



MAJOR POWER RIVALRY AND NUCLEAR RISK REDUCTION

Perspectives from Russia, China, and the United States

Edited by Brad Roberts

Center for Global Security Research
Lawrence Livermore National Laboratory
May 2020

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Contents

About the Authors **2**

Introduction
Brad Roberts **3**

Mapping Out an Agenda for U.S.-Russian Arms Control
Andrey Baklitskiy **8**

What the Five Nuclear Weapon States Can Do to Contain Nuclear Risks
Tong Zhao **14**

Reducing Global Nuclear Risk: A Strategy for Cooperative Engagement
Lewis A. Dunn **23**

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Introduction

Brad Roberts

Since its founding in 1992, the Center for Global Security Research (CGSR) has had an abiding interest in nuclear threat reduction. In the 1990s it did some of the leading thinking about cooperative threat reduction with post-Soviet entities. In the early 2000s it focused increasingly on strengthening the nonproliferation regime. Since 2015 one of its primary interests has been exploring the future of cooperative strategies to reduce nuclear/strategic dangers. That future faces many challenges, both technical and geopolitical. By 2020, a rising sense of urgency of nuclear danger had clearly taken shape in the United States and internationally, driven in significant measure by the renewal of major power rivalry and potential military flashpoints among those powers. And that urgency has driven a rising national and international exploration of what can be done to reduce nuclear dangers.

To better understand both those dangers and what can be done to reduce them, CGSR convened a workshop in February 2020 involving more than 70 experts from diverse institutions inside and outside the United States. We explored the following key questions:

- What are the most serious nuclear dangers and risks today?
- Where do we stand with the international project to reduce those dangers and risks?
- What new approaches can usefully be pursued? Bilateral? Multilateral? Unilateral?
- How does the global geopolitical landscape affect the prospects for success?

A detailed summary of the discussion can be found at the Center's website. From my perspective, the following key insights stood out:

First, a global view of nuclear dangers and risks is difficult to formulate because perceived risk is a function of strategic circumstance. The major powers each perceive a distinct set of risks. U.S. allies have views that do not fully align with U.S. views. Moreover, the terms risk, danger, and threat are often used interchangeably when in fact they sometimes mean different things to different actors. These differences of perception and definition can frustrate the effort to improve international cooperation to reduce dangers and risks.

Second, there is a broad consensus that nuclear dangers and risks have increased over the last decade and continue to increase. The catalogue of concerns includes:

- Russia's re-embrace of nuclear weapons as part of its campaign to reclaim a major power role, and its development and deployment of the nuclear means to deter and if necessary prevail in a regional war.
- North Korea's continued progress in assembling a small nuclear force.
- The collapse of the Joint Comprehensive Plan of Action with Iran.
- Continued development of nuclear capabilities and doctrine in South Asia amidst continued conflict and confrontation.
- The demise of the Cold War-vintage arms control regime in the context of major power rivalry and the heightened risk of an arms race, potentially triangular.
- The impact of military competition in new technologies on arms race and crisis stability.

Of note, for the moment at least, there is a sharp decrease in concern about the risk of nuclear terrorism.

Third, a particular concern attaches to the possibility of accidental or inadvertent escalation of a regional conflict between nuclear-armed adversaries, arising from technical malfunctions or mistakes by decision-makers or operators. This risk seems to have grown. Attention must also be paid to intentional escalation—that is, a decision to employ one or more nuclear weapons with the expectation that this would induce a de-escalatory response from the attacked party. Such escalation might have the intended effect; but it might also lead to significant retaliation, opening the possibility of a wider expansion of the conflict.

Fourth, the strategies to reduce nuclear risks are as varied as the risks. A central role has been played by bilateral arms control between the United States and the Soviet Union, now Russia. Multilateral arms control in the form of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) has also contributed significantly to global risk reduction. Unilateral measures by the United States and others have occasionally played a constructive role (e.g., the Presidential Nuclear Initiatives of the 1990s). Cooperative threat reduction programs between the United States and the Soviet successor states also contributed. All of this has been underpinned historically by dialogue among policymakers, military leaders, and technical experts. Official (Track 1) dialogue helped to ensure sustained leadership focus, mutual understanding of shared interests, and the habit of cooperation. Mixed official/unofficial (Track 1.5) dialogue helped to deepen understanding and promote the effectiveness of Track 1.

Fifth, the future of all of these endeavors is now in question. We are at a major crossroads. The bilateral process has been stymied by many factors, not least the shift to a more multipolar security environment (and thus the need to account for China, among others) and to a more multi-faceted strategic military relationship (and thus the need to account for missile defenses, non-nuclear strike, cyber, space, and counter-space capabilities, among others). The multilateral process has been stymied by the underperformance of the treaty system in dealing with

non-compliance by a handful of rejectionist states; some predict the near-term breakdown of the existing treaty architecture, for which there is no plan B. Additional unilateral measures by the United States to reduce the role and number of U.S. nuclear weapons appear problematic in the current security environment, though would be welcomed from Russia and China. Dialogues, both formal and informal, no longer pay the dividends they once did. How to re-focus and re-energize them has emerged as an important issue.

Sixth, the debate in the West about the future of the bilateral U.S.-Russian process has been centered on whether or not to extend New START. This is an important question—but not the only one. The debate in Russia has also addressed the possibility of a moratorium and/or ban on the deployment of intermediate-range missile systems. Bilateral strategic dialogue has continued at a slow rate and has proven to be helpful but not especially productive. The Trump administration's pursuit of a new arms control agreement that would address effectively the nuclear risks that have emerged since New START entered into force (principally the continued development of Russia's theater nuclear posture in Europe and the continued growth of China's nuclear forces) seems unlikely to be successful. But a sequential approach is conceivable, beginning with U.S.-Russian agreement and then turning to China's role.

Seventh, the debate about possible engagement by China in the arms control process has been even more constrained, given Beijing's long-standing and explicit rejection of any such engagement. But President Trump's ambition to enlist China in a trilateral arms control process is apparently deeply held and conveyed at the highest levels of government. The administration is not concerned primarily with a possible Chinese "sprint to parity" (as was the George W. Bush administration); rather, it is concerned with a possible Chinese effort to gain strategic equivalency and to exploit it with more provocative military action in the Gray Zone. Beijing's decision to join a Track 1 nuclear process is likely to be made only at the presidential level. But bilateral nuclear risk reduction does not depend on a formal arms control process, as much can be accomplished through dialogue aimed at dispelling mutual misunderstandings of nuclear doctrine and different views of the likelihood of nuclear escalation.

Eighth, the five NPT-recognized nuclear weapon states are engaged in periodic dialogue on nuclear issues. Begun more than a decade ago, this dialogue is the only game in town today. From a risk reduction perspective, there would be value in broadening, deepening, and transforming this process. To do so, a new working group should be created and charged with developing risk reduction and crisis management mechanisms. There may also be some value in dialogue focused on aligning nuclear doctrine with the Laws of Armed Conflict.

Ninth, these five states have also played an important role in containing and managing nuclear risks in regions of proliferation concern. This is especially so in South Asia, where outside powers have responded to mounting crises to defuse tensions. Whether they will be welcomed in this role in the future is an open question. Leaders in India and Pakistan appear to have drawn the conclusion from recent crises

that they can be successful in managing crises and manipulating nuclear risk to their advantage, thereby reducing their openness to outside interference.

Tenth, U.S. allies who live with significant nuclear risks are highly motivated to support risk reduction efforts and to do what they can separately, as well as in partnership with others, to reduce those risks. They also have particular interests that they want to protect while pursuing such efforts. Japan, for example, seeks to set the right international environment for further nuclear risk reduction but does not want to weaken deterrence while it has to rely on it to deal with the threats posed by North Korea and China. NATO plays an important role as a “safe space” for deep and continuing dialogue among its three nuclear-armed members and the rest on issues of deterrence, restraint, transparency, arms control, and disarmament. The NATO-Russia Council also has a potential role to play, but has been largely sidelined for the time being.

Eleventh, at a time of rising demand for more effective nuclear risk reduction, the marketplace of ideas is crowded. But the practical options for reducing risks appear to be few, given political factors in each of the stakeholder countries. A practical agenda should include the following:

- To reduce the risks of arms racing by and among Russia, China, and the United States as well as further erosion of the NPT, a trilateral arms control agreement would be helpful. But it appears highly unlikely absent a U.S. willingness to relax sanctions and/or reimpose legal restraints on missile defenses. A sequential process may be possible.
- To reduce fears of an arms race, extension of New START would be useful. Such extension would promote predictability and transparency. But it would only defer the difficult question about what comes next.
- To reduce the risks of crisis mismanagement by the major powers, a broadening of the ongoing nuclear dialogue among the five nuclear weapon states would be useful. It also appears possible, given their shared interest in sustaining the taboo against nuclear employment.
- To help reduce the risks of miscalculation arising from misunderstanding, and to help ensure leadership focus on nuclear risks, strategic dialogue between and among Russia, China, the United States, and its allies should occur on a sustained, substantive, high-level basis. This should include both Tracks 1 and 1.5.
- To reduce the risk of nuclear employment in regional wars, attention must be given to ensuring effective deterrence. This must include both a credible capability for conventional defense and a credible threat to retaliate by nuclear means in response to limited nuclear attack.

Time and again in this conversation we came back to the central question: How does major power rivalry affect the prospects for cooperative efforts to reduce nuclear dangers? In other words, has the changed context changed something important? Our answers were surprising and helped us find some silver linings in an otherwise dark cloud.

