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*Discussion Paper Series on Managing Global Disorder No. 4
April 2021*

The Future of Strategic Arms Control

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INTRODUCTION

A new era of great power rivalry is emerging. Geopolitical power shifts have manifested in increasingly stark terms over the past decade plus: the 2008 financial crisis, which seemed to question the primacy of the United States' liberal economic model; Xi Jinping's assumption of power in 2012 and his subsequent oversight of a newly assertive Chinese foreign policy, including militarization of islands in the South China Sea, as well as his acerbic "wolf warrior" diplomacy during the COVID-19 pandemic and crackdown on Hong Kong; and Russia's brazen revanchism, displayed in its invasion of Ukraine and annexation of Crimea in 2014, its interference in the 2016 U.S. presidential election, and its massive cyber intrusion into U.S. government and private sector networks revealed in late 2020.

To manage this new international landscape, the United States should develop a new strategy that includes regulating that rivalry when possible. The United States does not have an interest in engaging in zero-sum competition with China and/or Russia, nor can it afford to do so. The COVID-19 pandemic has also vividly illustrated the dangerous global dysfunction that follows when an adversarial mentality pervades even those issues where great powers should have mutual interests. Even those who advocate a U.S. grand strategy centered on great power competition contend that some measure of cooperation should proceed in parallel, citing two existential threats: climate change and nuclear war.

Arms control is not an end in itself: it is not a reward for good behavior by the United States' competitors, and it will not produce enduring strategic stability on its own. Although the Cold War's historical record suggests that arms control could serve as a cooperative

bright spot in an otherwise rivalrous relationship and that competitors can work toward mutual military restraint, the geopolitical landscape the United States now faces differs meaningfully from the one it confronted during the Cold War, and the future of strategic arms control will not replicate its past.¹

Global power shifts have propelled China's rise and enhanced its military threat to the United States and its allies, yet in the realm of strategic nuclear weapons, Russia remains the United States' only peer. Rapid technological change challenges strategic stability as novel military technologies enhance adversaries' capabilities, exacerbate uncertainty, and, in some instances, defy traditional models of arms control. Meanwhile, growing political polarization within the United States will likely tie Washington's hands, infusing any arms control agreements with partisan controversy, minimizing the likelihood of treaty ratification, and calling into question the United States' reliability as a diplomatic party. For all of these reasons, the traditional model of bilateral, treaty-based nuclear arms control will prove insufficient—and perhaps also impracticable.

To meet new challenges, the United States should expand its conception of nuclear arms control to pursue a broader array of reciprocal restraints. Although robust, legally binding treaties remain the optimal form of arms control, the United States should prepare to press ahead with various forms of nuclear risk reduction and confidence-building measures.² American objectives should guide a pragmatic and creative approach to reciprocal restraints rather than allowing legacy forms of arms control agreements to dictate their contemporary function. The Joe Biden administration should take advantage of this flexibility and move to regulate intensifying strategic rivalry through a series of incremental steps. Extending New START (Strategic Arms Reduction Treaty) was an essential first step; the administration should also begin negotiations toward a supplemental or follow-on agreement to shore up the U.S.-Russia strategic arms control regime; build new habits of cooperation on strategic stability issues with China bilaterally and in formats like the UN Security Council's five permanent members (P5), where China is most likely to participate; establish dialogues that can foster the development of norms and guardrails to prevent destabilizing applications of emerging technologies; and consider the unilateral measures the United States can take to enhance strategic stability.

THE BENEFITS OF ARMS CONTROL

Arms control benefits strategic stability by clarifying each participating state's capabilities and strategy. This transparency alleviates the pressure for nuclear-armed states to make the worst-case assumptions that could trigger arms races, miscalculations, and escalatory pressures in crisis situations.³ Though a fuzzy concept—it is unobservable and therefore impossible to measure at any given time—strategic stability has two core dimensions. The first is crisis stability, obtained when nuclear-armed states are not incentivized to attempt a disarming strike against their adversaries due to fear the other side could strike first. By buttressing assured retaliation, arms control helps to allay this fear, thereby relaxing the perceived imperative to attack preemptively. This form of stability enhances the deterrence value of the U.S. nuclear arsenal by reinforcing confidence in its second-strike retaliatory capabilities, helping to manage escalation, and expanding presidential decision space at moments of acute tension. Crisis stability also benefits U.S. allies, who rely for their security on a credible extended deterrent and share an interest in managing catastrophic escalation during crisis or wartime. The second is arms race stability, or the absence of incentives to build up nuclear armaments.⁴ By dampening unnecessary arms competition, arms control enables all parties to achieve security at a lower cost. As the United States anticipates the economic fallout from COVID-19 and requires major nonnuclear defense investments, mitigating or avoiding an expensive nuclear arms race remains a strong U.S. interest.

