, countries will be divided by region to undertake a timed negotiations simulation, facing a specific problem incorporating a nuclear weapons incident during an ongoing conventional crisis and the resulting fallout. Provided with both training and access to mentors, the teams will negotiate issues resulting from this incident as though they were representatives of the countries directly involved, and those that might be impacted by this incident over time. They will be instructed to develop response statements and plans, and will have to consider humanitarian concerns, such as access to medical aid. They would be asked to document the challenges that may arise and their observations and learnings along the way. The simulation will be designed to reflect a situation room environment, where participants will not know the exact nature of the problem they will be presented with until they begin. The aim is to convey the complexity of a timely and adequate political response in the face of an ongoing crisis, and the need for international collaboration in order to achieve this.

The participants and teams will present their findings and suggestions to a panel of civil society and international judges, who will provide feedback based on effectiveness of disaster management, scope of issues identified in the process and the practical value of proposed solutions. Participants will also be judged based on their ability to partner with other 'countries' and drive consensus or agreement on issues and solutions to forge a way forward. It is important to take into account a diversity of perspectives and the ability of teams to effectively negotiate with each other and find common solutions within the time allotted, just like a real world nuclear crisis.

The teams will then refine their findings into a report, titled, 'The Opportunities and Challenges in Formulating a Collaborative Nuclear Disaster Response: A Youth Perspective', to be widely disseminated in partnership with civil society, funders and youth groups. This will be delivered to relevant international offices and delegations attending the NPT RevCon. Both the Model Arms Control Negotiation and the report may be funded by donors in the nuclear security space looking to address a wider set of nuclear issues. Broadening the field

with more diverse voices, perspectives, international participation and cross-disciplinary engagement are all elements that define this project. The exercise may help strengthen cooperation within the NPT, with the purpose of generating new ideas but also demonstrating that the NWS and NNWS face common global challenges.

Conclusion

This exercise will establish a lasting pipeline between seasoned and new voices and has the flexibility and structure to be expanded after a pilot run. The model can be used to simulate different kinds of arms control

negotiations with impactful results for outreach and inclusivity in the arms control field, and generating substantive suggestions for experts to consider from a variety of regional and professional backgrounds that participants might bring. It helps train participants for long-term thinking and planning with regards to international security and nuclear risk reduction, and the complex decisions involved if timely and appropriate steps are not taken now. It is also a long term exercise for generating and sustaining interest in the field at-large and cultivating awareness, connections, education and responsible decision-making amongst participants. In this way, this proposed exercise will help plant the seeds for a system that makes us all truly safer.

Including the future generation in arms control

EXPERT COMMENTARY: PRANAY VADDI

In arms control civil society, an active, productive debate flourishes among researchers, former arms control professionals and diplomats. Unfortunately, the lack of formal negotiations (such as U.S.-Russian arms control talks) reduce opportunities for new entrants into the field – students and young professionals – to gain the necessary knowledge and skills to form a cadre of arms control negotiators. This is especially problematic in an increasingly worrisome global security environment where nuclear powers are enhancing their arsenals and paying little mind to their commitment to nuclear disarmament. Without active negotiations, the opportunity to train an enthusiastic class of future negotiators will wane; with it, the prospects for innovative solutions to further arms control policy internationally.

Haneen's submission recognizes these dynamics and how they may negatively impact global security in the future. In her submission, she:

- Observes that students and early career professionals – the potential next generation of arms control negotiators – feel less connected to arms control policy, using diplomacy to address global or 'transnational' security challenges, and do not understand state-to-state negotiations;
- Identifies the importance of person-to-person activities to build relationships and understand the multidisciplinary nature of arms control negotiations; and
- Recognises that learning to be effective arms control negotiators requires a practicum – there is only so much a student or young professional can learn through literature.

Haneen applies a 'model United Nations' concept to training and educating future generations of arms control negotiators. She recognises the lack of on-the-job training (due to a lack of ongoing negotiations) for policymakers now grappling with contemporary arms control challenges. Model U.N. is widely recognized with ample participation by students around the world; a Model Arms Control Negotiation programme could take advantage of the standard.

Haneen aligns these observations with a necessarily rapid timeline. The Nuclear Non-Proliferation

Treaty (NPT) Review Conference ('RevCon') rapidly approaches (likely in August 2021 following delays resulting from the COVID-19 Outbreak). After 6 years of little progress on the NPT, the global community of nuclear-armed and non-nuclear states are at odds with how to make further disarmament progress.

