

On Adapting Nuclear Deterrence to Reduce Nuclear Risk

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Since the end of the Cold War, changes to the practice of nuclear deterrence by the United States have been pursued as part of a comprehensive approach aimed at reducing nuclear risks. These changes have included steps to reduce reliance on nuclear weapons in U.S. defense and deterrence strategies. Looking to the future, the United States can do more, but only if the conditions are right. Policy-makers must avoid steps that have superficial appeal but would actually result in a net increase in nuclear risk. These include steps that make U.S. nuclear deterrence unreliable for the problems for which it remains relevant.

In a strategy to reduce nuclear risks, there are many building blocks: formal and informal arms control, cooperative threat-reduction activities, and controls on sensitive materials, technologies, and facilities, for example. The focus of this essay is one single building block: the practice of nuclear deterrence by the United States. In one of their seminal op-eds in *The Wall Street Journal*, George Shultz, William Perry, Henry Kissinger, and Sam Nunn made the case in 2011 that reliance on nuclear weapons for deterrence “is becoming increasingly hazardous and decreasingly effective” and called for “a joint enterprise among nations” to work toward “a safer and more stable form of deterrence.”¹ Nearly a decade later, there is little evidence of that “joint enterprise,” as Russia, China, and others proved reluctant to join any such effort.² But what about the United States? How far has it gone toward the envisioned goal? What has the United States done to modify its practice of nuclear deterrence to reduce nuclear risks and dangers, while ensuring that deterrence remains stable and effective for the problems for which it remains relevant? How has it accounted for the failure of the “joint enterprise?” What more should be done? What more can be done in current circumstances?

The effort to move away from Cold War approaches in U.S. deterrence strategy and to adapt deterrence to a changing security environment began well before the 2011 op-ed and has continued since. Changes to U.S. nuclear policy and posture have been driven by many factors: the end of Cold

War confrontation and the desire to consolidate a new political relationship with Russia, the emergence of new challenges such as nuclear-arming regional powers and an emergent China, the ambitions of individual leaders to push in certain directions, and the advocacy of influential individuals and organizations outside government. Presidents Bill Clinton, George W. Bush, and Barack Obama all arrived in office having campaigned in part on the argument that more could and should be done to move away from Cold War thinking and forces. Each administration took its own set of steps toward these goals, each with its own framing context: Clinton's "lead but hedge" strategy, Bush's "new strategic framework," and Obama's "Prague vision."³ Each also made decisions to maintain certain nuclear forces in the name of strategic stability: that is, to ensure that no adversary might be tempted to strike first in a time of war.

This focus on deterrence adaptation spanned the period from the end of the Cold War in 1990 to the Russian armed annexation of Crimea in 2014. In this period, three key developments in the practice of U.S. nuclear deterrence stand out from a risk-reduction perspective.⁴

First, nuclear deterrence lost its central place in U.S. defense strategy. This is well illustrated by U.S. defense strategy documents. During the Cold War, U.S. secretaries of defense published annual reports to Congress on defense strategy, in which nuclear issues featured prominently and consistently. In the post-Cold War era, it is difficult to find even a mention of nuclear issues in the Quadrennial Defense Reviews. This follows the shift in focus away from the possibility of an Armageddon-like war with the Soviet Union and onto new contingencies with no or at most limited nuclear aspects. As the Obama administration's Nuclear Posture Review (NPR) put it, nuclear employment might be considered only in "a narrow range of circumstances" when the vital interests of the United States or an ally are at risk. The world of 2009 seemed to present no such flash points or pathways to wars touching on such vital interests.

Second, reliance on non-nuclear means of deterrence increased significantly. In the 1990s, there was growing recognition of the rising value of missile defenses for reinforcing deterrence of regional challengers armed with weapons of mass destruction (WMD) and long-range missiles. U.S. defense planners came to see reliance on nuclear deterrence for this problem as unreliable and thus dangerous. Complementary measures were needed. With the continued maturation of missile defense technologies, the Congress passed the National Missile Defense Act of 1999, which established that the United States would "deploy as soon as is technologically possible an effective National Missile Defense system capable of defending the territory of the United States against limited ballistic missile attack (whether accidental, unauthorized, or deliberate)."⁵ President Clinton's successors went even further in developing non-nuclear means. The 2001 George W. Bush administration's NPR expressed a commitment to move toward a "new triad" of

offensive strike forces (including nuclear, non-nuclear, and nonkinetic means), ballistic missile defense, and a responsive infrastructure. The Obama administration continued the effort to rebalance the deterrence portfolio by strengthening regional deterrence architectures comprehensively, in a manner that embedded a “tailored nuclear component” in an approach encompassing an intended “favorable balance” of conventional forces, regional missile defenses, limited homeland missile defenses, plus resilience in cyberspace and outer space.