Major power rivalry brings with it increased mutual suspicion as well as reduced willingness to cooperate. But rivalry also brings with it an increased risk of conflict, including major regional wars with a potential nuclear dimension—and this creates new incentives to cooperate to avoid conflicts and the unwanted escalation they may involve. And in this context, the absence of a constructive agenda for nuclear risk reduction brings with it a high degree of risk of crisis, war, and nuclear use. Moreover, we discovered some cautious optimism among experts from multiple countries that the conditions are ripe for new thinking and new initiatives and that a short menu of practical measures could well be endorsed at the leadership level.

To better understand the potential pathways to improved cooperation among Russia, China, and the United States, we turned to three of the February 2020 workshop participants to elaborate their views on challenges and opportunities more fully. This Occasional Paper is the result. It nicely captures the cautious optimism and pragmatism of the February workshop. I am grateful to all three authors for their investment of time and energy on our collective behalf.

The title of this Occasional Paper highlights the three different national perspectives of the authors. To be clear, the authors were not asked to present the views of their national government or to somehow define a coherent national perspective. The views expressed here are the personal views of the authors and should not be attributed to any institution or represented as the views of the states from which they hail.

Mapping Out an Agenda for U.S.-Russian Arms Control

Andrey Baklitskiy

It does not take an expert to notice that U.S.-Russian relations in the strategic sphere are in a freefall. Some treaties have been dismantled; others are on life support. At the same time, new challenges are emerging, raising some new questions about what arms control might contribute to risk reduction. Given Washington's focus on China, the U.S. political calendar, and the impending expiration of U.S.-Russian treaties, what is the future for arms control between these two nations? Moreover, what should it be?

Strategic Nuclear Choices

Strategic nuclear forces are currently the only weapons covered by U.S.-Russian arms control agreements. The 2010 New START Treaty limits the numbers of nuclear warheads and delivery vehicles and provides the basis for a sophisticated verification regime. The treaty is widely seen as serving the interests of both countries.

New START expires on February 5, 2021. It would be a significant challenge to negotiate a follow-up treaty in the remaining nine months, even under the best of circumstances. The COVID-19 pandemic, which among other things led to the suspension of New START inspections and the cancellation of one of the two remaining meetings of the Bilateral Consultative Commission, makes this task outright impossible.

However, there is time to extend the treaty for another five years—but that window of opportunity is rapidly disappearing. While the United States can extend New START by an executive decision, Russia cannot. Instead, it would have to pass a federal law that ratifies the extension, which would require additional time. Washington's disregard towards this legal issue (by declining a Russian proposal to hold a meeting with both countries' legal teams to discuss an extension) could prove fatal if the U.S. decided to extend the treaty at the very last minute, thus not leaving enough time for Russia to pass the required legislation.

The decision on the extension now lies with Washington. Russia proposed a clean extension of the treaty, despite its concerns about U.S. conversion procedures of its sea-launched ballistic missiles launchers and heavy bombers. In a decision which could be interpreted as a response to U.S. worries, Moscow also agreed to include the Sarmat heavy intercontinental ballistic missile (ICBM) and the Avangard hypersonic boost-glide vehicle in the New START limits. While the Sarmat decision was not controversial, there was a lot of discussion among Russian experts and government officials about the Avangard inclusion and subsequent demonstration. Some made the legal case that the boost glide vehicle does not fall under the treaty definitions, but in the end the political decision was taken to include it. Finally, there have been rumors that Russia will deploy its Kinzhal air-launched ballistic missile on

its Tu-160 heavy bomber, thus making it accountable under the treaty as well. The Russian government also decided not to make the two remaining new systems—the Burevestnik nuclear-powered cruise missile and Poseidon underwater drone—accountable under an extended New START because they are not likely to be deployed before the five-year extension comes to an end in 2026.

These Russian decisions are a good opportunity for Washington to admit that Moscow is addressing U.S. concerns. It is safe to assume that Russia will closely follow the U.S. response. In case Washington simply ignores those overtures or tries to spin them in a negative light, Moscow would likely interpret this as a signal that the United States is not interested in compromise or in fair arms control arrangements.

Some context from a Russian perspective is necessary here. The Russian strategic community considers a number of past bilateral arms control treaties one-sided in one way or another. The INF Treaty banned ground-launched missiles but not those launched by sea or air which were of specific interest to the United States. START I placed sub-limits on heavy ICBMs, which were the backbone of Soviet nuclear force. START II banned altogether ICBMs with multiple warheads (MIRVs, multiple independently targetable re-entry vehicles). In comparison, New START is seen as an equitable treaty, as it does not include provisions limiting Russia but not the United States. A decision by the Trump administration not to extend New START would be widely perceived as an attempt to break this equality and to get an edge over Russia. Any subsequent proposals from Washington would be evaluated through this lens.

The failure to extend the New START treaty would have dangerous implications. It may not lead directly to an arms race or an immediate increase in the number of deployed warheads and launchers. But in the absence of legally binding measures, the situation will widely be seen as less predictable and more volatile. The actual situation on the ground would depend on a number of factors. A clear demonstration of U.S. interest in arms control as a concept, as well as the initiation of new formal bilateral or multilateral negotiations, would diminish the risk. Washington should understand that any increase in the number of deployed U.S. nuclear weapons will subsequently be matched by Russia.

The Broader Context

Despite the urgency of the situation, Washington and Moscow have yet to discuss the extension of the New START treaty. Instead, Washington is reportedly still holding internal interagency consultations on the issue for the third year in a row.

These important questions about whether, when, and how to extend New START—and also about the implications of the failure to do so—should not distract us from the broader context in which they sit. The strategic discourse between Russia and the United States touches on a much larger set of issues—or should do so.

The two countries have been discussing related topics, albeit only episodically. The two use the ongoing bilateral dialogue on “strategic stability” (the Russian version) or “strategic security” (the U.S. version) to exchange mutual dissatisfaction

over a range of other topics. As it stands, two one-day meetings per year are not enough to discuss, let alone negotiate, anything specific. But this track has had some value. In January 2020, the parties agreed to expert-level engagement on particular topics; it was later revealed that the first issue for in-depth discussion is space security.

An important step forward came in April 2020 with the Trump administration's appointment of Marshall Billingslea as the Special Presidential Envoy for Arms Control. Billingslea reportedly has a mandate to lead negotiations on behalf of the United States. But prospects for meaningful progress appear dim, as the ongoing pandemic and upcoming U.S. presidential election are likely to delay concerted U.S. action until at least November. And if the election results in a change of administration, substantial negotiations are likely to be delayed by another year or so.

Meanwhile, the Trump administration is continuing to pursue the idea of trilateral arms control with Russia and China. The precise meaning of the initiative is unclear since the United States still (as of April 2020) has not produced its official proposal for negotiations. Beijing has been consistent in its message about not willing to participate in the trilateral format. This makes the U.S. ambition unrealistic. In April 2020, it became clear that China had not even responded to the U.S. invitation to the dialogue of four months earlier.

The U.S. push to include China in the future arms control agreement presumably doesn't exclude the possibility of holding bilateral negotiations with Russia in the meantime, as the creation of the U.S.-Russia dialogue on space security suggests. However, it is unclear if Washington would want Beijing to join any possible agreement between Russia and the United States. If Washington were to so insist, it would make any bilateral deal provisional, subject to change after negotiations with China. This would aggravate Russian concerns that the United States cannot commit to agreements it concludes. There is also a concern that the Trump administration's focus on China, coupled with its limited bandwidth, will suck all the remaining oxygen from the Russian-U.S. process.

Washington should recognize that the United States and Russia have much to discuss, with or without Beijing. Long-standing security issues have intertwined with new developments creating a web of concerns, warnings, and demands. Coming to terms on some or all of those will be necessary for any arms control agreement whatever its legal status or membership.

The United States should understand that some of its cherished negotiating objectives with Russia will be impossible to meet without concessions that Washington has so far rejected. For example, Washington has repeatedly insisted that Russian non-strategic nuclear weapons should be included in future arms control negotiations, while Moscow has clearly linked any discussion of the issue with the withdrawal of U.S. tactical nuclear weapons from Europe. This obviously would require some kind of buy-in from European NATO allies. The United States has also made clear it wants all new Russian strategic systems (including Poseidon

and Burevestnik) to be limited by an arms control treaty. Moscow maintains that those could not be included in the New START treaty, which does not have the necessary provisions, but is ready to discuss their inclusion in future negotiations. Russia has not specified if it would be willing to include new strategic systems in the treaty ceilings or require the United States to balance this by including some of its capabilities. Or it could simply trade Poseidon and Burevestnik away. A decision to abandon those systems would undoubtedly require Washington to make concessions on missile defense.

Of course, Moscow has its own objectives. Russia still considers U.S. ballistic missile defense a potential threat to its survivable second-strike capability and wants to put some limits on its development. In the past Washington has proposed to meet this concern with transparency and confidence building measures, which was not enough for Moscow. Although Russian officials express great confidence in the ability of modern Russian nuclear systems to penetrate any possible U.S. missile defense, changes in technology or U.S. force structure could bring the issue back to the forefront.

This is linked to the second long-standing Russian concern—possible U.S. deployment of weapons in outer space. Moscow is mostly concerned with its space-based missile defense, but has also mentioned the potential of land-attack weapons in space. It would prefer a legal prohibition of placing weapons into Earth orbit. Conversely, Washington is mostly concerned with Russian anti-satellite capabilities as well as the activities of Russian inspector satellites. Mutual concerns about space-related issues can explain the choice of space security as the first specific topic to be discussed in the bilateral strategic stability talks.