Haneen proposes making the Model Negotiation into a 'side-event' during RevCon, an excellent way to harness the innovation that may come from a group of new entrants into the arms control field debating and recommending responses to global security challenges, and directly influence diplomats who will attend RevCon. Additionally, hosting the Model Negotiation as a side event will amplify and benefit from existing multilateral youth groups, such as those run by the Comprehensive Nuclear-Test-Ban Treaty Organisation or United Nations Office for Disarmament Affairs.

Haneen's choice of nuclear disaster response is appealing for several reasons. During a time of political attention among nuclear-armed states, the number of security challenges viewed as truly common or 'global' in nature are few. Exploring this topic will put Model Negotiation participants in a position to work collaboratively, reducing contrary foreign policy aims among the model negotiating teams and the more competitive negotiating dynamic of bilateral nuclear arms reduction or disarmament-focused agreements. In many respects, nuclear-armed and non-nuclear states need to be reminded that the need for collaboration on global nuclear security issues continues, even when progress on nuclear disarmament is slow.

There are clear benefits to increasing the knowledge base of future arms control negotiators. Governments, civil society and non-governmental funders would benefit from a trained class of new negotiators, prepared with the necessary political, legal and technical skills to be effective diplomats. In each government, managers recognise that effective policy making is tied to effective people. Haneen acknowledges this basic fact and puts forward an innovative approach to help motivate the global nuclear community with much-needed fresh blood.

Lower Level Arms Control: Options for Managing Tactical Disruptive Technologies

JON TISHMAN

America's withdrawal from the Intermediate-range Nuclear Forces and Open Skies Treaties may sound the death knell for nuclear arms control. A major revamping of the current process is required to reduce strategic threats. With so many ground-breaking treaties terminated and new delivery mechanisms like hypersonic glide vehicles on the horizon, it will be difficult for practitioners to restart nuclear arms control negotiations. Amidst this challenging environment and given growing distrust, new arms control measures at the strategic level may be politically unfeasible. Instead, the United States and Russia should re-invigorate arms control at the tactical level of war, well below the threshold of nuclear exchange, in order to reduce friction points that have thus far stymied negotiations. By reducing the ability of either state to spoil negotiations by linking strategic weapon systems with tactical malfeasance, serious negotiations can finally take place.

The Pitch: Nesting Non-Nuclear Arms Control Agreements

By entering into tactical³⁶ weapon arms control arrangements, the United States and Russia could re-establish trust and create the groundwork for future negotiations. An analysis of Russian treaty-making behaviour demonstrates that treaty nesting, with an initial, limited treaty serving as a base framework for subsequent treaties, is a feasible method of establishing trust in the context of arms control.³⁷ The majority of Russian bilateral treaties with the Commonwealth of Independent States, for example, are nested, each containing language that references and is contingent upon previous treaties. At a time when trust between the United States and Russia is at a post-Cold War low,³⁸ Washington and Moscow could adopt a similar approach because it would be best to begin small and build up to agreements at the strategic level.

By re-starting arms control at the tactical level, focusing first on non-proliferated disruptive technologies (such as autonomous target acquisition in loiter and anti-armor systems), both the United States and Russia can accomplish three goals. First, they will reduce the risk of vertical escalation, particularly in the context of proxy

conflicts, as both countries have shown a hesitancy to engage in high-casualty conflicts associated with more advanced weaponry. Second, the US and Russia will establish mutual trust and pave the way for developing verification methodologies that can be expanded upon with subsequent agreements. Third, as political arrangements, agreements at the tactical level provide the most flexibility for the US and Russia to allow other states to join, by making each step contingent on, for example, particular classes of weapon systems.

As an example, I propose a Treaty on the Non-Proliferation of Self-Guided Anti-Tank Missile Systems to help demonstrate the value of this approach.

Self-guided anti-tank missile systems are arguably the most disruptive technology today, the proliferation of which will create significant escalation risks in proxy conflicts. Second generation anti-tank guided missile technology has proliferated among states since the 1970s. Until recently they have had limited use by non-state actors and proxy forces, because of their weight, lack of portability, and guidance trajectory. That changed with the US covert operation, 'Timber Sycamore', which supplied anti-tank missiles to rebel forces in Syria, with a devastating effect on the Syrian Arab Army.³⁹ Although these systems are outdated, they still can have a substantial escalatory effect.