The design of any arms control agreement will determine the extent to which it enhances strategic stability. In designing reciprocal restraints that advance U.S. interests and benefit strategic stability, policymakers could consider the extent to which any agreement or initiative captures the potential benefits of arms control:

Arms control can enhance transparency through inspections and verification. Verification has traditionally been a central component of arms control. It provides confidence that the reductions or limits that states commit to through arms control agreements will not jeopardize their security. It deters cheating (because cheating would be caught by the verification mechanisms) and ensures that each side holds up its end of the agreement.⁵ In addition, information exchanges and transparency provisions (including, but not limited to, formal verification measures) reduce the national costs of monitoring and increase the accuracy of U.S. intelligence estimates.

Arms control can enhance predictability by committing states to limitations on their behaviors or capabilities. Whereas uncertainty is often a breeding ground for worst-case assumptions, arms control agreements impose transparent limitations that create conditions for greater predictability.⁶ By participating in these agreements, the United States and Russia have effectively subscribed to nuclear force planning by mutual consent. Although no arms control treaty has covered the entirety of both states' nuclear arsenals, the limitations and time horizons of strategic arms control agreements have bounded the options available to both nations' militaries—thereby enabling each to conduct military planning on the basis of fairly stable assumptions about an adversary's nuclear capabilities. Numerical limits on capabilities have traditionally been central to this approach; a similar logic could apply to behaviors—such as unilateral, bilateral, or multilateral restraints—codified in declaratory policy and associated military doctrine and plans.

Arms control can enhance stability by limiting or even eliminating types of nuclear weapons, delivery systems, or behaviors. Arms control can entail either freezes or reductions, and it can limit certain categories of nuclear weapons, delivery systems, or behaviors, or it can eliminate them entirely. Such limitations benefit arms race stability directly: by imposing freezes or reductions, arms control can reduce incentives for states to undertake costly arms buildups. Nuclear arms limitations can also benefit crisis stability by dampening first-strike incentives. Limiting both offense and defense allows arms control to reinforce the condition of mutually assured destruction as the basis for deterrence, while also limiting systems that create “use it or lose it” pressure. Of course, arms limitations do not *necessarily* benefit strategic stability, as reductions to extremely low numbers, for example, could create new forms of vulnerability that are actually destabilizing. Beyond these traditional frameworks, arms control can provide additional benefits by preventing or limiting potentially destabilizing, new technological developments.

Agreements could limit or eliminate emerging military technologies before they are even deployed, at a moment when the distribution of advantage they will confer remains uncertain.⁷ Arms control can also constrain how these technologies can be used—for example, the integration of artificial intelligence (AI) into nuclear command and control systems—to minimize the ways they could reduce strategic stability.

Arms control can clarify intentions by creating clear thresholds for cheating. Arms control establishes clear bright lines for acceptable nuclear forces and nuclear behaviors, the breach of which would send an informative signal about the violating state's intentions. In many arms control agreements, the technical details establish verification mechanisms to guard against cheating as well as consultative bodies in which suspicions of cheating can be addressed.⁸ Although these measures are designed to deter and detect cheating, they cannot prevent a determined state from breaking free of agreed-upon limits. They can, however, increase the likelihood that militarily significant cheating is detected. Arms control can also help parties discern each other's intentions—a notoriously difficult task. When a state cheats on an arms control agreement—understanding the possibility and consequences of being caught—it sends a signal of more aggressive, or at least changed, intent.