Third, the practice of U.S. nuclear deterrence adapted to the more multipolar character of the present international system by becoming more flexible and “tailored.” In the bipolar context of the Cold War, the United States developed an approach to nuclear deterrence aimed at being able, in times of crisis and war, to put at risk what Soviet leaders valued. A deterrence strategy premised on being able to threaten what enemy leaders value must be sufficiently flexible to contend with a changing cast of such leaders with a changing constellation of values and interests. Accordingly, each post-Cold War administration has praised the virtues of a more “tailored approach” to deterrence for a more complex security environment. The George W. Bush administration formally abandoned the long-standing Single Integrated Operational Plan in 2003 in favor of a more flexible approach. That new approach gives the president a wider set of options for the employment of both nuclear and non-nuclear weapons, a wider set of potential objectives, and the ability to adapt plans quickly to cope with rapidly changing circumstances.⁶ The Obama administration continued this focus on tailoring deterrence for the range of challenges present in the security environment. In its employment guidance, it focused on “more likely 21st century contingencies,” as opposed to a major bolt-out-of-the-blue attack by a nuclear peer or near peer.⁷ Each administration has also relied on the enduring strategy of ensuring that any country capable of posing an existential threat to the United States never comes to a point of seriously contemplating such an attack.

These three changes were aimed at “a safer and more stable form of deterrence.”⁸ They did so by reducing the risk that the United States might rely on nuclear deterrence even when its nuclear threats might not be credible. In parallel, the post-Cold War administrations have made decisions to maintain some elements of continuity with prior practice. Three such continuities stand out in the debate about risk reduction.

The first was the preservation of what the Obama administration called “the fundamentals of deterrence.” In a June 2013 report to Congress on its nuclear deterrence strategy, the administration described these as:

- “The fundamental role of nuclear weapons is to deter nuclear attack on the United States and its allies and partners.”

- “The United States will only consider the use of nuclear weapons in extreme circumstances to defend the vital interests of the United States or its allies and partners.”
- “The United States will maintain a credible nuclear deterrent capable of convincing any potential adversary that the adverse consequences of attacking the United States or our allies and partners far outweighs any potential benefit they may seek to gain from such an attack.”
- “U.S. policy is to achieve a credible deterrent, with the lowest possible number of nuclear weapons, consistent with our current and future security requirements and those of our allies and partners.”
- “All plans must also be consistent with the fundamental principles of the Law of Armed Conflict. Accordingly, plans will, for example, apply the principles of distinction and proportionality and seek to minimize collateral damage to civilian populations and civilian objects. The United States will not intentionally target civilian populations or civilian objects.”⁹

A second element of continuity was the commitment to prepare for the possibility that deterrence might fail. Even in a security environment in which the prospects of nuclear conflict seem extremely remote, the potential costs of being unprepared for a failure of deterrence were deemed too high. Each president in the post–Cold War period has faced the unhappy facts that 1) there exists a small but troubling set of foreign leaders deeply hostile to U.S. interests and to the regional orders and allies the United States seeks to protect; 2) such leaders are armed with, or are pursuing, nuclear or other weapons of mass destruction and the means to deliver them at long range; and 3) even tailored deterrence may prove unreliable in deterring nuclear aggression by leaders whose values and interests are fundamentally different from those of the United States and its allies.¹⁰

Such preparations include ready forces capable of operating at both the regional and strategic level, forces capable of operating under attack and reaching their target, the development of employment options for the president, and exercises of the forces, the planning process, and the deliberative process. Such readiness lends credibility to the threat of U.S. nuclear retaliation. It has the additional value of helping to negate the potential coercive value of enemy nuclear threats by robbing them of their credibility.