Third-generation lighter-weight systems, such as the US Army's Javelin missile, which is single soldier portable and can self-guide the ordnance to target, represent a technological leap forward that is not yet available to most states unless purchased from either the US or Russia. The lethality of these higher technology systems demonstrated in Syria that the next generation systems will prove even more disruptive. Newer variants of third-generation systems are significantly lighter and have a range increased from 2500m to 4000m. Coupled with a 'fire and forget' capability, irregular and proxy forces would have the ability to destroy tanks and armoured personnel carriers completely out of direct fire range. To gauge the game-changing effect these systems could have against a peer adversary, consider that beginning in 2022 the US Army will add remotely operated Javelin missiles to the majority of motorized

infantry platforms to increase the threat to Russian armored vehicles.⁴⁰

Nested non-nuclear arms control efforts could tackle some of the problems posed by the threat of these systems by obligating states to take concerted preventive non-proliferation measures. A Treaty on the Non-Proliferation of Self-Guided Anti-Tank Missile Systems would not ban state-to-state military sales, which are attractive to states in both profit and security terms. Such an agreement and its signatories would therefore have to find ways to avoid the systems' proliferation through the looting of government armories, black market sales or theft from export recipients. One of the major unforeseen consequences of Operation Cyclone^{41,42} was the proliferation of man-portable air defense systems either left over from US covert sales or looted from abandoned armories. Through the continued permissibility of state-to-state sales under the 'Stronger than a Tank' Treaty, there remains scope for concern that high technology items, like third generation anti-tank guided missiles, may still show up on proxy battlefields following a state collapse. This would undoubtedly increase tensions between the United States and Russia and further complicate strategic-level negotiations, as one of the rivals could plausibly be blamed for the weapon's appearance on the battlefield.

To rectify this, the Treaty would include an added non-proliferation or anti-proliferation levy made payable to the United Nations Office for Disarmament Affairs. This levy would provide the UNODA with buy-back funding should armories be raided by non-state actors. Though a recipient state might not have concerns about future state collapse and corollary hardware theft, they would have an interest in ensuring that these systems do not make it into illicit markets globally and thereby undercut the value of their own investments in the systems. This levy would create a shared responsibility between all states that purchase technologies of concern to prevent proliferation and ensure a responsible third party manages a funded buy-back and destruction program.

By pooling the payable levies centrally and making the funds available wherever high technology items of concern make it into the marketplace, the international community (spearheaded by the UNODA) would have sufficient capacity to incentivize the relinquishing of looted or stolen systems by nonstate actors through buy-backs. By rapidly buying back these items without having to wait on UNSC authorisation for funding, state militaries could maintain their technological advantage over proxy and insurgent forces. This would relieve the US and Russia of sole responsibility for the buy-back program, strengthen and legitimise the UNODA and mitigate the risk of sponsor states to a proxy force vetoing action when crises occur.



BY LIMITING STATES' ABILITY TO PROVIDE DISRUPTIVE TECHNOLOGY TO PROXY FORCES, NESTED ARMS CONTROL ARRANGEMENTS AT THE TACTICAL LEVEL PROVIDE GREATER NEGOTIATION ROOM FOR FUTURE AGREEMENTS AT THE STRATEGIC LEVEL.



Risk Reduction: Avoiding Escalation with Disruptive Technologies

With the United States and Russia currently engaged in proxy conflicts in several theaters, nested arms control arrangements like the Treaty discussed above, would reduce the escalation risk and create space to continue more strategic negotiations. Many emerging, disruptive technologies are in the process of being mass-produced⁴³ so widely that accused states will be able to plausibly deny distribution to third party states or proxy forces, risking further escalation locally as proxy conflicts increase in lethality. By limiting states' ability to provide disruptive technology to proxy forces, nested arms control arrangements at the tactical level provide greater negotiation room for future agreements at the strategic level.

The friction between Russia and the US over conflicts in regions such as Syria and the Donbas can escalate horizontally into other environments, including separate strategic negotiations.⁴⁴ Unexpended munitions can find their way into diverse theaters of conflict. The proliferation of the US Javelin or a Russian variant missile to proxy forces, for example, would have huge escalatory implications for any theater. During the First Battle of Grozny in 1994 Chechen rebels, due to the limitations of their weapon systems, had to wait until Russian soldiers entered the city in order to initiate ambushes to devastating effect. Armed with more advanced anti-tank missile systems, however, Chechen rebels could have been able to effectively wear-down armored columns prior to their entering the city. Such systems grant proxies the ability to engage state military forces at extreme range with incredible lethality, significantly changing force ratio calculations. If systems like anti-tank guided missiles make their way into the hands of proxies more regularly, the United States and Russia and their allies will have to commit significantly more forces to control even small conflicts.⁴⁵

The US already places strict controls on its sale of Javelin missiles through categorisation three and four of its International Trafficking in Arms Regulations, requiring

inventory, inspection by US personnel and bans on third party transfers. Though a comparable Russian system has not made it to market yet, development is likely underway and the control requirements will probably be similar. Neither party wants the advanced technology offloaded or lost to competitor countries for the development of counter measures. Therefore, it is in both states' interests to agree politically to implement controls on these systems.