Arms control can establish communication mechanisms that build confidence between parties and provide venues to discuss perceived violations or address new factors the original agreement omitted. Strategic stability is a fundamentally intersubjective condition: it exists only when the nuclear powers in question believe it exists.⁹ To help bring about convergent understandings of strategic stability, the conditions that underlie it, and the changes that could threaten it, arms control can provide venues for dialogue. Strategic stability dialogues can elucidate the nuclear thinking of rivalrous states, creating some measure of predictability, and build confidence in parties' commitment to implementation. Arms control agreements can provide avenues for settling disputes over implementation, including accusations of cheating, and integrate new or unforeseen capabilities into the terms of the agreement—thereby making the agreement impervious to inadvertent violations, resistant to misperception, and flexible amidst geopolitical or technological change. Arms control can also build broader trust among parties, building a foundation for other cooperative ventures.

Even those committed to developing counterforce capabilities that could confer nuclear advantage can see benefits in arms control. As political scientists Austin Long and Brendan Rittenhouse Green

argue, intelligence has long been viewed as the central challenge for counterforce doctrines.¹⁰ Insofar as arms control inspections are effectively intelligence collection efforts, they can aid in counterforce targeting—especially when compared with having no such transparency. Moreover, arms control can exist, and has existed, alongside parallel efforts to compromise Russia’s secure second-strike capabilities via enhanced targeting intelligence.¹¹

Parties to an arms control agreement do not necessarily ascribe the same benefits to it or weigh the benefits similarly. Whereas Russia seems to value the prestige of participation in U.S.-Russia arms control treaties—the zenith of high politics during the Cold War—the United States does not seek similar validation of its great power status, nor does China seem convinced that great powers have a responsibility to participate in strategic arms control, as the Donald Trump administration contended.¹² Conversely, the transparency benefits of arms control are disproportionately valuable for the United States.¹³ Given the United States’ political structure, Russia can gain significant insights into U.S. nuclear force posture through public budget meetings, congressional testimonies, and public statements by U.S. officials. In contrast, Russian public information about its nuclear forces is far more limited, requiring the United States to gain this information through other means.

Though not its primary merit, arms control can also strengthen the nonproliferation regime. Nuclear force reductions are central to fulfilment of nuclear weapons states’ Nuclear Nonproliferation Treaty (NPT) commitment “to achieve at the earliest possible date the cessation of the nuclear arms race and to undertake effective measures in the direction of nuclear disarmament.”¹⁴ Particularly at a time when the Treaty on the Prohibition of Nuclear Weapons is gaining political support—it entered into force in January 2021—the United States and its allies are under pressure to demonstrate progress toward nuclear force reductions.¹⁵

THE CHALLENGES TO ARMS CONTROL

Despite its benefits, arms control faces persistent and growing challenges. The collapse of the U.S.-Russia arms control regime reflects these pressures, as its framework was designed to regulate bilateral nuclear competition between the United States and Russia and therefore does not account for new actors or novel technologies.¹⁶ Progress toward updating arms control for these twenty-first-century challenges failed to materialize under President Trump. But even with Biden in the Oval Office, the domestic politics of formal international agreements are highly contentious and present a stark contrast to the centralized authoritarian approach of both China and Russia. Together, these challenges make plain the impossibility of achieving any kind of grand bargain by simply tweaking the existing structure of U.S.-Russia arms control.

TRIANGULAR DYNAMICS

The next wave of arms control will occur amidst profound geopolitical flux, as the world adjusts to the end of U.S. primacy and rebuilds in the wake of COVID-19. Without question, the United States' narrowing margin of advantage across many realms of national power is producing a more rivalrous and contested international system. At the same time, the United States, China, and Russia share an incentive to compete in a way that avoids dangerous and costly excesses, mitigates the risk of war, and promotes cooperation in those areas where mutual interests converge. Reinforcing and reinvesting in a system of reciprocal restraints in the nuclear and nuclear-adjacent domains would seem an obvious shared priority. Yet the challenges of arms control under conditions of great power competition are substantial because of the

profound difference between U.S., Chinese, and Russian nuclear postures and strategies—all of which exist within a multipolar nuclear order that also includes states such as India, North Korea, and Pakistan.