This commitment to prepare for deterrence failures implies a rejection of minimum deterrence, the third major element of continuity. Minimum deterrence is a mode of deterrence that does not particularly concern itself with the necessary and appropriate responses if deterrence fails. The advocates of minimum deterrence for the United States have argued that “deterrence today would remain stable even if retaliation against only ten cities were assured.”¹¹ This might be so. But

it might not, if a vital national interest were at risk. Minimum deterrence makes no effective accommodation for the principles of discrimination and proportionality or for a theory of deterrence that depends on putting at risk only those things most valued by an enemy leadership. It promises simple, crude punishment of an enemy society.¹²

These continuities reflect the fact that nuclear deterrence itself is a form of risk reduction. It reduces the risk of nuclear-backed aggression and nuclear employment in war and thus helps preserve the nuclear taboo. It also reduces the coercive value of nuclear threats. Until such time as humankind discovers the means to safely eliminate nuclear weapons, nuclear deterrence must remain effective for the problems for which it remains relevant. This requires leadership focus on deterrence strategy, a commitment to excellence in the practice of deterrence, clear signals of resolve to defend vital interests, and the associated capabilities.

It is useful also to recall the risk-reduction policy options that were considered but rejected in this period. In the Obama administration, at least, there was a sustained and thorough exploration of options. Policy-makers were interested in three main questions: Would the proposed measure reduce real risk in a material way? Would it have unintended effects that might increase risk? What would be the net impact on nuclear risk? This risk framework was familiar to senior policy-makers; as the administration argued in 2010, “defense strategy requires making choices: accepting and managing risk is inherent in everything the Department [of Defense] does.”¹³

De-alerting, for example, had many advocates outside the administration. Whether to take additional steps to reduce the alert status of U.S. nuclear forces is an obvious first-order question for nuclear risk reduction. The case for doing so is that it would reduce the risk of accidental and unauthorized use because it reduces the ability to rush a decision in the context of imperfect information. But most officials were not persuaded that that risk is significant. There is also no reason to think that current Russian leadership would join such an effort, not least because it would disproportionately affect the Russian force (given the higher percentage of its deterrent associated with land-based systems). Whatever the benefit might prove to be in practice, this must be weighed against the risk of a competitive re-alerting in time of crisis. A nuclear variant of August 1914 looks especially unappealing to senior policy-makers. Thus, further de-alerting was rejected in the 2010 NPR. But a rushed and imperfect decision on nuclear employment is also unappealing, so the Obama administration put its emphasis on improving support to the president in preparing for and making such decisions.

Another risk reduction option advocated by nongovernmental experts was nuclear no-first-use (NFU). The case for adopting a policy of NFU is that it would reduce the instability in crisis generated by concerns about the need to use-or-lose

nuclear forces. The potential unintended consequence is that a WMD-armed aggressor might be emboldened to challenge by non-nuclear means a vital interest of the United States or, more likely, a U.S. ally. The administration saw this risk as material and thus rejected NFU (and the closely related “sole purpose” formulation).¹⁴ But to help underscore the last-resort character of possible U.S. nuclear employment, the Obama administration emphasized that such employment would be considered only in “extreme circumstances.”

The Obama administration also considered changes to the U.S. nuclear posture in the name of risk reduction. These included, for example, the possible retirement of forward-based nuclear-capable fighter-bombers in Europe (deployed there in support of NATO’s unique nuclear sharing arrangements). The case for retirement is that it would reduce the risk of theft or accidents. Again, there seems little prospect that Russia would join in such an effort (having rejected it consistently for many years). The case against it is that it might embolden Russian challenges to NATO and encourage Russian nuclear escalation in conflict. At a time of uncertainty and rising concern about Russian military ambitions in Europe, the Obama administration concluded that the case for retaining the fighter-bombers outweighed the case for retirement. The administration viewed these capabilities as essential to the demonstration of the alliance’s promise that an attack on any NATO ally will be treated as an attack on all and, in particular, that any nuclear attack on a NATO ally will implicate all those participating in NATO’s sharing arrangements. These NATO sharing arrangements also serve as a unique link between the United States and its allies in both Europe and Asia by demonstrating for all the nuclear risks it is willing to run to safeguard allied vital interests. These effects, too, are good for deterrence.

Retirement of the ICBM (intercontinental ballistic missile) force was also oft debated. The risk-reduction case for retirement is that it would reduce the risk of accidental launch.¹⁵ The case against it is that retirement would erode the credibility of U.S. nuclear threats. The ICBM force lends credibility to U.S. nuclear threats in two ways. A successful strike on four-hundred-plus nuclear targets must look vastly more challenging to a leader contemplating nuclear war with the United States than a preemptive strike on the relatively few critical aim points that would remain if the ICBM silos were gone. With a large U.S. target base, only one country can contemplate a possibly successful disarming strike; without that base, more countries could do so. Moreover, a massive strike at targets spread across the American heartland would seem to ensure retaliation by a deeply wounded nation. These effects are good for deterrence. Accordingly, the Obama administration committed to the modernization of all three legs of the nuclear triad, as has the Trump administration.