Conclusion

Agreements for disruptive technologies do not immediately meet the global need for a reinvigoration

of strategic arms control, but rather, provide an initial framework for limits to specific technologies that can be built into a broader web of arrangements that gradually approach the strategic level. A framework that limits new technologies from reaching proxy forces would enable two major achievements in risk reduction of escalation that would support future strategic negotiations. First, it would allow signatories to continue exporting equipment to partners and allies, addressing their security concerns, while limiting the ability of non-state actors to conduct spoiling attacks. Second, it would provide opportunities for agreement that would facilitate signatories progressing from tactical to strategic arms control, by necessitating more contact between parties and the implementation of verification methodologies.

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- 36 Tactical level of war; specifically, weapon systems controlled by a commander at the Corps-level and below in support of specific battles or meeting engagements as defined by Department of Defense Joint Publication 3-0. Tactical in this context excludes tactical nuclear weapons. https://www.jcs.mil/Portals/36/Documents/Doctrine/pubs/jp3_0ch1.pdf?ver=2018-11-27-160457-910
- 37 Michael O Slobodchikoff, 2013. *Strategic Cooperation*. Lanham: Lexington Books
- 38 Michael McFaul, 2018. 'Russia As it Is.' *Foreign Affairs*. <https://www.foreignaffairs.com/articles/russia-fsu/2018-06-14/russia-it>
- 39 Specifically, the operation supplied tube-launched, optically-tracked, wire-guided (TOW). Typically mounted on pickup trucks to increase their mobility or shot from concealed positions, TOW missile systems allowed rebels with limited training and little other technologically sophisticated equipment to rapidly destroy SAA armor units at ranges that exceed a tank's ability to engage or target – a capability completely new to proxy conflicts. Janovsky, Jakub. 2018. *Nine Years of War – Documenting Syrian Arab Army's Armored Vehicles Losses*. MAR 27. <https://www.bellingcat.com/news/mena/2018/03/27/saa-vehicle-losses-2011-2017/>
- 40 Matthew Cox, 2019. 'Infantry Carriers with Tank-Killing Missiles.' *Military.com*, September 24. <https://www.military.com/daily-news/2019/09/24/army-details-plan-equip-stryker-infantry-carriers-tank-killing-missiles.html>.
- 41 Steve Coll, 2004. *Ghost wars: The secret history of the CIA, Afghanistan, and bin Laden, from the Soviet invasion to September 10, 2001*. New York: Penguin
- 42 Jill Dougherty, 2011. 'U.S. expands efforts to secure Libyan anti-aircraft missiles.' *CNN*. OCT 14. <https://www.cnn.com/2011/10/14/world/africa/libya-anti-aircraft-missiles/index.html>
- 43 Seth J Frantzman, 2020. 'Israeli drones in Azerbaijan raise questions on use in the battlefield.' *The Jerusalem Post*, Oct 1. <https://www.jpost.com/middle-east/israeli-drones-in-azerbaijan-raise-questions-on-use-in-the-battlefield-644161>.
- 44 Emma Ashford, 2017. 'Why New Russia Sanctions Won't Change Moscow's Behavior.' *Foreign Affairs*. <https://www.foreignaffairs.com/articles/russia-fsu/2017-11-22/why-new-russia-sanctions-wont-change-moscows-behavior>.
- 45 Jack Watling, interview by John Amble. 2020. *MWI Podcast: The Conflict Nagorno-Karabakh is Giving Us a Glimpse into the Future of War* (OCT 14). <https://mwi.usma.edu/mwi-podcast-the-conflict-in-nagorno-karabakh-is-giving-us-a-glimpse-into-the-future-of-war/>

Lower Level Arms Control: Options for Managing Tactical Disruptive Technologies

EXPERT COMMENTARY: ED READ

Modern arms control has multiple potential benefits. It can increase stability, reduce the likelihood of conflict, reduce damage if conflict occurs, promote responsible use of arms and promote dialogue. Through the transparency that arms control encourages, we can build confidence and trust, reducing the risk of unintended military escalation and helping to provide opportunities to deescalate in the event of a crisis. To be successful this activity needs to be based on a shared interest, reciprocity (though not necessarily symmetrical), honesty (deeds must match words), and not be detrimental to the security of third parties in the region.