China will be the United States' chief rival over the coming decades, but that competition is exceedingly unlikely to play out in the domain of strategic nuclear weapons. Whereas the nuclear arms race was a central feature of bipolar U.S.-Soviet rivalry during the Cold War, China has never ascribed the same military or diplomatic significance to nuclear weapons.¹⁷ With approximately 320 weapons, China's nuclear arsenal is roughly equivalent in size to France's and represents about 5 percent of the United States' and Russia's respective arsenals. China also has a long-standing declaratory policy of nuclear "no first use."¹⁸

China, however, is in the midst of a military modernization program that will likely change the nuclear balance between the United States and China, even if it remains far from parity. The Pentagon estimates China's nuclear arsenal will double over the next decade, suggesting China could become a nuclear triad power.¹⁹ Beyond nuclear weapons and delivery systems, China is pursuing new asymmetric counterspace and cyber capabilities.²⁰ The considerable secrecy surrounding these developments, as well as the emphasis on rising Chinese military power and growing geopolitical ambitions in the few publicly available doctrinal documents, has increased U.S. alarm about expanding capabilities and hostile intentions.²¹ Even with these changes, however, the United States would retain a sizeable quantitative and qualitative overmatch.

Yet if U.S.-Russia arms control were to proceed along its current path, these China-centric risks would go unaddressed—and, in some cases, a purely bilateral framework could expose both the United States and Russia to new dangers generated by China's unconstrained military modernization.²² Given the warming relationship between China and Russia, Russia could possibly be more tolerant of changes to the trilateral strategic balance—though, with a shared border, overlapping notional spheres of influence, and a history of cooperation-turned-enmity, Russia has reason to be warier of growing Chinese military power than it publicly acknowledges.²³ The United States is of course in a different position. Sino-U.S. relations are on a downward trajectory, which COVID-19 has only accelerated, and the two nations have sharply different visions for the future of the Asian regional order.²⁴ The United States can only deter a Chinese bid for regional hegemony and preserve its position as an Indo-Pacific power if it maintains a military presence sufficient to ensure the costs of any U.S.-China war remain prohibitively high.²⁵

Russia and its nuclear forces present a distinct challenge. Although the Trump administration's National Security Strategy and National Defense Strategy grouped China and Russia together, Russia's economy is far smaller than China's and it has no prospects of becoming a global system leader. Russia is, however, revanchist in its ambitions to establish a sphere of influence in its near abroad, capable of acting as a regional or global spoiler, and enduringly proficient in the nuclear domain.²⁶ Indeed, Russia has the world's largest nuclear arsenal and, as two scholars observe, "Russia's leaders see nuclear weapons much as their Soviet predecessors did: as guarantors of peace and security among great powers" and also as tools of political power and influence.²⁷ Russian revanchism has intersected with its military modernization, resulting in a more assertive foreign policy that elevates nuclear weapons as a coercive tool in times of peace, crisis, and war.²⁸ The deployment of intermediate-range missiles in violation of Russia's Intermediate-Range Nuclear Forces (INF) Treaty commitments exemplifies the tension between Russia's apparent strategy and its commitment to a robust arms control regime.

Although New START places verifiable limits on Russia's deployed strategic nuclear forces, it does not address the full range of Russian nuclear capabilities. Russia retains a sizable arsenal of nonstrategic (short range or "tactical") nuclear weapons, which are more usable for warfighting, including as part of a possible "escalate to deescalate" strategy that seeks to blackmail the United States or the North Atlantic Treaty Organization (NATO) into tolerating a Russian fait accompli by credibly threatening unacceptable nuclear escalation. The collapse of the INF Treaty repealed limits on Russia's intermediate-range nuclear forces. Russia is also undertaking a modernization program that will yield a variety of exotic new systems. Some are strategic systems that would count under New START limits (such as the Avangard hypersonic glide vehicle, or HGV, and Sarmat heavy ballistic missile) and others are potentially destabilizing new capabilities that fall outside of the treaty (such as the Poseidon underwater drone, the Burevestnik nuclear-powered cruise missile, the Kinzhal air-launched ballistic missile, and the Tsirkon hypersonic cruise missile).²⁹

In light of these triangular asymmetries, arms control that is comprehensive, symmetrical, and binding—that is, arms control that replicates the U.S.-Russia model in trilateral form—will be impossible to achieve. Whereas a mutual and formal recognition of mutually assured destruction served as the basis for U.S.-Russia arms control at a time when those states had fairly symmetrical nuclear arsenals and doctrines, no

corresponding recognition exists between the United States and China or China and Russia. Given these differences, the U.S.-Soviet approach for arms control and nuclear risk reduction is unlikely to succeed for the United States and China.³⁰ Nevertheless, trilateral negotiations could prove fruitful in generating reciprocal restraints of a different, and initially more modest, variety. Such negotiations could also serve a broader, strategic end: creating friction and exposing divergent interests between China and Russia at a time when they are increasingly aligned in opposition to the United States.³¹