Finally, despite the fact that the INF treaty ended in 2019, the issue of INF-range missiles has not disappeared. Washington maintains that the Russian Iskander system's 9m729 cruise missile has intermediate range. The United States has tested both cruise and ballistic intermediate-range missiles in 2019. Moscow has announced a moratorium on deployment of its INF-range systems in the regions where the United States has not yet deployed its missiles. This would open a possibility of keeping ground-based intermediate-range systems out of Europe and avoiding a second Euromissile crisis. While verifying such an arrangement would be a challenge, Russia has announced its readiness to discuss the options. Moscow is also skeptical of the U.S. argument that its allies in East Asia would oppose a new INF deal. This is not supported by the evidence. Unlike the 1980s, Japan today doesn't see Russia as a pressing military threat. Neither does China—again this is a big shift from the 1980s. Western media reports claim that Russia already deploys 9m729 missiles east of the Urals but provide no evidence that this raises much concern in Tokyo or Seoul.

This is long list of mutual concerns. Clearly, the difficult nature of these issues requires systematic work to achieve any progress. To conduct such work, Russia and the United States would have to start long-term formal negotiations like the SALT and START processes of the Cold War.

Form and Structure

But let's assume for the moment that dialogue resumes, hard problems are tackled in a constructive and cooperative spirit, and mutually satisfactory points of accommodation can be found. The next step would be to try to codify points of agreement in some way. Previous bilateral negotiations tended to focus on formal legally binding treaties that required ratifications by the respective legislatures. But Moscow and Washington have also used politically binding documents (such as the 1972 Interim Agreement) and even political declarations (such as the 1991 declarations on nuclear sea-launched cruise missiles) to formalize their agreements.

From a Russian perspective, legally binding measures are preferable. Formal treaties are generally more stable and last longer. The process of ratification inevitably requires creating substantial domestic support for the agreement, which can include compromises and tradeoffs to secure a treaty's future. Treaties are the law of the land; they can include provisions otherwise impossible under national legislation (such as sharing classified information or providing immunity for inspectors, for example).

The less formal political agreements favored by the U.S. government thus raise important—even troubling—questions for the Russian side. Why does the United States not want the benefits of stable and long-lasting agreement? Is it because the executive wants to have arms control but is unwilling or incapable to get the formal treaty ratified? Or is it because the U.S. government wants less constraints and the freedom to walk away from the agreement at any time? Moscow would probably be more sympathetic to the former.

That said, Russia has been warming up to informal measures when formal instruments are unavailable. Moscow is promoting unilateral national statements of no first placement of weapons in space. Russia has also proposed a political moratorium on the deployment of INF-range systems. So, if Moscow and Washington are genuinely interested in pursuing arms control, political agreement could be a feasible option. However, whatever the legal status, Russia would want specific verifiable limits in any agreement. For example, committing to stick to the New START numbers after the treaty expires would make sense. Parties could then work out informal information exchange and verification mechanisms (though those would necessarily be inferior to the treaty-based options). On the other hand, a proposal for information exchange in the absence of agreed ceilings would be dead on arrival in Moscow.

Compared to the United States, Russia is less interested in transparency per se. This could have something to do with the fact that a great deal of information about U.S. military capabilities and security practices is available publicly. But it also has to do with an asymmetry of interests: Moscow sees a commitment to mutual transparency measures as a concession which should be traded for something else.

Russia's Broader Approach to Nuclear Risk

Russia and the United States also differ in their general approach to nuclear risk reduction. Moscow shares the U.S. interest in reducing real military risks that could arise from misunderstandings or lack of communication (Cold War hotlines and coordination in Syria are just two of many examples). But Russia does not want to encourage destabilizing activities by decreasing perceived risks. Moreover, some forms of risk reduction could be seen as the legalization of undesirable practices. Moscow opposes discussions of military risk reduction in outer space and cyberspace because those would be seen as a green light to the militarization of those domains.

In the nuclear sphere Russia sees deliberate U.S. actions as the main risk. If Washington is dismantling arms control and rejecting any limitations with one hand and proposing to have more transparency and manage escalation with the other, it is not a good bargain. Agreeing to such an arrangement would be seen as a disadvantage to Russia. It could mean inviting more destabilizing non-nuclear—even nuclear—behavior. Moscow would rather prefer to talk about decreasing the risk of the possibility of war between the nuclear weapons states, specifically between Russia and the United States.

In sum, Moscow and Washington have a lot to discuss when it comes to strategic issues. The choices that leaders in both countries make will have a profound impact not only on their own security and bilateral relations but on the global scale. If Russia and the United States want to achieve any progress, they will have to agree that the other party has a say and be ready to engage in serious negotiations with compromises and tradeoffs. And they will have to finally get started. The sooner, the better.

What the Five Nuclear Weapons States Can Do to Contain Nuclear Risks

Tong Zhao

The international debate about nuclear risk has catalogued many different kinds of risk and danger. But two stand out as especially salient: the risk of the nuclear arms race and the risk of employment of nuclear weapons arising out of a conventional conflict. The five nuclear weapon states (NWS) have a special responsibility to contain these risks. They also have a responsibility to try to manage the risk posed by nuclear proliferation. Constructive action by the five is both necessary and possible. But they face many challenges to such action, including the limits on their ability to cooperate given their wariness of each other.

This essay explores four areas to focus improved NWS cooperation to reduce nuclear risk. These include efforts to:

1. Prevent decoupling of NWS nuclear policy communities
2. Frame principles for cooperative nuclear risk reduction
3. Address areas of concern about future strategic military balances
4. Elevate and deepen existing dialogues

Prevent Decoupling of NWS Nuclear Policy Communities

The growing great power competition and rivalry has caused people to worry about technological and economic decoupling between some of the major powers. A less discussed but very serious threat to the international effort to contain nuclear risks, however, comes from the decoupling of the nuclear policy communities in the major nuclear powers. Such communities consist of people who have direct or indirect influence on the making of nuclear and strategic security policy, including civilian and military leaders, and other practitioners, scholars, and analysts. Within individual countries, the mainstream view of the nuclear policy community usually reflects a country's overall consensus on nuclear issues, the underlying strategic rationale, and the trajectory of future policy development.

In the Cold War, so-called epistemic communities, developed within and then between the Soviet Union and the West, played a critical role in creating the intellectual capital to manage and ameliorate the nuclear risks of that era.¹ In more

1 Emanuel Adler, "The Emergence of Cooperation: National Epistemic Communities and the International Evolution of the Idea of Nuclear Arms Control," *International Organization* 46, no. 1 (1992), p101-145. Accessed May 7, 2020. <https://doi.org/10.1017/S0020818300001466>.

recent times, such communities have also emerged between Chinese and Western nuclear experts.²

Today, however, these epistemic communities are eroding. There is a risk that they will finally come to a breaking point—decoupling. This occurs when the nuclear policy communities in different countries no longer access the same information, share the same understanding of relevant facts, and hold the same common goals.

So far, this decoupling is incomplete. But it has taken its toll. Information barriers and centrally controlled media narratives in some societies have effectively created echo chambers that receive external information selectively and reject alternative perspectives. With intensified great power competition, the dominant narrative within such societies becomes increasingly self-absorbed on one hand and critical toward perceived rivals on the other. Widespread misinformation and disinformation further exacerbate this trend. They are skewing the general public's understanding of the policy and strategic intentions of strategic rivals. Their ultimate impact on the general trust between such countries is not yet fully understood. Because they too are members of the general public, members of the nuclear policy community in such countries appear no less susceptible to this impact. They appear to be increasingly inclined to interpret the strategic intentions of the nuclear policy developments of strategic rivals with deepening suspicion and anxiety.

Moreover, great power competition reinforces self-righteousness and confrontational sentiment in the public narratives in some (if not all) societies, discouraging voices that seek to introduce a more balanced understanding of enemies' policy goals. The growing sense of external threat also reinforces bureaucratic secrecy, including in nuclear and other security policy sectors, which exacerbates the preexisting compartmentalization of domestic stakeholders and hampers free and thorough internal policy debate and deliberation. More secrecy makes international exchange among the nuclear policy communities in relevant countries much harder as well by creating more bureaucratic barriers for conducting meetings and travel, and for organizing workshops and conferences. When nuclear experts from one country have little idea about what their counterparts in other countries are seeing, discussing, and debating through new virtual hubs of information-sharing (such as Twitter)—and they face growing challenges to meet in person and keep in touch with their foreign counterparts in the physical world—it is no surprise that these expert communities develop increasingly divergent perceptions, making their occasional communications with each other less effective.

This decoupling of nuclear policy communities has negative consequences, all of which could intensify nuclear risks. Today, nuclear experts from the main powers have less common understanding about elements of each other's nuclear capabilities, programs, and future trajectories. This problem has been aggravated by the broad

2 Tong Zhao, "Trust-Building in the U.S.-Chinese Nuclear Relationship: Impact of Operational-Level Engagement," Ph.D. dissertation, Sam Nunn School of International Affairs at the Georgia Institute of Technology (2014).

dispersion of serious misinformation/disinformation about other countries' weapons of mass destruction (WMD) programs. Accordingly, there is less trust and joint support for universal norms and rules. Instead, the mainstream views within some expert communities lean increasingly toward power politics thinking, cynicism about international institutions, and dismissiveness toward cooperative security. In addition, there is less shared appreciation of independent research as a useful tool to deepen mutual understanding. Instead, analysts face stronger domestic incentives to prioritize their political standpoints over scholarly standards.

Halting and reversing this trend is an essential first step for establishing a cooperative approach to nuclear risk reduction among NWS communities. NWS should separately and together take steps to preserve and strengthen the international nuclear epistemic community, and thereby prevent the nuclear policy communities in these five countries from decoupling from each other.