Jon Tishman's submission touches on a number of these areas. It seeks to:

- increase stability by restricting the proliferation of potentially disruptive weapon systems (self-guided anti-tank missile systems), generating benefits in a crisis and helping to avoid the need for costly arms races as States seek to maintain a competitive advantage;
- reduce damage between states by limiting the scale of conflicts and avoiding escalation; and
- promote dialogue, and through that confidence and trust, by envisaging this as a first step to building relationships between arms control professionals that can then be used to develop broader accords.

It equally has several of the indicators for a successful agreement. It:

- seeks to identify a shared interest, in this case preventing the proliferation of self-guided anti-tank missile systems to non-state groups;
- is based on reciprocity, as it applies equally to both proposed parties; and
- is deliberately designed not to impact on the security of allies by identifying acceptable technology transfer mechanisms.

But it also goes further. Tishman identifies that success in strategic arms control will depend on building confidence between states. It therefore starts at a more modest level to build links, encourage dialogue, build relations and develop transferable arms control expertise in national systems.

The UK has taken a similar approach to building confidence through encouraging dialogue and transparency – starting small and building to great mutual success. In 2009, the UK took the initiative to convene a conference of the Nuclear Weapon States recognised by the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) to discuss matters related to that Treaty. This process has since become an important channel of communication and co-ordination between us on nuclear issues. The UK hosted the ninth P5 Conference in London in February 2020. During the year, the P5 made important progress on several issues that help to building confidence, including discussions on the concept of risk reduction, nuclear doctrines and transparency – all from the humble beginning we are creating the environment for better global security. And we do similarly in non-nuclear domains, working through the UN, the Conference on Disarmament and in other relevant international fora.

Given the potential benefits to us all of arms control, the UK will continue to work for the preservation and strengthening of effective arms control, disarmament and non-proliferation measures, taking into account the prevailing security environment. Countering proliferation is integral to the UK's security, prosperity and global reputation. It keeps us safe at home, reduces threats to our citizens and military and facilitates safe trade for our industry – protecting intellectual property and high skilled jobs across the UK.

Binding Review of New Weapons: Standardising the Present, Safeguarding the Future, Securing Humanitarian Principles

JOHANNA TRITTENBACH

The militarisation of emerging technologies evokes mounting concerns about the humanitarian and strategic impacts of new weapons systems. Lack of transparency regarding states' development of new military capabilities raises the question of whether new weapons would be in compliance with international humanitarian law (IHL), the legal framework that obliges states to review whether the ordinary or intended use of a new weapon would be prohibited by any rules of international law.⁴⁶ National weapons reviews under IHL therefore determine the legality of developing, procuring and possessing military capabilities and assess whether weapons systems' characteristics are in compliance with the applicable legal framework.⁴⁷

Especially in light of increasing complexities in weapons systems and underlying technologies – for example offensive cyber military capabilities – and as the existing legal obligation does not provide clarity on its implementation, states' application of the obligation to review new weapons needs to be enhanced.⁴⁸ While the current lack of inter-state dialogue and information exchange on the obligation to review new weapons creates a climate of ambiguity and mistrust, I propose to clarify and strengthen the legal framework that regulates states' military capabilities based on agreed humanitarian standards. Strengthening this existing legal obligation to conduct weapons reviews would build trust among states through increased transparency on the application of humanitarian standards that determine whether a weapon is considered to be lawful under international law.

The Pitch: Binding Review of New Weapons

I propose an internationally binding instrument, hereafter referred to as the Weapons Review Convention, that will elaborate on the existing legal obligation to review new weapons and will standardise the assessment of weapon systems' compliance with international law.

First, the existing principles of IHL that govern the means and methods of warfare will be reiterated. IHL determines



I PROPOSE TO CLARIFY AND STRENGTHEN THE LEGAL FRAMEWORK THAT REGULATES STATES' MILITARY CAPABILITIES BASED ON AGREED HUMANITARIAN STANDARDS.



that the right to choose weapons is not unlimited, as (i) a weapon must not be indiscriminate, (ii) it must not cause superfluous injury or unnecessary suffering; and (iii) it must not cause widespread, long-term and severe damage to the natural environment.⁴⁹

While the existing IHL framework obliges states to take these principles into account when reviewing new weapons, this first component of the proposed Weapons Review Convention will provide an opportunity for states to elaborate on these principles and adjust the threshold of a legal obligation as necessary.

The principle of the prohibition of widespread, long-term and severe damage to the natural environment poses an example of a legal obligation inadequate in serving its purpose due to the high threshold at which actors can be deemed to be in breach.⁵⁰ The prohibition lists three cumulative criteria for a weapon to be deemed to violate IHL, and scholars as well as practitioners have proposed to lower the prohibition's threshold for violation by individualising its criteria (i.e. widespread, long-term or severe damage would become individually sufficient criteria for unlawfulness), as well as by more clearly defining the meaning of these terms.⁵¹ The drafting process of the Weapons Review Convention could provide a platform to address such existing inadequacies of the legal framework governing armed conflict, and will facilitate determination of how legal requirements can adequately be upheld in state practice during weapon reviews.