EMERGING TECHNOLOGIES

The confluence of progressive military modernization and technological innovation risks a new age of strategic instability. Cyber, AI, hypersonics, and space-based capabilities can upend crisis stability, as cross-domain escalation dynamics remain poorly understood.³² Technological breakthroughs also raise the possibility of real or perceived first-strike incentives—particularly when they result in novel vulnerabilities that adversaries can exploit.³³ Given this complexity, a strategic arms control regime that focuses exclusively on nuclear forces will prove progressively less stabilizing over time, as technology continues to evolve.

A range of emerging technologies has the potential to undermine strategic stability. Cyber is perhaps the most pressing concern. Militaries' increasing reliance on digital information systems, including for command and control, creates new forms of vulnerability, as perfectly impenetrable cyber defenses are impossible to erect.³⁴ This apparent vulnerability, in turn, could undermine command and control system survivability and, when combined with the threat of conventional and nuclear counterforce strikes, magnify instability. Inadvertent escalation is a further risk. As cybersecurity and AI scholar Ben Buchanan and political scientist Fiona Cunningham point out, distinguishing between hacking for espionage and preparation of the environment as a precursor to a cyberattack is exceedingly difficult.³⁵ Combined with "use it or lose it" pressures, misperceived espionage could represent an additional route to nuclear escalation. Beyond cyber vulnerabilities, the introduction of novel cyber capabilities could also be destabilizing if they enable existing weapons systems to perform faster, more accurately, or with greater stealth—an outcome made more likely by advances in artificial intelligence.³⁶ Although cyber and AI implicate nuclear stability, they defy traditional models of arms control because

they are “invisible” capabilities, prone to rapid change and improvement, and especially secretive because disclosure can obviate a military advantage.³⁷

Space systems are not new, but their increasing sophistication and integration into command and control amplifies destabilizing risk. The United States, China, and Russia all operate satellites for espionage purposes, and the ability to capture frequent, high-resolution images is progressing rapidly. Particularly when combined with other forms of sensing and AI, these advances in space-based surveillance could provide real-time tracking for mobile missiles. Such intelligence advances would enhance counterforce targeting, potentially calling into question China or Russia’s second-strike capabilities.³⁸

The United States also relies on satellites for its early warning and command and control systems, making it vulnerable to anti-satellite attacks, and China and Russia likely do the same.³⁹ Yet most satellites have no defensive capabilities other than the ability to maneuver out of the way of an approaching object. They also lack onboard sensors to detect approaching objects and require human intervention to respond or move out of their programmed orbit.⁴⁰ This vulnerability creates the risk of attacks on early warning satellites. Because these satellites warn early of both nuclear and conventional attacks, an effort to disable them as part of a conventional attack could be interpreted as an attempt to blind U.S. early warning against a strategic nuclear attack.⁴¹ Chinese and Russian development of anti-satellite weapons suggests such an attack is a real possibility. Moreover, given the difficulty of defending satellites against attack, even the fear of an attack on satellites necessary for command and control could generate first-mover pressures to attack another country’s satellites.⁴² Arms control for space-based assets and operations could be possible, as satellite numbers and orbits are relatively straightforward to verify and new launches are readily observable.⁴³ Yet any progress toward arms control in space could require parties to sacrifice perceived advantages—including in the conventional domain—which could prove prohibitive, especially given sharper geopolitical rivalry.

Maneuvering hypersonic glide vehicles are a third type of emerging technology that could prove destabilizing—though they could also prove amenable to integration within existing arms control regimes. Maneuvering hypersonic glide vehicles are missiles that can be launched into the atmosphere like intercontinental ballistic missiles (ICBMs) but that have greater maneuverability upon reentry, so as to take an unpredictable path and evade defenses en route to a target. In