One such step would be to agree to ensure direct, in-depth, and continuing interactions among the U.S., Russian, and Chinese nuclear policy communities. To bring in the British and French nuclear policy communities as well could be useful to mitigate animosity and foster a sense of multilateral community among the five most influential powers in international security affairs. Such interactions should have the following goals: to promote a joint epistemic community, with a sense of a shared interest and common objective in containing nuclear risks; to break the echo chambers around national policy groups; to develop nuanced and sophisticated understanding about the other's nuclear policies and to also introduce one's own domestic nuclear policy debates (at the unclassified level) to other NWS; to expose each other to different perspectives; to create conditions for self-reflection and for building empathy; to develop interpersonal trust, which could help contain worst-case scenario thinking about the intention of other NWS; and to cultivate appreciation, openness, and transparency.

One very simple step would be to allow and encourage communities in each NWS to come together and set up a joint online forum to facilitate regular and in-depth exchanges via the internet. Existing social media platforms such as Twitter, Facebook, WeChat, or VK would not work, as they are not accessible or user-friendly to all. Rather, a basic bulletin board system (BBS) or even a simple email listserv could be very useful to bridge the existing engagement gap. The goal would be to provide an unclassified, transparent, free, and easily accessible forum open to all interested nuclear policy analysts and experts from the five NWS participating in their personal capacities. This would allow them to share news in this field, share new research, offer personal opinion/reactions to new policy developments, jointly examine new problems, debate lessons from historical precedents, debunk false claims, clarify misinformation and inaccurate readings of policy, and propose and debate new policy solutions. Government officials—including policy makers and practitioners—would be welcome to participate to the extent they feel comfortable; they also have the option to remain quiet observers of such exchanges.

This type of regular, broad, and comprehensive engagement would be very useful to supplement the increasingly rare small-scale physical meetings among what is often a small selection of certain members of the separate nuclear communities. Although it probably would not have an immediate policy impact, the long-term impact of this initiative in forging a less confrontational mindset in these countries to address common nuclear risks could be more significant than engagement measures that occur occasionally and focus on isolated policy issues.

Frame Principles for Cooperative Nuclear Risk Reduction

The resurgence of power politics thinking in the major powers is the most fundamental driver of the increasing risk of a nuclear arms race. This thinking drives the interest in acquiring better strategic capabilities. Moreover, in the process of this intensifying arms competition, countries also tend to ignore issues that potentially lead to a higher risk of nuclear use. As noted above, the spread of such thinking in some countries' nuclear policy communities has a broad societal impact and can only be mitigated by serious and long-term engagement, along with other efforts. That said, it is also true that in some countries with centralized political systems, top leadership's personal endorsement and promotion of power politics thinking has led to an even more widespread and deeper embrace of such thinking throughout the bureaucratic system and the general public—much more significantly than any other factors.

In some NWS, the expert community that studies arms control issues has little incentive to propose arms control and other cooperative security measures, because such proposals are unpopular in bureaucratic systems that believe the accumulation of hard power is more effective than anything else in defending national security. However, members of such expert communities are usually scattered across different places and organizations within the bureaucracy and only constitute a small voice in their respective home organizations such as various defense industries, military institutes, and civilian government agencies. Even if some arms control experts seek to promote cooperative security policies, they can hardly get such proposals endorsed by their own organizations, let alone to be passed on and considered at higher levels. In such cases, the bureaucratic obstacles for endorsing cooperative nuclear risk reduction measures can only be effectively overcome if the top national leadership shows interest. In some countries, top-level endorsement is essential for creating domestic conditions to carry out an effective policy debate within the bureaucracy on cooperative security issues.

Therefore, there is a need for the leaders of the five NWS to officially and explicitly endorse a set of principles to guide joint efforts to tackle nuclear risks. Such principles would generate a “demand signal” within governments for such thinking and help to sweep aside bureaucratic and political barriers to strategic innovation.

First and most importantly, leaders should endorse the principle of cooperative security. Doing so would highlight the fact that some common threats, and nuclear

risks in particular, cannot be addressed through military competition and power struggles and can only be effectively contained through international cooperation.

A summit of the five permanent members of the United Nations Security Council (the P5)—first proposed by President Putin and then supported by President Trump—would be an excellent opportunity for the five national leaders to discuss and make such a commitment. The time is right for doing so, especially in light of the coronavirus pandemic. The deep economic crisis and desperate demand by the general public for greater investments in public health care that has arisen from this emergency require the P5 to make the right choice at a critical moment of human history. Faced with a new reality, these leaders can and should set the major powers on a course of cooperation to prevent a costly and dangerous nuclear arms race with higher risk of nuclear conflict. To pursue cooperative security, including through arms control measures, might have been viewed by some as a choice before, but should be seen by all as a necessity today.

In addition to pursuing cooperative security, the P5 leaders need to show public endorsement of the principle of transparency, at least in nuclear security issues, if not more broadly in other areas of interstate relations. The culture of secrecy in some countries has stood in the way of achieving effective confidence-building and cooperative security for too long, despite the widely accepted wisdom that transparency enhances mutual security. To keep a high level of nuclear secrecy would defeat any effort to enhance the predictability of each other's nuclear capability development trajectories, as well as to offer reassurances of strategic intention. Unneeded secrecy also obstructs the needed substantive discussion of effective crisis management and joint nuclear risk reduction. The bureaucratic culture and inertia of nuclear secrecy in centralized political systems can be best mitigated by a good appreciation of its risks and public commitments by top leadership to change these dynamics.

In practice, the process of improving nuclear transparency needs to be incremental. But initial steps can and should include a basic level of transparency that sheds light on the rough size and types of nuclear weapons, the nature of nuclear weapon launchers (nuclear-only or nuclear/conventional dual-capable), and the plan of arsenal change for the next five or 10 years that may include both nuclear weapons and certain types of missile defense interceptors. A discussion and public endorsement of the general principle of nuclear transparency by the five NWS leaders could help promote domestic discussions on such issues and start an international process of substantive engagement.

Address Areas of Concern about Future Strategic Military Balances

Improved NWS cooperation for nuclear risk reduction will not be possible without overcoming a few key issues of areas of concern and disagreement about future strategic military balances. China and Russia both have a deep concern about U.S. commitment to strategic stability/mutual vulnerability in general and U.S. missile

defense specifically, which they are likely to continue to prioritize absent some new understanding addressing their core concerns.

China is also highly motivated to see all NWS adopt the no first use (NFU) policy as a demonstration of rejecting a preemptive nuclear strike doctrine. Adoption of mutual NFU by the five NWS would be a necessary step toward reducing the salience of nuclear weapons and thus reducing nuclear risks; it would also constitute a necessary step of implementing the incremental nuclear disarmament approach which NWS prefer over the prohibition approach promoted by supporters of the Treaty on the Prohibition of Nuclear Weapons. In this sense, NWS would be well served to prove the viability of the incremental disarmament approach by giving NFU a more serious consideration.

To move things forward, the five NWS should start a dialogue on how to create necessary conditions to endorse mutual vulnerability and NFU with each other. Practical obstacles for some NWS to explicitly commit to mutual vulnerability and NFU exist and need to be addressed. For example, some U.S. allies strongly oppose such commitments by the United States because they worry about the lack of effective means to stop Chinese or Russian conventional blitzes that could create *fait accompli* over disputed territories. Thus, a constructive approach would involve Washington, London, and Paris expressing interest in explicitly endorsing mutual vulnerability and NFU, in exchange for Beijing and Moscow expressing a willingness to regulate their conventional military capabilities or postures in relevant regions in ways that reduce concerns of the United States and its allies. The specific give and take between the two sides would require long and sophisticated negotiations, but a joint acknowledgement of the nuclear-conventional linkage underlying the issues of mutual vulnerability and NFU may help move these countries toward reaching a shared and balanced principle to guide their resolution. Even if agreement proves impossible, the dialogue can help build understanding and an element of trust.

As an agreement on mutual vulnerability and NFU could take a very long time to accomplish, an interim confidence-building measure could be useful. The five NWS could make a joint political pledge on no first attack on each other's nuclear forces. They could choose to limit the scope of this promise to nuclear attack only; or, better still, they could broaden it to include both nuclear and non-nuclear means of attack. Such an interim step could help to address Chinese and Russian concerns with the possibility of U.S. preemptive strike on their nuclear forces while also leaving enough military flexibility for the United States, the United Kingdom, and France to respond quickly with all necessary means to conventional aggression against themselves and their allies.

Missile defense is another long-standing obstacle for nuclear risk reduction cooperation among NWS and provides the most important external incentive for Chinese and Russian nuclear investments. One way to prevent the competition between offensive and defensive weapons from further fueling an arms race is for NWS to go beyond the U.S.-Russian bilateral acknowledgement of the

“interrelationship between strategic offensive arms and strategic defensive arms” in the preamble of the New START Treaty. They could start a process of jointly examining the feasibility of a new arms control framework that puts certain types of missiles and missile defense systems under some form of central limit mechanism. The benefit of a central limit mechanism would be in addressing Chinese and Russian concerns about an unlimited U.S. missile defense buildup. It could also ensure the needed flexibility for countries to decide how they would like to mix their offensive and defensive capabilities, according to a negotiated exchange ratio between the two types of weapons. It would also address Western concerns about Chinese and Russian offensive capabilities. The specifics, such as the types of weapons to be covered, the exchange ratio(s), and how to address the capability asymmetry among states, should be thoroughly examined and debated at the expert level, which would be a time-consuming process. What is required of the political leaders now is a public acknowledgement of the practical need to consider offensive and defensive weapons together in an integrated framework. This would provide critical political support for starting expert-level talks and studies.