Second, the Weapons Review Convention will oblige states to conduct periodic reviews of any new weapon and

emerging modifications to existing weapons and to apply the review criteria as agreed upon in the instrument's first component. In addition, there will be an obligation to nominate a national point of contact for the review of new weapons, providing a link between the government structures and officials involved in domestic weapons reviews and transnational cooperation and transparency mechanisms. The national point of contact will issue an annual report on the review procedure and the standards that are being applied in weapons reviews.

Annual reporting will not oblige states to disclose any confidential information on the military capabilities that they are developing or procuring. It rather aims at abstractly elucidating the benchmarks that states apply in the review of new weapons. Reporting mechanisms in international arms control, disarmament and non-proliferation frameworks are a useful feature in establishing transparency and facilitating independent monitoring.⁵² They may identify either convergence or discrepancies in the application of norms to weapons reviews, and could indicate issues that necessitate inter-state capacity-building. Wherever relevant, other stakeholders should be provided the opportunity to engage in the international reporting mechanism that will be established by the Weapons Review Convention.

Third, the Convention will establish an international committee of experts, which will be mandated to analyse the reports that are issued by states parties and enter into dialogue with states.⁵³ The committee will assess the implementation of the instrument and will publicly issue an annual summary report on the practical application of benchmarks and procedures that are used in order to review new weapons. The committee will call attention to existing discrepancies in applying legal requirements to weapons reviews, and identify challenges in the practicable application of the law to weapons reviews that necessitate further dialogue among states.

Fourth, the internationally binding instrument will be complemented by a provision for voluntary inter-state capacity-building to promote universalisation and advance the implementation of weapons reviews, including the effective and transparent application of agreed-upon standards.⁵⁴ This mechanism may be accompanied by a voluntary trust fund. Existing capacity-building mechanisms evidence that states and other international actors can be incentivised to participate in collective security activities. The mechanism may provide a useful tool for establishing trust in international legal standards for the review of weapons and the regime that upholds them.

Finally, the Weapons Review Convention will require periodical meetings of states parties to assess the instrument's implementation. These review meetings



THE PROPOSED WEAPONS REVIEW CONVENTION WILL BUILD TRUST THROUGH INCREASING TRANSPARENCY AND WILL STRENGTHEN OVERARCHING HUMANITARIAN STANDARDS THAT APPLY TO NEW WEAPONS.



may help to monitor the operational status, functioning and adequacy of mandate of the treaty. The meetings should enable the participation of other stakeholders, including non-member states, international and regional organisations, humanitarian and civil society organisations, academia and the scientific community.

The Convention will provide a platform for continued dialogue and collective assessment of the challenges in applying and implementing the legal framework for emerging weapons technologies. This new internationally binding instrument could hence facilitate enhanced collaboration on broader international security issues, as it will constantly present opportunities to identify future arms control or disarmament initiatives that are necessary to protect humanitarian values in armed conflict.

Risk Reduction: Strengthening Collective Security

The proposed Weapons Review Convention will build trust through increasing transparency and will strengthen overarching humanitarian standards that apply to new weapons, which is much needed in times of deteriorating trust in arms control regimes and uncertainty regarding future military capabilities. In line with the object and purpose of promoting and implementing universally applicable standards of humanitarian law to any new weapon, the binding instrument would increase transparency among states regarding the benchmarks and procedures that are applied in weapons review processes.⁵⁵ While states may handle information on the precise nature of the military capabilities that are developed or procured confidentially, a standardized framework for the implementation of weapons reviews could mitigate the existing climate of ambiguity and mistrust surrounding states' future military capabilities and the corollary risk of new arms races.

A diverse set of international actors have voiced the need for clarity and insight on the review process of new weapons in light of the unprecedented questions that technological developments and their potential military application pose.⁵⁶ Strengthening the legal obligation to

review weapons and standardising its implementation would thus provide a tool for states and other stakeholders to address these issues in line with collective approaches to security.