In sum, the period from 1990 to 2014 was marked by a few key developments in the U.S. practice of nuclear deterrence that helped to reduce nuclear risk. But the “fundamentals of deterrence” remained because deterrence itself remained

relevant in this period, albeit in a reduced and different role. In addition, U.S. planners considered and rejected various new forms of risk reduction as, on balance, contributing more risk than they might eliminate.

Then came the revelations of 2014. President Vladimir Putin proved willing to use military force to change international borders. He promised to “snap back hard” against a European security order he deemed unjust and dangerous. And he called for “new rules or no rules” for a global order he saw as dominated by a United States seeking “absolute security” (that is, security for the United States at everyone else’s expense). These revelations cast a bright light on his nuclear strategy: Putin had given nuclear weapons a central place in his strategy for Russian renewal, nuclear threats a central place in his political strategy for coercing NATO, and limited nuclear war a central place in his military strategy. This raised basic policy questions for the United States and its allies about whether and how to further pursue nuclear risk-reduction strategies.

In retrospect, it is clear that the world should not have been surprised in 2014.¹⁶ Already in the 1990s, the Russian military began to debate how to respond to the emerging American way of waging war. In the early 2000s, Putin, as the new Russian president, supported investments in Russian nuclear forces, in part as compensation for weaknesses in Russian general purpose forces. But his incentives and objectives appear to have shifted over time. His worldview evolved substantially from 2001 to 2014: from his effort to “reset” relations with the United States after 9/11, to his plaintive call in 2007 for renewed cooperation amidst frustration with American “hyper use of force,” to his 2014 watershed decisions and declarations.

In line with this shift in President Putin’s perspective, the Russian military enacted dramatic changes in policy, posture, and behavior. For example:

- Following Putin’s February 2007 speech to the Munich security conference, Russia launched a campaign of harassment against its neighbors that included crippling cyberattacks (against Estonia, for example) and renewed long-range bomber patrols and mock nuclear strikes on Western capitals.¹⁷
- In this period, Russia also suspended compliance with the Treaty on Conventional Forces in Europe and violated the Treaty on Intermediate-Range Nuclear Forces. Selective compliance with the Open Skies Treaty followed, along with Russian violations of multiple other arms control and military transparency agreements.¹⁸
- In 2008, Russia intervened militarily in Georgia. Shortcomings in Russian military performance galvanized a major effort finally to reform and modernize fully the Russian military institution and its capabilities. In 2009, it restarted its ZAPAD exercise series to test and demonstrate its ability to

conduct large-scale military campaigns, including using strategic forces, in a major regional war on its western flank.

- In 2012, Russia announced a major adjustment to its force modernization, aimed at ramping up a diverse set of new capabilities, both strategic and nonstrategic.¹⁹ Somewhere in this period, President Putin also initiated the development of the novel strategic weapons that would be revealed in 2018. Some of the results were publicized in spring 2019 by Defense Minister Sergei Shoigu, who reported an increase from 2013 in the number of carriers of high-precision long-range weapons on land, sea, and in the air by a factor of twelve and in the number of high-precision cruise missiles (all of which are dual-capable) by a factor of thirty.²⁰ The Russian military also made qualitative and quantitative improvements to its tactical nuclear forces and increased the role for low-yield options.²¹
- Apparently also in this time frame, Putin made the decision to interfere directly and illicitly in the domestic politics of Western countries, including the 2016 U.S. presidential election.²²
- Russia published updates to its foreign policy concept and military doctrine in 2013 and 2014, respectively, setting out the principles of a more confrontational approach to the U.S.-led world order and the strategy of “active defense.”²³
- In 2014, Putin authorized the military to invade Ukraine and, later through referendum, annexed Crimea, using force to alter international borders in Europe and violating a central norm of international behavior.
- By 2015, Putin had taken steps to demonstrate what he meant by “no rules” (or perhaps demonstrate the new rules themselves) with direct interference in the political affairs of other states, targeted extraterritorial killings, direct military assistance to a thuggish Syrian regime, and multiple other efforts to undermine Western institutions, values, and leaders.