addition to their intercontinental range, they are extremely fast, with speeds greater than Mach 5 (i.e., five times the speed of sound), and support heavy payloads. Although the United States does not plan to place nuclear warheads on hypersonic glide vehicles, China and Russia are developing hypersonic weapons that could be tipped with nuclear warheads.⁴⁴ Hypersonics risk escalation through their extreme speed and potential for nuclear-conventional entanglement. As command and control for nuclear and nonnuclear systems are increasingly entangled, the speed at which hypersonic vehicles operate heightens the risk of misinterpreting a conventional strike as a nuclear one, especially with diminished decision time.⁴⁵ Even so, the apparent novelty of hypersonics remains questionable: a ballistic missile submarine launch could result in similarly foreshortened decision time, existing nuclear delivery systems have the ability to carry conventional payloads, and Russia's hypersonic boost glide missile was already classified as an ICBM under New START limits.⁴⁶ This precedent could make it easier to classify other hypersonic weapons as ICBMs and fit them into existing, understood procedures for delivery vehicle limits. The relatively slower pace of technology development in hypersonic weapons, in contrast to other emerging technologies, could also make arms control more feasible.⁴⁷

The destabilizing effects of many emerging technologies remain largely prospective, as much will depend on these capabilities' development trajectories and how militaries ultimately adopt them.⁴⁸ For all the difficulties of regulating emerging technologies—and doing so in a verifiable manner—their effect on strategic stability could hold promise for future arms control regimes that exert stabilizing influence on the employment of new technologies, even if the technologies themselves cannot be proscribed. Furthermore, technological innovation could yield breakthroughs in states' ability to conduct verification, monitoring, and intelligence collection. The latter could be particularly important for informal agreements that rely on unilateral monitoring via national technical means (NTM).⁴⁹

U.S. DOMESTIC POLITICS

An inhospitable domestic-political environment within the United States compounds the international hurdles to arms control. All of the U.S.-Russian arms control treaties that entered into force during the Cold War received bipartisan approval with eighty-eight or more affirmative votes. By contrast, the most recent bilateral arms control agreement—New START, ratified in 2011—passed seventy-one to twenty-six, with

only 32 percent of Republican senators supporting the treaty.⁵⁰ This outcome seems to reflect several trends and dynamics in U.S. politics that portend greater difficulty for future arms control treaties.

The first trend is sharpening partisan polarization in the United States—not only among the mass public, but also evident among policy elites—as Democrats and Republicans have sorted into two opposing political camps.⁵¹ Partisan polarization hampers U.S. foreign policy in many respects, including by presenting barriers to treaty ratification, which requires a two-thirds vote by the U.S. Senate. Over the last two decades, the number of new international agreements concluded by the United States has plummeted. Treaty ratification has experienced an especially sharp downward turn.⁵² Although not solely attributable to partisan polarization, this trend does reflect fundamental divergence on the nature of U.S. interests and the best methods to achieve national security objectives, especially as concerns about the encroachments of international law on U.S. sovereignty have become a particular stalking horse of some on the ideological right.⁵³ Diminished congressional interest in arms control issues makes reflexive partisanship even likelier, as members decline to consider the merits of an agreement substantively and instead vote along party lines or weaponize arms control politically.⁵⁴

Polarization could also be eroding the consensus that undergirded the last remaining arms control agreement between the United States and Russia. New START rested upon a bipartisan compromise initially articulated by the Perry-Schlesinger Commission on the Strategic Posture of the United States, which stated: “The United States should continue to pursue an approach to reducing nuclear dangers that balances deterrence, arms control, and nonproliferation. Singular emphasis on one or the other element would reduce the nuclear security of the United States.”⁵⁵ In effect, hawkish Republicans accepted arms control as the prerequisite for nuclear modernization and more dovish Democrats accepted modernization as the price for arms control.⁵⁶ Democratic Senator Robert Menendez put it plainly in 2018: “bipartisan support for nuclear modernization is tied to maintaining an arms control process that controls and seeks to reduce Russian nuclear forces.”⁵⁷ As partisan animosity has increased and bipartisan compromises have become more difficult, Democrats could rethink their support for robust nuclear modernization, further jeopardizing future prospects for arms control.

This fragile accommodation could also founder as arms control agreements reach into new territory. Limitations on U.S. missile

defense are, for example, a central priority for both China and Russia, but agreeing to any such constraints would be a political lightning rod, and perhaps even a third rail. Recent political science research indicates that, as a Democrat, Biden would face an especially high “ratification premium”; gaining Senate approval for a post–New START arms control treaty could entail a political price in the form of defense spending that progressives are simply unwilling to pay.⁵⁸ Hawks could also construe arms control as overly “soft” on China or Russia—a line of political attack that partisan polarization all but guarantees. Anticipating such gridlock and taxation of political capital, Biden or his successors could simply turn away from treaty-based arms control and pursue executive agreements or other, less formal measures.