History shows that states have incentives to create and uphold international humanitarian law as a set of ‘shared principles of morality and ethics’⁵⁷ that apply even in times of armed conflict. In order to minimize the effects of armed conflict on people who are affected by it and require protection, states have a shared interest in upholding humanitarian principles, and ensuring that any new weapon is in compliance with agreed humanitarian standards. The implementation of weapons reviews is a necessary condition to successfully and demonstrably upholding IHL, not only by states that are bound by the existing legal obligation under Additional Protocol I to the Geneva Conventions, but also by non-member states to the protocol such as the United States and Israel who conduct weapons reviews although they are not (yet) bound to do so.⁵⁸

Based on an existing legal obligation, the Weapons Review Convention will bring significant added value to international security and inter-state relations. Uncertainties regarding weapons review processes could be addressed, and inconsistencies in states’ implementation of this obligation may vanish in light of increased information-sharing and transparency regarding state practice. For instance, the internationally binding instrument may promote a dialogue on the precise interpretation of legal terms that provide the framework for weapons reviews, may provide clarity

on the nature of modifications to existing weapons systems that invoke a new weapons review, as well as on possible outcomes of a review process and what triggers them.⁵⁹ The information exchange among states envisioned by the Convention could lead to the dissemination of best-practices in weapons review processes on issues such as opportunities to appeal a review outcome and ensuring robust appeals processes. Similarly, enhanced transparency on issues such as the identity of involved experts and necessary multidisciplinary subject-matter expertise needed for the comprehensive analyses of specific weapons, such as offensive cyber capabilities, could enable capacity-building measures and promote the universal implementation of this legal obligation.⁶⁰

Strengthening the legal framework that limits the nature of states’ military capabilities along the lines of humanitarian standards will ensure that any new weapon will be in compliance with the crucial legal framework that governs armed conflict, and will ultimately build further trust among states.

Conclusion

The proposed Weapons Review Convention will strengthen humanitarian norms governing armed conflict and could provide for their universal application to the review of the legality of any new weapon. The legally binding instrument on the review of new weapons will build trust among states through enhanced transparency and will be able to avert future militarisation of emerging technologies not in compliance with international law.

- 46 International humanitarian law (IHL), the body of law that applies during armed conflict, aims at protecting persons that are affected by armed conflict and governs the means and methods of warfare deployed during conflict. Under IHL, weapons are generally referred to as the means of warfare.
- 47 *Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts* (AP I), June 8, 1977, art. 36. Article 36 AP I, 'New Weapons', stipulates: 'In the study, development, acquisition or adoption of a new weapon, means or method of warfare, a High Contracting Party is under an obligation to determine whether its employment would, in some or all circumstances, be prohibited by this Protocol or by any other rule of international law applicable to the High Contracting Party.' The term 'in some or all circumstances' hereby relates to the ordinary and intended use of weapons.
- 48 Yves Sandoz, Christophe Swinarsky, and Bruno Zimmermann, *Commentary on the Additional Protocols of 8 June 1977 to the Geneva Conventions of 12 August 1949*, Martinus Nijhoff Publishers, 1987, para. 1469.
- 49 The basic rules that limit means and methods of warfare can be found in art. 35 AP I. For the principle of distinction, see art. 51(4) (b) AP I, and International Committee of the Red Cross (ICRC), Customary IHL Database, available at <https://ihl-databases.icrc.org/customary-ihl/eng/docs/home>, Rules 1 and 7; for the prohibition of weapons causing superfluous injury or unnecessary suffering, see art. 35(2) AP I, and ICRC, Customary IHL Database, Rule 70; for the protection of the natural environment see arts. 35(3), 55(1) AP I, and ICRC Customary IHL Database, Rule 45.
- 50 Michael Bothe, Carl Bruch, Jordan Diamond, and David Jensen, 'International law protecting the environment during armed conflict: gaps and opportunities', *International Review of the Red Cross* vol. 92 no. 879 (2010), p. 576.
- 51 Cordula Droege and Marie-Louise Tougas, 'The Protection of the Natural Environment in Armed Conflict – Existing Rules and Need for Further Legal Protection', *Nordic Journal of International Law* vol. 82(1) (2013), p. 33.
- 52 See, for example, reporting mechanisms under the Arms Trade Treaty, the UN Programme of Action on Small Arms and Light Weapons, as well as UN Security Council Resolution 1540.
- 53 A committee of experts is envisioned to support states similarly as the UNSC 1540 Committee Group of Experts.
- 54 See, for example, *Arms Trade Treaty*, April 2, 2013, arts. 15, 16; and *Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mine and on Their Destruction*, September 18, 1977, art. 6.
- 55 Under the current legal framework, states are not obliged to make their weapons reviews public. Some states have disclosed some information on their existing review procedure, see Vincent Boulanin and Maaïke Verbruggen, 'SIPRI Compendium on Article 36 Reviews', SIPRI Background Paper, December 2017.
- 56 See, for example, Permanent Representation of France to the Conference on Disarmament, 'France's speech on international humanitarian law', Group of Governmental Experts on LAWS, Geneva, August 20-21, 2019, available at <https://cd-geneve.delegfrance.org/Group-of-Governmental-Experts-GGE-on-LAWS-Geneva-20-21-August-2019>; United Nations Office for Disarmament Affairs, 'Summary of the first virtual information exchange on the implementation of weapons reviews, September 16-17, 2020', available at <https://documents.unoda.org/wp-content/uploads/2020/10/Summary-weapons-reviews-info-exchange-FINAL.pdf>.
- 57 Anna Di Lellio and Emanuele Catsano, 'The danger of 'new norms' and the continuing relevance of IHL in the post-9/11 era', *International Review of the Red Cross* vol. 97, no. 900 (2016), p. 1277.
- 58 U.S. Mission to International Organizations in Geneva, 'Statement on "Weapons Reviews", as delivered by Michael Meier', CCW Informal Meeting of Experts on Lethal Autonomous Weapons Systems, Geneva, April 13, 2016, available at <https://geneva.usmission.gov/2016/04/13/u-s-statement-at-the-ccw-informal-meeting-of-experts-on-lethal-autonomous-weapons-systems/>; International Committee of the Red Cross, 'States Parties to the Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977', available at https://ihl-databases.icrc.org/applic/ihl/ihl.nsf/States.xsp?xp_viewStates=XPages_NORMStatesParties&xp_treatySelected=470. Due to the absence of comprehensive state practice and opinion juris, the obligation to review new weapons cannot be considered customary international law at this point, see Natalia Jevglevskaja, 'Weapons Review Obligation under Customary International Law' *International Law Studies* vol. 94 (2018), p. 220.
- 59 International Committee of the Red Cross, 'A Guide to the Legal Review of New Weapons, Means and Methods of Warfare: Measures to Implement Article 36 of Additional Protocol I of 1977', *International Review of the Red Cross* 88(864), 2006.
- 60 ICRC Advisory Service on International Humanitarian Law, 'New Weapons', November 2001, available at <https://www.icrc.org/en/document/new-weapons-factsheet>.