One result of this string of developments is a new Russian approach to regional war involving rapid power projection, integrated defensive and offensive operations in aerospace, and the use of all means available to influence the strategic calculus of the enemy, including kinetic and nonkinetic weapons as well as nuclear and non-nuclear strategic options. It is a strategy intended to present the enemy with unacceptable risks of escalation by any of these means and thus to drive the costs of conflict with Russia (or continued conflict) beyond the enemy’s stake. It is a strategy of deterrence built on the foundations of coercion through blackmail and brinkmanship backed up by a credible threat to employ all these means.

Surveying this history, some Western analysts have concluded that there has been little or no change in the nuclear threat posed by Russia and that President

Putin conceives a “predominantly defensive” role for nuclear weapons aimed at deterrence, not coercion or war-fighting.²⁴ Some argue further that the U.S. policy-makers have misunderstood and/or misrepresented the “escalate to de-escalate” strategy and that Russian leaders are not prepared to employ nuclear weapons early in a conflict to seek prompt war termination on their terms.²⁵

Already in the Obama era, NATO leaders had come to different conclusions about these risks. At NATO summits in Wales and Warsaw, they made it clear that they see these developments as dangerous and destabilizing and as requiring enhancements to the alliance’s overall deterrence and defense posture, to its nuclear readiness, and to its nuclear forces. These enhancements are aimed at “addressing potential adversaries’ doctrine and capabilities” in order to ensure that NATO’s deterrence posture remains “credible, flexible, resilient, and adaptable.”²⁶

In the United States, the renewal of focus on Russia as an object of U.S. deterrence strategy began in 2015 with Secretary of Defense Ash Carter’s call for “a new playbook for Russia.”²⁷ In its final year, the Obama administration rejected any further unilateral changes to U.S. nuclear policy and posture in support of the Prague vision in part because of the need for deterrence confidence vis-à-vis a more dangerous Russia (and a more assertive China). But it fell to the newly elected Trump administration to put together that new playbook.

To what extent is the nuclear deterrence strategy of the Trump administration a departure from past practice? Like its predecessors, the Trump administration has embraced “the fundamentals of deterrence,” planned for the possibility that deterrence might fail, and rejected minimum deterrence. Also like its predecessors, it has sought to increase the role in deterrence of non-nuclear means such as missile defense and hypersonic non-nuclear strike capabilities, to tailor deterrence to diverse challengers, and to strengthen extended deterrence. On the central issue of the role of nuclear weapons, the Trump administration has been more ambiguous. On the one hand, its NPR reiterates the limited roles set out in the 2010 NPR; on the other, it explicitly opens the door to nuclear deterrence of catastrophic cyberattacks.

To deal more directly with the new Russian challenge, the Trump administration might have changed deterrence strategies or sought new nuclear weapons with new military purposes. Instead, it chose to focus on supplementing the deterrence toolkit with additional reduced-yield options. It also sought to ensure an enduring ability to deliver reduced-yield weapons past steadily improving Russian air defenses. In this way, the administration hopes to redress any doubts leaders in Moscow might have about the capability and resolve of the United States and NATO to defend their interests by all necessary means. This is intended to buttress deterrence and negate nuclear coercion by Russia and thereby raise the nuclear threshold.

But some critics see a substantial change in deterrence strategy: a shift to nuclear war-fighting that necessarily lowers the nuclear threshold. To assess this argument, a Cold War context is needed. What did it mean to the nuclear planners of that era to be prepared to fight a nuclear war successfully? In NATO's flexible response doctrine, it meant being prepared to employ nuclear weapons in significant numbers at the tactical level of war to enable the defeat of numerically superior Warsaw Pact ground and air forces. Thus, the United States and NATO deployed thousands of nuclear artillery shells and land mines. Deterrence was supported by preparations to fight at any level of nuclear scope and intensity that the Soviet leadership might choose. To prevail meant to achieve military objectives at the tactical and operational levels and to survive the war with some objectives achieved and interests intact despite the employment of nuclear weapons by both sides in support of their military operational objectives.

This is not how U.S. military planners have thought about potential nuclear conflict in the post-Cold War era. They have not prepared for the employment of nuclear weapons for tactical benefit. In fact, the United States brought home and destroyed its tactical nuclear weapons (the remaining reduced-yield capability – the nuclear bomb – can be used to support tactical, theater, or strategic goals). Rather, it has prepared for the possible employment of nuclear weapons at the strategic and theater levels of war, including, on a very limited basis, to shape the enemy's intent and capability to sustain war. The purpose of such employment would be to terminate rapidly the nuclear phase of war or otherwise negate a threat to a vital interest.