Leaders of the NWS also need to explicitly acknowledge the linkage between missile defense and regional proliferation threats. In East Asia, for example, there are complex linkages among the long-range missile strike systems of many countries, uneven access to missile defense, and significant questions about a potential “nuclear tipping point” and a potential “proliferation cascade” in the region. How seriously Japan and South Korea might consider their own nuclear capabilities in the future is partly dependent on their confidence over the missile defense capabilities of their own and of the United States. So far, disagreements among the major powers over missile defense has undermined their willingness and capability to fully cooperate to prevent North Korea from becoming a permanent nuclear-armed state. It is time to address these two issues together. Leaders from the United States, Russia, and China should support experts from their countries to jointly examine the technical feasibility for the United States and its allies to deploy a set of missile defense systems that can protect against North Korea’s nuclear capabilities, as well as minimize the impact on Chinese and Russian nuclear deterrents. This study is likely to reveal important insights into the practical challenges of meeting both goals at the same time. Such insight, in and of itself, can help keep things in perspective and curtail worst-case scenario thinking against each other’s strategic intentions.

Elevate and Deepen Existing Dialogues

The absence of formal dialogue mechanisms for concerted NWS cooperation on nuclear risk reduction does not mean that they have not found other opportunities, albeit unstructured for this purpose, to discuss topics related to risk reduction. These could usefully be elevated—that is, brought to a high level of political and/or military leadership and sustained over time. They could also be deepened with new mandates and needed expertise. Think of this as low-hanging fruit.

For example, there are already indications from China, Russia, and the United States of a desire to come to a better mutual understanding of the impact of new technologies on nuclear systems and nuclear stability. Occasional unofficial dialogues at the Track 2 and 1.5 levels have sometimes touched on these issues. In addition to ongoing initial exploration in establishing potential political norms of no cyber interference with nuclear command and control systems, NWS need to more systematically examine the entanglement between nuclear and non-nuclear systems and the implications of this entanglement.³ For example, nuclear-conventional dual-capable missile systems are being built and deployed in large numbers in some countries (most likely as a result of pursuing military flexibility) without sufficient attention being paid to their potential impact on causing misunderstanding and inadvertent escalation. As the competition over hypersonic missiles intensifies, the five NWS need to jointly examine how the development and deployment of dual-capable hypersonic missiles could affect escalation dynamics, before they procure such capabilities. A useful next step would be to discuss these issues at the official level and implement concrete measures—whether unilateral, bilateral, trilateral, or multilateral—to address potential risk.

Take another example: the ongoing discussion of nuclear doctrine within the P5 process. This could usefully be broadened to include a discussion of views of the likely sources and pathways of conflict escalation. For instance, recent research has shown that Chinese experts tend to dismiss the risk of a conventional conflict escalating to the nuclear level but believe that once the nuclear threshold is crossed an all-out nuclear war would be almost inevitable. In contrast, American strategists tend to think that there are realistic pathways for a major conventional conflict to escalate into a nuclear war but there are also opportunities to manage a limited nuclear war and prevent further escalation.⁴ The P5 setting would be useful for NWS to share perspectives and historical experiences of escalation risks. A better understanding of each other's views would encourage self-reflection on one's own policy thinking and raise interest in future discussions on reducing escalation risks.

NWS also find ways to talk about the conflicts that might erupt between them, usually in something akin to a dialogue of the deaf. But with a possible rise in the likelihood of such conflicts in an era of intensifying competition and hostility, potential military flashpoints become much more important subjects of discussion. The fact that such conflicts might bring two or more nuclear-armed adversaries to difficult choices about conceding or using nuclear weapons should also concentrate leadership thinking and attention. NWS would be well served by paying more attention to adopting conflict prevention and escalation management measures at the regional level including around the First Island Chain where military tensions over the Taiwan

3 James M. Acton, "Escalation through Entanglement: How the Vulnerability of Command-and-Control Systems Raises the Risks of an Inadvertent Nuclear War," *International Security* 43, no. 1 (2018), p56-99.

4 Fiona S. Cunningham and M. Taylor Fravel, "Dangerous Confidence? Chinese Views on Nuclear Escalation," *International Security* 44, no. 2 (2019), p61-109.

Strait and South China Sea persist and may arise in the future. Between the United States and China, this is the place where a future conflict is most likely to start. Other NWS also claim to have important stakes in this region.

In this case, these countries' tactical/regional nuclear forces would play a more direct role than their long-range strategic nuclear forces in affecting the potential escalation of a regional conflict. Yet much less is known about those forces and the thinking that might guide their use, a fact that only fuels mutual suspicion. These ambiguities and suspicions include debates about why the United States seems to have re-emphasized low-yield tactical nuclear weapons, the role of Russian tactical nuclear weapons in the alleged escalate-to-deescalate strategy, and the employment scenarios of China's increasingly advanced theater-range nuclear missiles. Given the growing need to prevent and manage regional conflicts in the nuclear shadow, it would make sense for NWS to devote more effort to clarifying the existing ambiguities and mutual suspicions over each other's tactical/regional nuclear forces. Such dialogues can take place as part of the existing nuclear doctrine exchange within the P5 process.

Better still, experts from these countries can use open source data and modeling tools to jointly study the humanitarian and environmental consequences of various scales of nuclear exchanges in the Asia Pacific region. They can heed the suggestion of George Perkovich to examine the applicability of the law of armed conflict to their nuclear postures at the regional level.⁵ Such exercises can provide a reality check on how nuclear wars should not be fought, help rule out the most dangerous elements in their nuclear planning, and thus contribute to nuclear risk reduction.

Conclusion

In sum, at a time of intensifying major power rivalry, it is both necessary and possible for the five NWS to take constructive action to manage and mitigate nuclear risks, and even to eliminate some. They should find it relatively easy to pluck some low-hanging fruit by expanding existing dialogues for new purposes and by renewing a robust discourse among their nuclear policy communities. They would find it more difficult but also more rewarding to tackle in a more practical and constructive way the concerns and disagreements each has about developments in the strategic military postures of another. All of these efforts could be reinforced and accelerated by a top-down P5 elaboration of an agreed set of principles for the cooperative pursuit of nuclear risk reduction. This would have the added benefit of engaging a much larger community of other states and other actors interested in reducing nuclear dangers.

⁵ George Perkovich, "Toward Accountable Nuclear Deterrents: How Much Is Too Much?" Carnegie Endowment for International Peace (2020). Accessed May 7, 2020. <https://carnegieendowment.org/2020/02/11/toward-accountable-nuclear-deterrents-how-much-is-too-much-pub-80987>.

Reducing Global Nuclear Risk: A Strategy for Cooperative Engagement

Lewis A. Dunn

The COVID-19 pandemic dominates today's global security agenda. It has driven into the background concerns that a clash of nuclear-armed states could culminate in the first use of nuclear weapons in nearly 75 years. That risk persists, though it is uncertain how it will be impacted, for better or worse, by shifting national priorities and inter-state relationships once the world comes out of the COVID-19 tunnel. Equally important, the lack of preparations for a global pandemic despite repeated expert warnings is a strong reminder that even if the risk of use of nuclear weapons is less than sometimes feared, it is essential to act now to reduce that risk to an absolute minimum. Should nuclear weapons be used, the consequences of failing to do so almost certainly would be even more catastrophic than COVID-19.⁶

This short essay first sketches possible pathways to the use of nuclear weapons in today's world of great power competition and regional rivalries.⁷ It then sets out a strategy for cooperative engagement to reduce nuclear risks comprised of three mutually-reinforcing elements: bilateral engagement between the United States and Russia and the United States and China; broadening and transforming the so-called P5 process involving China, France, the United Kingdom, the United States, and Russia; and a new dialogue among the declared and acknowledged nuclear-armed states to develop a Code of Nuclear Responsibilities. The constraints for action vary across these elements. Nonetheless, there also are important opportunities that should be pursued once COVID-19 restrictions on face-to-face interaction are eased. Even before then, time could usefully be spent on “doing the homework” on specific initiatives, both by individual governments and by “virtual” engagement.⁸

Pathways to Use of Nuclear Weapons

During the Cold War, both the United States and the Soviet Union prepared for a “bolt from the blue” all-out nuclear attack by the other. As late as November 1983, the U.S./NATO Able Archer exercise raised significant concerns among the political and military leadership of the Soviet Union that the United States was preparing to carry

6 I would like to thank Brad Roberts for very helpful suggestions on an earlier draft of this essay.

7 Throughout this essay, “use of nuclear weapons” means an actual detonation of a nuclear weapon, whether by intention or accident. The author acknowledges that on a day-to-day basis nuclear weapons are “used” as instruments of deterrence by nuclear-armed states.

8 With its focus on cooperative engagement, this paper intentionally sets aside one additional and important U.S. approach for reducing the risk of use of nuclear weapons arising out of a clash with Russia, China, or North Korea: ensuring a robust deterrence posture, comprising both conventional and nuclear capabilities. That said, particularly for Russia and China, it is equally important to pursue the types of cooperative nuclear risk reduction approaches explored in this essay, including to help reduce risks inherent in relying on deterrence.

out a nuclear first strike under the guise of an exercise in Europe. By contrast, the only credible pathway today to use of nuclear weapons between the United States and Russia or the United States and China is through a process of escalation during and from a conventional conflict.⁹ That process of escalation would entail calculated decisions based on assessments of the benefits and risks of military action, including ultimately use of nuclear weapons. However, those decisions would be made in the context of mutual perceptions and misperceptions, and could well be driven by some combination of misinterpretation, miscalculation, and/or military incidents and accidents. A comparable set of factors provides a credible route to the use of nuclear weapons in an escalating conflict between India and Pakistan.