Binding Review of New Weapons: Standardising the Present, Safeguarding the Future, Securing Humanitarian Principles – Expert Commentary

EXPERT COMMENTARY: TANYA OGILVIE-WHITE

Arms Control Idol couldn't have come at a more critical time, amid rising mistrust among the great powers, uncertainties over new domains of warfare, a loss of faith in multilateralism, and doubts about the future of arms control. The militarisation of new technologies is partly responsible for these doubts and for the deteriorating strategic outlook. Strategists question whether it will be possible to maintain strategic stability as new weapons systems emerge, particularly if they undermine strategic command and control. In this age of mounting existential uncertainty, there should be strong incentives for states, including the most powerful, to constrain the militarisation of the most potentially destabilising and destructive technologies. And yet we appear to be at an impasse. How can we move forward?

Arms Control Idol offers hope that a new generation of scholars can help us chart a new course. Having worked with Johanna on her pitch and watched the inaugural competition, I'm more convinced than ever that early career scholars play an important role in stimulating ideas. Admittedly, my first reaction to Johanna's proposal was that it was probably too wide-ranging, open-ended and politically fraught to gain serious traction, but the more I thought about it, the more value I saw in it. Serious debate over the pros and cons of setting up a weapons review convention along the lines Johanna proposes would encourage the arms control community to address both the strategic and humanitarian implications

of new weapons technologies. Constructive dialogue on this subject is urgently needed: on the types of weapons technologies to be controlled or prohibited; on the mechanisms to achieve this; and on even bigger questions, such as how to create international security institutions that can generate trust and confidence. From this perspective, the wide-ranging, open-ended nature of Johanna's proposal is exactly what's needed to help spark debate, partly because it helps us think big and think outside the box.

There could be opportunities to feed Johanna's proposal into arms control dialogues that are currently underway, including the UNIDIR Disarmament, Deterrence and Strategic Arms Control Dialogue, the IISS Missile Dialogue Initiative, and the US-led dialogue on Creating an Environment for Nuclear Disarmament. By putting questions about new military technologies and how/whether they can be prohibited or controlled front and centre in these initiatives, dialogue participants may be able to tease out areas of common ground, including among those who have begun to see arms control as too divisive or outdated. Whether or not those discussions eventually lead to the creation of a weapons review convention, the dialogue process in and of itself is worthwhile, building bridges between groups of arms control experts internationally, generating new arms control expertise in countries where it is currently lacking, and helping to forge new epistemic communities.

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