To achieve this effect, the enemy must be compelled to reassess the assumptions that led to their decision to employ nuclear weapons or otherwise jeopardize a vital interest. Such a decision would likely only be made by the enemy on the assumption that the United States would not respond to nuclear attack, especially if limited in nature, or would not respond in a manner as to impose significant cost or new risk for the attacker. To alter the enemy's calculus of benefits, costs, and risks, the United States must be capable (and must be seen as capable) of limited nuclear retaliation to achieve effects the enemy would see as costly, whether militarily or politically. It must also be seen as capable of further nuclear employment in more damaging ways. It need not be seen as capable of engaging in extended and large-scale nuclear exchanges at the tactical, operational, and strategic levels of a regional war. Thus, each administration since the end of the Cold War has chosen to maintain the capability to forward-deploy a limited number of nuclear bombs with forward-based fighter-bombers, as opposed to strategic delivery systems.

The Trump administration's pursuit of supplemental low-yield capabilities is consistent with this approach to deterrence as it has evolved since the Cold War. Deployment of these capabilities would help to reinforce NATO's message that it has the means and resolve to defend its interests by all means necessary – at a time when these appear to be in some doubt in Moscow.

In an era when the hoped-for “joint enterprise” with Russia and China has proven beyond our reach, what more can and should the United States do to adapt its practice of nuclear deterrence to reduce nuclear risks?

Part of the answer is to continue working on that joint enterprise while accepting that the near-term payoffs may be few and the long-term payoffs uncertain. Administrations should focus on the ongoing dialogue among the five permanent members of the UN Security Council, who bring shared interests to this process.²⁸ Such a joint enterprise should also include a renewal of bilateral, trilateral, and multilateral arms control for new purposes.

Part of the answer is to update the menu of potential options for reducing risk in light of the risk net assessment framework described above.²⁹ The advocacy community on risk reduction loses credibility every time it readvocates in a one-sided way for an approach rejected by even sympathetic policy-makers.

And part of the answer is to focus on emerging nuclear risks. In both Europe and Northeast Asia, the strategic balance has shifted in ways unfavorable to deterrence at the conventional level of war and in the new domains of cyberspace and outer space. This increases crisis instability. In the strategic postures of Russia, China, and the United States, capabilities in the new domains are increasingly salient, as is competition in these domains and in the more familiar offense-defense realm (with new competition for hypersonic delivery systems, for example). This increases strategic unpredictability and arms race instability. These new instabilities bring new forms of nuclear risk. From a U.S. policy perspective, there are important questions about the possibility of reducing the risks of both crisis and arms race instability by encouraging restraint. Some of those questions relate to what might be accomplished cooperatively with Russia and/or China; others relate to what must be accomplished cooperatively with U.S. allies and partners. In defining these new risks and developing strategies to mitigate them, the United States must continue to balance the need to minimize risk with the need to ensure that deterrence remains a viable risk-reduction strategy.

For most of the period since the Cold War, changes to the U.S. practice of nuclear deterrence have contributed to a comprehensive strategy to reduce nuclear risks by reducing reliance on nuclear threats where they may lack credibility. Current prospects for more such adaptations, however, are not good. Most of the advances were harvested in the period from 1991 to 2014. In an eroding security environment, the most likely gains in nuclear risk reduction will be in deterring threats rather than reducing or eliminating them. In current circumstances, there appears to be no immediate prospect that Russia and China (or North Korea and other nuclear-weapon states) will join in a collective effort to remake the deterrence framework on a fundamental level. Their embrace of nuclear weapons to protect themselves, in large measure against the exercise of U.S. power, appear deep and enduring.

In this context, the only fundamental adaptations to the practice of deterrence that are possible for the United States are unilateral in character. These have sometimes had value. But many such measures have been rejected – repeatedly – as contributing to a net increase, as opposed to a net decrease or elimination, of nuclear risk. At the same time, there may be more limited opportunities to address the crisis and arms race instabilities of today’s deterrence relationships. But even while exploring new possible threat reduction measures, the United States and its allies must ensure that deterrence remains effective for the problems for which it is relevant, albeit with a posture of restraint so as not to stimulate unwanted responses by others.