Mutual perceptions or misperceptions of hostile intentions, capabilities, and doctrines provide the overall context in which adversary actions would be interpreted and responses initiated in the midst of a crisis or conventional conflict. At one level, Washington is concerned that both Moscow and Beijing may be prepared to use military force to overturn the existing regional status quos in Europe and Asia; Moscow and Beijing are concerned that Washington's ultimate objective is pursuit of "color revolutions" to bring down their existing regimes. At a different level, both Moscow and Beijing have convinced themselves that the ultimate purpose of sustained U.S. investments in missile defense will be to negate each country's nuclear deterrent—notwithstanding repeated U.S. initiatives to reassure both countries. Conversely, U.S. defense officials and experts believe that Russian nuclear doctrine includes a readiness for limited first use of nuclear weapons to achieve its objectives in an escalating conflict on its peripheries—despite repeated denials by Russian officials and experts and skepticism among some European defense experts. In South Asia, Pakistan's leadership remains convinced that their Indian counterparts have yet to accept Pakistan's existence as an independent state; India's leadership believes that Pakistan is prepared to use non-state actors to destabilize the Indian state.

Misinterpretation of the intent of adversary actions would be a more immediate driver of continuing escalation of a conventional conflict toward use of nuclear weapons. In particular, actions seen respectively by the United States or Russia, or the United States or China as prudent increases in readiness or as means to signal resolve could be wrongly interpreted by the other as preparations for major escalation. Redeployments of conventional military units, stepped up cyber intrusions, and changes to the orbits of possible space-based ASAT systems would be possible examples. Still other actions might be regarded by one country as a necessary use of conventional military capabilities to prosecute an ongoing conventional conflict but could be interpreted by the other side as intended to degrade its nuclear deterrent. Here, possible examples would be U.S. conventional strikes against Chinese bases

9 This judgment that for U.S./NATO-Russia, U.S.-China, or India-Pakistan the route to nuclear use also runs through a conventional conflict was one of the main findings of the recent February 19-20, 2020 workshop on "Nuclear Risk Reduction in an Era of Major Power Rivalry" workshop organized by the Center for Global Security Research at Lawrence Livermore National Laboratory.

containing both conventional and nuclear-tipped missiles and Chinese strikes against U.S. dual-use communication satellites. Another example would be either Russian or Pakistani deployments of theater-nuclear capabilities that could be interpreted as a precursor to a limited use of nuclear weapons.

Particularly in the context of escalation in a U.S.-Russia or U.S.-China conventional conflict, one additional factor could well increase the risk of misinterpretation. Such a future conflict almost certainly will entail actions in the cyber and space domains. But in these domains a past pattern or record that can be used to assess the “meaning” of specific actions—and to evaluate the continuing impacts in an ongoing conflict—is likely to be limited or lacking.

Closely related, *miscalculation* of the risks of specific military actions—including especially how the opposing country would respond—could readily reinforce a process of escalation, make it more difficult to control that process, and increase the risk that the nuclear threshold would be reached if not crossed. For example, rather than responding within the space domain to a Chinese attack against U.S. communication satellites that also have a nuclear role, the United States could use limited conventional strikes or anti-submarine operations against a component of China’s nuclear deterrent. The purpose would be to send a signal of “don’t do it again.” But China could respond by even more intense cyber and space attacks, now directly targeting U.S. nuclear command and control infrastructure. Or given uncertainty about Pakistan’s “red lines,” Indian leaders and military planners could misjudge at what point a conventional military strike into Pakistani territory (made in response to a terrorist attack in India traced back to Pakistan) would trigger nuclear use on the battlefield as threatened by Pakistan. Conversely, Pakistan’s military leadership could miscalculate the response to such use by Indian leaders and military planners. Rather than ceasing military operations, India could decide to escalate decisively, including given an assessment of the risks of failing to do so. In addition, Russia could seek to selectively use nuclear weapons in a U.S./NATO conventional conflict to achieve a decisive military advantage and favorable political result; the United States could respond with its own selective use of nuclear weapons. Both could prove wrong in their calculation that limited use of nuclear weapons would not spiral out of control.

Military incidents and accidents comprise a final factor that could drive a process of escalation. At least in a crisis or early stages of a conventional clash, an accident or unintended encounter among U.S., Russian, or Chinese military units could occur, worsening that crisis or military clash. In turn, frequent attention focuses on an accidental detonation of a nuclear weapon or loss of control. For their part, the NPT-recognized nuclear-armed states have repeatedly affirmed that this risk is extremely low, given past and ongoing investments to prevent an accidental detonation or loss of control. That judgment assumes continuing and effective efforts—and no surprises. Greater concern may well be justified, however, in the case of Pakistan and India, particularly in the event of Pakistan’s deployment of battlefield nuclear weapons in the midst of conventional conflict. In turn, the more unsettled domestic political-

social environment in Pakistan could make a breakdown of control more possible. Very differently, the United States and Russia—but also China as it moves to deploy both sea-based nuclear forces and a space-based early warning system—all may be vulnerable to the cyber hacking of nuclear command and control systems by third parties. The impact is uncertain but the possibility reinforces concern about the role of incidents and accidents in influencing decisions about escalation.

The relative importance of each of these potential drivers is difficult to gauge. Readers are likely to evaluate their significance differently, and may propose different examples. In a future conventional conflict between the United States and Russia, the United States and China, or India and Pakistan, there also would be important brakes on escalation toward and across the nuclear threshold, including concerns that any use of nuclear weapons would prove uncontrollable and that the outcome would be worse than losing. Nonetheless, taken together, this potential combination of mutual perceptions and misperceptions, misinterpretations, miscalculation, and military accidents/incidents justifies significant concerns about the risk of use of nuclear weapons—and calls for pursuit of cooperative measures to minimize that risk.

Bilateral Engagement between the United States and Russia and the United States and China

Bilateral engagement between the United States and Russia and the United States and China respectively would be the preferred approach to reduce the risk of use of nuclear weapons arising out of a U.S./NATO-Russia or a U.S.-China military conflict.¹⁰ The starting point would be to restore sustained, substantive, and high-level dialogue (including participation by defense officials and military personnel) between Washington and Moscow and to ensure comparable dialogue between Washington and Beijing. Taking these steps, however, would require on one hand a shift of U.S. posture vis-à-vis Russia. On the other hand, it would require greater readiness to engage in such a dialogue by China. It also would presuppose recognition by all three countries that such bilateral engagement would serve their mutual interests in reducing the risks of conflict, including nuclear risks.

U.S. sanctions put in place after Russia's annexation of Crimea, including within the National Defense Authorization Act (NDAA), have constrained U.S.-Russian military-to-military engagement. More than five years after Russia's action, it is time to strike a different balance between making the point of U.S. opposition to Russian annexation of Crimea and leveraging military participation in restored U.S.-Russia bilateral engagement. This would reduce risks of military crisis, conflict, and escalation toward the nuclear threshold. As with the decades-long U.S. opposition to the Soviet annexation of Estonia, Lithuania, and Latvia in 1940, U.S. policy should continue not

¹⁰ This discussion focuses on direct bilateral engagement between the United States and Russia to reduce nuclear risks. It sets aside engagement between the United States and its NATO allies and Russia within the NATO-Russia Council. Focused on many of the specific agenda items described here for U.S.-Russia engagement, however, a revitalized Council could reinforce and complement direct engagement between Washington and Moscow.

to recognize Russia's claim to Crimea but also recognize the realities of the need to reengage Russian military personnel. But if Congressional approval to lift restraints on such engagement cannot be won, the waiver authority granted to the Secretary of Defense in coordination with the Secretary of State (which is built into the NDAA legislation) should be exercised.

Quite differently, the primary constraint on sustained and in-depth U.S.-China political, defense, and military engagement has been China's reluctance to engage at the official level on the full set of military-strategic issues dividing the two countries. It has proved difficult to build upon limited military-to-military contacts and strategic dialogue. Track 1.5 and Track 2 exchanges occurred for most of the past decade but, particularly from an American perspective, were never an adequate substitute for official engagement. Those exchanges have largely been suspended, partly due to China and partly due to the United States.

Assuming these constraints can be overcome, the agenda for bilateral exchanges to reduce the risk of nuclear use is a very robust one. An exchange of views on how a bilateral crisis could come about, turn into a conventional conflict, and then escalate, including toward the nuclear threshold, would be one place to begin either a U.S.-Russia or U.S.-China risk reduction dialogue. As already suggested, preventing escalation in a conventional military conflict is essential to nuclear risk reduction because such a conflict almost certainly would be the birthplace of the use of nuclear weapons. In particular, such a discussion should focus on possible *misperceptions* and *miscalculations* linked to specific actions by the other side. Taking into account the sensitivity of the subject, nuclear-related red lines and thinking about the conditions under which the use of nuclear weapons could be considered could be explored. By way of example, all three countries have stated or implied, albeit in different ways, that the use of nuclear weapons would be a last resort, to be considered only in extremis. But how do they define that situation?

These exchanges would help to provide windows into each other's thinking, clarify misperceptions and faulty assumptions, and thereby lessen the likelihood of unilateral missteps. In addition, this discussion would aim to identify mutual actions to lessen the risk of conflict escalation. Specific actions could take the shape of undertakings by the United States and Russia and the United States and China regarding the deployment, posturing, and use of conventional military capabilities in a crisis or conflict (for example, from peacetime measures to alleviate potential structural sources of misperception and miscalculation to avoiding those actions identified by the discussions as most likely to be misinterpreted in a crisis or escalating conflict). Other commitments could focus on the use of space and cyber capabilities (for example, no cyber or anti-satellite weapon attacks in a crisis or conventional conflict against space-based nuclear command and control communication satellites). Actions also could involve mutual affirmations of restraint regarding the purpose, posturing, and use of nuclear weapons (for example, from restraint in nuclear rhetoric to statements by the United States and Russia and

the United States and China that in their mutual relationships the only purpose of nuclear weapons is for deterrence).

Turning to *reducing the risk of military incidents or accidents* involving the United States and Russia that could trigger or then drive the process of escalation, the two countries should use this type of restored defense/military dialogue to revisit, revise, and reaffirm the crisis avoidance and conflict management agreements reached by the United States and the Soviet Union in the early 1970s. These agreements include the 1971 Agreement on Measures to Reduce the Risk of Outbreak of Nuclear War Between the United States of America and the Union of Soviet Socialist Republics (Accidents Measures Agreement), the 1972 Agreement Between the Government of the United States of America and the Government of the Union of Soviet Socialist Republics on the Prevention of Incidents On and Over the High Seas (Incidents at Sea Agreement), and the 1973 Agreement Between the United States of America and the Union of Soviet Socialist Republics on the Prevention of Nuclear War (Preventing Nuclear War Agreement). These agreements rested in turn on the decision after the Cuban Missile Crisis to put in a “hot line” between Washington and Moscow, a communications link periodically upgraded over the ensuing decades.

Substantively, a reaffirmed and updated Accidents Measures Agreement could be a starting point for cooperative actions to reduce the risk of cyber threats by third parties to either country’s nuclear command and control architecture. In turn, an updated and reaffirmed Incidents at Sea Agreement, like its original, could help constrain today’s U.S.-Russian naval encounters that once again are a dangerous feature of interaction between the two countries’ naval forces. Reaffirming both agreements as well as the Preventing Nuclear War Agreement also would be a political signal of Russian and U.S. intentions. The adequacy of existing crisis communications mechanisms could also be assessed.

As for the U.S.-China dimension, Beijing could be invited to participate in U.S.-Russian discussions of these Cold War crisis avoidance and conflict management agreements to contribute ideas on how they might be updated, and to associate itself with any reaffirmation by the United States and Russia, including (conceivably) in new trilateral agreements. Short of such Chinese engagement, bilateral defense/military engagement would provide a forum to evaluate mutual implementation of existing U.S.-China agreements on crisis communications and avoiding military incidents as well as to explore further steps to avoid military incidents.

Going beyond the above confines of a more robust official dialogue on nuclear risk reduction, the two countries’ presidents should reaffirm the declaration first made jointly by President Ronald Reagan and General Secretary Mikhail Gorbachev in November 1985 that “*a nuclear war cannot be won and must never be fought.*” Though a Cold War statement, many of the conditions that led to it are strikingly similar with today’s world: great mutual suspicion between Washington and Moscow, a breaking down of the bilateral arms control process, significant risk of military confrontation if not conflict that could escalate, and a seeming inability to find a way

forward to manage risks and improve the U.S.-Russia political-military relationship. Thus, reaffirmation would be another important signal of mutual intent to reduce nuclear risks. Equally important, that reaffirmation would provide leadership guidance to both countries' bureaucracies as well as a context for the more focused bilateral conventional conflict and nuclear risk reduction efforts set out above. In turn, these latter-focused efforts would be the essential means to ensure that reaffirmation of the Reagan-Gorbachev principle was not simply a rhetorical slogan, but an energizing step to specific actions.

As for China, it could be encouraged to join the United States and Russia in affirming that a nuclear war cannot be won and must never be fought.¹¹ Chinese leaders could be prepared to do so, given China's earlier efforts within the so-called P5 process to gain agreement on a joint affirmation of the Reagan-Gorbachev principle by China, France, the United Kingdom, Russia, and the United States. Nonetheless, it also should be expected that Chinese officials would call attention to China's longstanding declaration that it will not use nuclear weapons first and quite possibly propose that the United States join China to make a *mutual U.S.-China no first use of nuclear weapons pledge*.

In the past, U.S. officials have rejected Chinese calls to adopt a blanket no first use of nuclear weapons declaration applicable to all countries. That rejection reflected a mix of alliance considerations in Asia, a desire to retain some ambiguity about whether the United States ever would use nuclear weapons first, and not least, skepticism about such declaratory policies and their actual impact. For similar reasons, there almost certainly would be great reluctance to join China in a more limited mutual no first use of nuclear weapons declarations. But the time has come to reassess that reluctance and to consider seriously whether to pursue a mutual China-U.S. no-first-use pledge—particularly because it is extremely difficult to envisage an American first use of nuclear weapons against China.

Specifically, a *mutual no first use declaration* would be a strong signal of U.S. and Chinese interest in controlling escalation in any conventional conflict and ensuring that such a conflict does not approach or cross the nuclear threshold. Chinese participants in U.S.-China Track 1.5 and 2 dialogues also have repeatedly stated that a U.S. no first use of nuclear weapons declaration would be the most important step that the United States could take to reassure China regarding U.S. strategic intentions.¹² Nor should a mutual no-first-use statement be dismissed simply as rhetoric. The intensity with which Chinese officials defend its no first use policy, the policy's stated and evident impact on China's posture (for example, de-mating of nuclear warheads and land-based missiles), and the periodic debates within the Chinese defense/nuclear establishment about changing that policy all evidence

11 This possibility of a trilateral affirmation of the Reagan-Gorbachev principle was first suggested by former Secretary of State George Shultz, former Secretary of Defense William Perry, and former Senator Sam Nunn. See George P. Shultz, William J. Perry, and Sam Nunn, "The Threat of Nuclear War Is Still With Us," *The Wall Street Journal* (April 10, 2019).

12 This statement reflects the author's participation in such meetings over the past decade.

that China's no first use of nuclear weapons doctrine shapes and constrains its nuclear posture, operations, and decision-making. The very process of reaching U.S.-China agreement on a mutual no first use declaration, moreover, would provide opportunities for U.S. officials to probe the practical impacts of no-first-use and generally open windows into Chinese thinking about nuclear weapons. In addition, a mutual no first use posture could be particularly timely in light of China's decision to deploy nuclear-armed missiles on submarines and its development of a space-based early warning system. Both of these developments could generate pressures for operational changes that would reverse China's historic go-slow approach to nuclear decision-making, with uncertain implications for escalation.

As for U.S. alliance considerations, the more limited scope of a mutual U.S.-China no first use agreement could somewhat dampen Japanese opposition to the extent that those Japanese concerns are based on deterrence of North Korea. Regarding specifically the U.S.-Japan-China triangle, there also are other U.S. means of reassurance to Tokyo vis-à-vis Beijing. Successful deterrence of Chinese Gray Zone and conventional military activities, moreover, depends on a comprehensive and robust mix of U.S. and allies' gray zone and conventional military means¹³—and not on the threat of a first use of nuclear weapons. In the final analysis, no less than the United States and China, moreover, Japan has a significant interest in measures that would reduce the risk that a conventional clash between the United States and China would escalate across the nuclear threshold.

What about Bilateral Engagement between India and Pakistan? The initial discussion of drivers of escalation to use of nuclear weapons highlighted reasons for concern about nuclear risks in South Asia. In principle, bilateral engagement between India and Pakistan could be encouraged to help reduce those risks. India and Pakistan have indeed agreed in the past to some confidence-building measures. Moreover, experts have identified possible new initiatives for nuclear risk reduction measures for that region.¹⁴ In practice, however, India and Pakistan have only sporadically and desultorily implemented previously agreed confidence-building measures. Leaders and officials have repeatedly proved unreceptive to new initiatives, instead believing that the risk of a nuclear conflict in South Asia is either exaggerated by outsiders or readily manageable. For both reasons, therefore, this essay sets aside consideration of possibilities for bilateral engagement on risk reduction between Delhi and Islamabad. Instead, a still difficult but perhaps more promising approach to encourage nuclear restraint would be to bring both Pakistan and India into the broader exploration among nuclear-armed states of a Code of Nuclear Responsibilities. That approach is discussed later in this essay.

13 For a discussion of how to respond to China see Brad Roberts, *On Theories of Victory, Red and Blue* (Livermore, CA: Center for Global Security Research, Lawrence Livermore National Laboratory, 2020).

14 For a recent comprehensive discussions of new nuclear risk reduction initiatives in South Asia as well as the constraints on their pursuit, see Michael Krepon, Travis Wheeler, and Liv Dowling (eds.), *Off Ramps from Confrontation in Southern Asia*, The Stimson Center (Washington DC: The Stimson Center, 2019). Also see Manpreet Sethi, "Nuclear Risks in Southern Asia: The Chain Conundrum," in Wilfred Wan (ed.), *Nuclear Risk Reduction: Closing Pathways to Use*, (UNIDIR, 2020).

Broadening and Transforming the P5 Process

Over the past decade, China, France, Russia, the United Kingdom, and the United States have met in what has come to be known as the P5 process. Though intended initially to focus more broadly, their annual meetings and inter-sessional work increasingly has become a means to harmonize their diplomacy for the five-yearly conferences to review implementation of the NPT. The P5 process was leveraged to show non-nuclear weapon states (NNWS) parties to the NPT that NWS were taking seriously their NPT obligations, especially their obligation under Article VI to pursue nuclear disarmament. In recent years, there also have been formal presentations and give and take questions on their respective nuclear doctrines in a working group on that subject. These exchanges provided valuable insights into each other's thinking and helped to reduce misperceptions and misunderstanding. They also brought to the table not only NPT diplomats but also individuals with defense, military, and nuclear weapon backgrounds.