AUTHOR’S NOTE

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ENDNOTES

- ¹ George P. Shultz, William J. Perry, Henry A. Kissinger, and Sam Nunn, “Deterrence in the Age of Nuclear Proliferation,” *The Wall Street Journal*, March 7, 2011.
- ² For a discussion of the Obama administration’s effort to engage Russia and China in a remaking of the nuclear deterrence framework, see Brad Roberts, “On Creating the Conditions for Nuclear Disarmament: Past Lessons, Future Prospects,” *The Washington Quarterly* 42 (2) (2019): 7–30.
- ³ For a detailed discussion of these frameworks and their nuclear policy implications, see Brad Roberts, “The Evolution of U.S. Nuclear Policy and Posture,” in *The Case for U.S. Nuclear Weapons in the 21st Century* (Stanford, Calif.: Stanford University Press, 2015), chap. 1, 11–50.

⁴ Except as noted, all references in this section are from the Nuclear Posture Reviews conducted by the Clinton, Bush, and Obama administrations. Note that the George H. W. Bush administration did not conduct an NPR as such, though it did review and make extensive changes to U.S. nuclear policy and posture. Note also that the Obama administration was the first to release an actual NPR report. The Clinton administration reported out the results of the inaugural NPR (conducted in 1994) as a chapter in the then-annual Report of the Secretary of Defense to the President and the Congress. See “Nuclear Posture Review,” in William J. Perry, *Report of the Secretary of Defense to the President and the Congress* (Washington, D.C.: U.S. Government Printing Office, 1995). The George W. Bush administration conducted an NPR in 2001 and prepared both classified and unclassified versions, though the former leaked and thus the latter could not be approved for release. The record therefore consists of “United States Department of Defense Briefing Slides,” January 9, 2002; Donald H. Rumsfeld, “Foreword,” *Nuclear Posture Review* (Washington, D.C.: U.S. Department of Defense, 2002); Donald H. Rumsfeld, *Annual Report to the President and the Congress* (Washington, D.C.: Office of the Secretary of Defense, 2003); and Douglas J. Feith, “Statement before the Senate Armed Services Committee Hearing on the Nuclear Posture Review,” February 14, 2002. See also Keith B. Payne, “The Nuclear Posture Review: Setting the Record Straight,” *The Washington Quarterly* 28 (3) (2005): 135–151; and Keith B. Payne, “The Nuclear Posture Review and Deterrence for a New Age,” *Comparative Strategy* 23 (4/5) (2004). In addition, late in the George W. Bush administration, the secretaries of defense and energy attempted to renew momentum around the main objectives of the 2001 NPR with an unclassified report on nuclear deterrence (the Gates-Bodman Report). See *National Security and Nuclear Weapons in the 21st Century* (Washington, D.C.: U.S. Department of Defense and U.S. Department of Energy, 2008). The Obama administration released not only its NPR report, but also an unclassified report to Congress characterizing the new nuclear employment guidance issued by President Obama to the U.S. military at the same time. See *Report on Nuclear Employment Strategy of the United States, Specified in Section 491 of 10 U.S.C.* (Washington, D.C.: The White House, 2013). The Trump administration’s NPR was issued in 2018, but at the time of writing, there has been no detailed elaboration of the internal debates underpinning the policies chosen.

⁵ Greg Thielman, “The National Missile Defense Act of 1999,” *Arms Control Today*, July 8, 2009.

⁶ Paul I. Bernstein, “Post-Cold War U.S. Nuclear Strategy,” in *On Limited Nuclear War in the 21st Century*, ed. Jeffrey A. Larsen and Kerry M. Kartchner (Stanford, Calif.: Stanford University Press, 2014), 89.

⁷ *Report on Nuclear Employment Strategy of the United States*.

⁸ Recalling Schultz et al., “Deterrence in the Age of Nuclear Proliferation.”

⁹ *Ibid.*, 3–4.

¹⁰ See, for example, *ibid.*, 2.

¹¹ Bruce Blair, Victor Esin, Matthew McKinzie, et al., “Smaller and Safer: A New Plan for Nuclear Postures,” *Foreign Affairs* 89 (5) (2010): 10.

¹² Keith B. Payne and James Schlesinger, *Minimum Deterrence: Examining the Evidence* (Fairfax, Va.: National Institute for Public Policy, 2013).