Building on this record, the second element of this essay's proposed strategy for cooperative engagement to reduce nuclear risks is to broaden the P5 process to include exchanges on crisis avoidance, crisis management, and nuclear risk reduction. For the most part, its specific agenda would mirror those described above for bilateral engagement. To reprise, issues to be addressed would include how a crisis involving P5 countries could come about and escalate toward the nuclear threshold, specific misperceptions and miscalculations that could lead to escalation as well as actions and undertakings to lessen their likelihood, a revisiting of earlier Cold War risk reduction agreements and their possible updating, and in the P5 context, an affirmation of the Reagan-Gorbachev principle or some other expression of nuclear restraint by all five countries.

Going a step further, the agenda for a broadened P5 dialogue could also include discussion of how the P5 countries could cooperate to reduce nuclear risks not arising out of today's great power competition but still directly impacting them. Possible actions that P5 countries could take independently, in parallel, or together to reduce nuclear risks in South Asia is one example. Particular attention could focus on political efforts to encourage nuclear restraint in peacetime and in crisis, taking advantage of significant ties among P5 countries to India or Pakistan, or both countries. Quite differently, a broadened P5 agenda could include how to strengthen international efforts (including among the P5 themselves) to prevent access by a terrorist group to nuclear-weapon materials as well as preparations for P5 cooperation to prevent a terrorist nuclear attack should there be warning that such an attack was imminent.

As a result of these proposed changes, the P5 process no longer would be only an instrument of NPT diplomacy. Instead, it would also become a means to help manage interactions among the great powers in an era of heightened nuclear risk. Consequently, broadening the purpose of the process would serve the interests of the P5 countries in reducing the risk of use of nuclear weapons. In addition, by contributing to reducing nuclear risks, a broadened P5 process would pay even greater

A CODE OF NUCLEAR RESPONSIBILITIES

Some Illustrative Guiding Principles

- Exercise restraint and ensure predictability of development and deployment decisions and actions
- Reflect existing international legal obligations in development and deployment of nuclear weapons, and in nuclear doctrine
- Support cooperative measures to prevent further proliferation of nuclear weapons
- Ensure rigorous safety and security of nuclear weapons
- Ensure effective control of nuclear weapons
- Ensure adequate nuclear decision-making time
- Reduce ambiguity and exercise restraint in nuclear declaratory policy and doctrine
- Pursue measures for mutual reassurance and predictability
- Affirm that the sole purpose to retain nuclear weapons is for deterrence—and that absolute security from nuclear threats is unattainable
- Avoid provocative nuclear rhetoric, deployments, actions, and posturing that would be subject to misinterpretation in crisis or conflict
- Avoid posturing and actions (including within the space and cyber domains) undermining adversary nuclear deterrence postures
- Ensure robust nuclear decision-making practices and sufficient time
- Pursue cooperative measures to ensure that nuclear weapons are never used again
- Emphasize nuclear weapons are to be used only as a last resort subject to an existential threat

dividends for NPT diplomacy. It would visibly demonstrate that NPT NWS are directly addressing the concerns about growing nuclear risks of many NPT NNWS and thereby lessen their frustrations with the NPT.

However, to make this type of broadened discussion truly productive, the modes of working of the P5 process would need to be transformed. In particular, given the specific issues to be addressed, it would be important to continue the trend of bringing to the table individuals with defense, military, and nuclear experience and responsibilities. Doing so would address one of the main reasons for skepticism about using the P5 process in the way proposed (that is, that it lacks the right type of participants). Greater use of working groups as well as intersessional discussions among experts and practitioners also would be beneficial. Use of mini-games and tabletop exercises also would help illuminate these issues, whether it focuses on how a crisis or conflict among the great powers might escalate toward the nuclear threshold, or on cooperative responses in the event of intelligence warning that a terrorist group was about to carry out an attack with an improvised nuclear device.

At a minimum, if it proves too difficult to overcome the obstacles to sustained, high-level bilateral engagement between the United States and Russia and the United States and China on nuclear risk reduction, broadening and transforming the P5 process would provide an alternative venue for exchanges on these issues. This step also would offer an interim approach prior to more robust bilateral engagement. However, even assuming future bilateral dialogues on reducing nuclear risks between Washington and Moscow and Washington and Beijing, transforming the P5 process and broadening

its agenda in the ways suggested here would be valuable in its own right. A broadened and transformed process would be a means to identify nuclear-related risks and have an initial exchange of views, highlight possible misinterpretations and miscalculations to other P5 members, and to “tee up” the most important problems for more in-depth bilateral discussion later. Though there are obstacles to this envisioned transformation of the P5 process, they should not be insurmountable. U.S. officials are reluctant to go down this path because of concern that doing so would make it easier for China to continue to say no to bilateral discussions by hiding behind P5 discussions, skepticism about getting the right people around the table, and simple institutional inertia. So far, moreover, China apparently has been less prepared than others to deepen its participation beyond NPT diplomats. However, the fact that France now chairs the P5 process gives reason for optimism, given that country’s recent emphasis on strategic risk reduction. Ultimately, the prospects for agreement to broaden and transform the P5 process depend most on whether each of the P5 countries concludes that making this change is in their interests, not only to buttress their NPT diplomacy but even more importantly to help reduce the nuclear risk they face.

Toward a Code of Nuclear Responsibilities

A dialogue among declared and acknowledged nuclear-armed states—defined here as China, France, India, Pakistan, Russia, the United Kingdom, and the United States—focused on the elements of a Code of Nuclear Responsibilities would complement both bilateral U.S.-Russia and U.S.-China engagement and a transformed P5 process.¹⁵ Focused on avoiding nuclear competition and lessening nuclear risks, such a dialogue could begin by exploring a set of principles or guidelines that would cover the spectrum of nuclear weapon-related activities and behaviors: production, modernization, and deployments; safety, security, and command and control; nuclear doctrine, posture, readiness, and operations; crisis and conflict signaling and actions; readiness, warning, and decision-making; and use. One possible set of such principles is illustrated by the accompanying text box.¹⁶ Based on such principles, commitments then could be identified and agreed upon.

The very process of dialogue on a Code of Nuclear Responsibilities would be valuable even if it proves too difficult to reach agreement. For the great power nuclear-armed states, it would provide additional windows into each other’s thinking as well as opportunities to seek clarifications of each other’s nuclear activities. It would also highlight potential sources of misperception and miscalculation. Specific principles

15 Given continued global commitment to the denuclearization of North Korea, that country is intentionally left out of consideration here.

16 Crafted for this essay, these principles draw on my thinking and writing over the past decade on a code of nuclear conduct or responsibilities. There also have been other proposals in recent years to pursue this type of nuclear code, with discussion of what it might entail. For a different but for the most part congruent listing of possible principles that has factored into my own thinking, see also J. Gower, “Improving Nuclear Strategic Stability Through a Responsibility-Based Approach,” Council on Strategic Risks (January 7, 2019).

and associated undertakings also could more directly contribute to lessening escalation risks. Of equal if not greater importance, this dialogue would entail long-overdue discussions with India and Pakistan on a range of nuclear-related issues: lessons learned regarding nuclear best practices; past mistakes to be avoided; and actions and undertakings to lessen the risk of use of nuclear weapons, including in South Asia. As such, it would serve the interest of all NPT NWS in ensuring that nuclear weapons are never used again.

For India and Pakistan, their participation would bring with it a belated recognition of their status as nuclear-armed states, something politically sought after by both countries. It also could be politically much easier for them to engage in this type of a multi-party discussion of nuclear risk reduction than in a bilateral dialogue focused only on South Asia. Especially for India, it would mean having China as part of the dialogue. Not least, like the great powers, both Delhi and Islamabad have a deep interest in avoiding nuclear conflict.

Over the past several years, proposals to develop a Code of Nuclear Responsibilities have been discussed in Track 2 meetings with participating officials from NPT NWS and in other informal contexts. Those officials have listened with interest and not rejected it from the start, though it also has been outside their day-to-day focus. By contrast, at least some officials in NPT NNWS—as well as experts among the nuclear disarmament community—have opposed reaching out to India and Pakistan in this way. Their argument is that so engaging with India and Pakistan would legitimize their status as nuclear-armed states. After more than two decades since both countries tested nuclear weapons, that concern is outweighed by the need to include these two countries in a comprehensive approach to reducing nuclear risks. Quite differently, Article I of the NPT would need to be taken into account in any such dialogue. Article I obligates NWS not to “assist” NNWS to “manufacture” nuclear explosive devices, with India and Pakistan for the purposes of the NPT considered as NNWS because they had not detonated a nuclear weapon prior to January 1967. However, the focus on principles and commitments—not nuclear-weapon technology and know-how—provides a way to manage this issue.

A Way Forward

The COVID-19 pandemic dominates the global agenda today and concerns about the risk of nuclear weapons have faded into the background. This essay has described a strategy for cooperative engagement to reduce the risk that an escalating conventional conflict will conclude with an even more devastating global nuclear catastrophe. That strategy combines bilateral engagement between the United States and Russia as well as the United States and China, broadening and transforming the P5 process, and a dialogue among the NPT NWS, India, and Pakistan on a Code of Nuclear Responsibilities. Learning from the global lack of preparedness to deal with a long-predicted but still discounted global pandemic, now is the time to identify the elements of such a strategy—and to prepare to pursue them vigorously once the COVID-19 cloud finally lifts.

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The Center for Global Security Research has performed an invaluable service with the publication of *Major Power Rivalry and Nuclear Risk Reduction: Perspectives from Russia, China, and the United States*. The essays by experts from Russia (Andrey Baklitskiy), China (Tong Zhao), and the United States (Lewis Dunn), along with the excellent introduction by Brad Roberts, will be immensely helpful to practitioners and academics interested in reducing the risk of nuclear war. No one will agree with every insight and suggestion made in these thoughtful essays. But all will benefit from understanding the thinking and the world views that lie behind them. Highly recommended! ”

– **Ambassador Linton Brooks**