¹³ U.S. Department of Defense, *Quadrennial Defense Review Report, 2010* (Washington, D.C.: U.S. Department of Defense, 2010), 89.

- ¹⁴ Brad Roberts, “Re-Debating Nuclear No First Use, Again,” *Survival* 61 (3) (2019).
- ¹⁵ William J. Perry, “Why It’s Safe to Scrap America’s ICBMs,” *The New York Times*, September 20, 2016.
- ¹⁶ This summary is drawn from “The Second New Problem: Relations with Putin’s Russia,” in Roberts, *The Case for U.S. Nuclear Weapons in the 21st Century*, chap. 4, 106–140. See also Angela Stent, *Putin’s World: Russia against the West and with the Rest* (New York: Twelve, 2019).
- ¹⁷ Matthew Bodner, “Russia’s Strategic Bomber Fleet on Global Intimidation Drive,” *The Moscow Times*, March 19, 2015. These flights violated a 1991 signed agreement with the United States and the United Kingdom.
- ¹⁸ See the U.S. Department of State annual reports on *Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Undertakings* (Washington, D.C.: U.S. Department of State, various years).
- ¹⁹ See the May 2012 announcement of President Putin’s decision to develop and implement a force development Plan of Action by 2020 on a year-by-year basis.
- ²⁰ “Pivotal Changes in Russian Forces,” *Red Star* online, March 16, 2019.
- ²¹ See Defense Intelligence Agency, *Russian Military Power: Building a Military to Support Great Power Aspirations* (Washington, D.C.: Defense Intelligence Agency, 2017), 29–31; “Evidence of Russian Development of New Subkiloton Nuclear Warheads [Redacted],” Intelligence Memorandum, Office of Transnational Issues, Central Intelligence Agency, August 30, 2000, approved for release October 2005, https://www.cia.gov/library/readingroom/docs/Doc_0001260463.pdf; and Jacob W. Kipp, “Russia’s Nonstrategic Nuclear Weapons,” *Military Review*, May–June 2001, <https://www.hsdl.org/?abstract&did=3693>.
- ²² Central Intelligence Agency, Federal Bureau of Investigation, National Security Agency, *Assessing Russian Intentions and Activities in Recent U.S. Elections* (Washington, D.C.: Office of the Director of National Intelligence, 2017).
- ²³ See Dave Johnson, *Russia’s Conventional Precision Strike Capabilities, Regional Crises, and Nuclear Thresholds* (Livermore, Calif.: Lawrence Livermore National Laboratory, 2017); Stephen R. Covington, *The Culture of Strategic Thought Behind Russia’s Modern Approaches to Warfare* (Cambridge, Mass.: The Belfer Center for Science and International Affairs, Harvard Kennedy School, 2016); Andrei Kokoshin, *Ensuring Strategic Stability in the Past and Present: Theoretical and Applied Questions* (Cambridge, Mass.: The Belfer Center for Science and International Affairs, Harvard Kennedy School, 2015); and Kristin Ven Bruusgaard, “Russian Strategic Deterrence,” *Survival* 58 (4) (2016): 7–26.
- ²⁴ See, for example, Anya Loukianova Fink and Olga Oliker, “Russia’s Nuclear Weapons in a Multipolar World: Guarantors of Sovereignty, Great Power Status & More,” *Dædalus* 149 (2) (Spring 2020).
- ²⁵ Olga Oliker, “Moscow’s Nuclear Enigma: What is the Russian Arsenal Really For?” *Foreign Affairs* 97 (6) (2018). For the opposing case, see Katarzyna Zysk, “Escalation and De-Escalation in Russian Military Strategy,” *RUSI Journal* 163 (2) (2018): 4–22.
- ²⁶ North Atlantic Treaty Organization, “Warsaw Summit Communiqué,” July 9, 2016, para. 52, https://www.nato.int/cps/en/natohq/official_texts_133169.htm.
- ²⁷ Ash Carter, “A Strong and Balanced Approach to Russia,” *Survival* 58 (6) (2016): 51–62.

²⁸ See Christopher Ford, *The P-5 Process and Approaches to Nuclear Disarmament: A New Structured Dialogue* (Washington, D.C.: U.S. Department of State, 2018).

²⁹ A good starting point would be a menu of options assembled by the United Nations Institute for Disarmament Research. See Wilfred Wan, *Nuclear Risk Reduction: The State of Ideas* (Geneva: United Nations Institute for Disarmament Research, 2019).