Finally, partisan polarization undermines the United States’ credibility as a counterparty in international diplomacy, including arms control negotiations. Arms control treaties are easy for presidents to exit and therefore they are only as binding as a president’s willingness to uphold bargains struck by his predecessors. Polarization thus injects greater volatility into U.S. foreign policy because of the likelihood of swings and reversals whenever the presidency changes hands from a Democrat to a Republican. Allies and adversaries alike will observe this inconstancy when considering diplomatic agreements, especially costly ones that rest upon U.S. promises of future restraint.⁵⁹ Indeed, the congressional politics of the Iran nuclear deal encapsulate the difficulties of nuclear diplomacy in a polarized Washington, as the Barack Obama administration sought to circumvent congressional gridlock by pursuing an executive agreement rather than a treaty, and Congress’ subsequent, highly contentious review of the deal validated the wisdom of that strategy. Once Trump took office, however, he pulled the United States out of the deal and reinstated sweeping sanctions on Iran—underscoring the ease with which presidents can withdraw from informal agreements.

THE SCOPE FOR ARMS CONTROL

A follow-on to New START is exceedingly unlikely to address the full range of challenges posed by Chinese and Russian military modernization, emerging technologies that undermine strategic stability, and U.S. domestic-political dysfunction. Attempting to forge an expansive, trilateral agreement is a recipe for failure, but the United States need not accept the death of arms control simply because it cannot sustain or replicate legacy frameworks. Instead, the United States should embrace a new, multitrack approach to arms control that features a range of reciprocal restraints varying across dimensions, which creates a menu of arms control options. Although some of these measures will be highly visible, others will entail quiet cooperation, which could even prove tacit in nature. None assume goodwill on the part of rivals but rather seize upon shared interest in preventing crises from spiraling into conflict and limiting the destructive scope of war should deterrence fail.

PARTIES: UNILATERAL, BILATERAL, TRILATERAL, OR MULTILATERAL

The United States can pursue reciprocal restraints via a variety of configurations. The most familiar is bilateral arms control of the kind the United States and Russia have repeatedly undertaken since the early 1970s. Despite China's professed disinterest, a trilateral U.S.-China-Russia format could prove a fruitful venue for some forms of reciprocal restraint in the future. A more inclusive framework could entail multilateral groupings, including the P5 UN Security Council members, all nuclear weapon states, NPT member states, or even signatories to the Nuclear Ban Treaty.

The least “reciprocal” format is unilateral restraints. Unilateral restraints could take the form of changes to declaratory policy (e.g., winnowing the conditions under which the United States would use nuclear weapons, including “sole purpose” or “no first use” declarations) or nuclear posture (e.g., abandoning launch on warning, reducing nuclear arsenal size, or eliminating a leg of the nuclear triad). Although unilateral measures cannot guarantee reciprocity, the 1991 Presidential Nuclear Initiatives, in which Russia followed the United States in pledging to reduce its tactical nuclear arsenals, provide precedent for reciprocal, unilateral restraints.⁶⁰ To increase the likelihood of reciprocity, the United States could explicate its expectations of reciprocity and potentially threaten reversal within a defined time period if the specified measures are not taken.⁶¹

In determining the correct number and identity of parties for future arms control, the United States will face clear trade-offs. Unilateral measures are the easiest to achieve because the authority to conduct them rests exclusively with the United States—but reciprocity cannot be assured and, even if reciprocal restraints are embraced, unilateral measures lack agreed-upon mechanisms for verification. Bilateral U.S.-Russia strategic nuclear arms control has been the dominant configuration, and the United States and Russia have established habits of cooperation in the negotiation and implementation of their agreements—but the exclusion of China from this format grows increasingly problematic. With the incremental addition of more parties to arms control agreements, the reach of a reciprocal restraint regime expands—but bargaining grows more complex and the number of veto points, including within each nation’s domestic political system, increases.

CODIFICATION AND VERIFICATION: FORMAL/TECHNICAL OR INFORMAL/POLITICAL

Reciprocal restraints can occur via formal treaties with technically specified and mutually agreed verification procedures or through informal, political agreements that rely on national technical means for verification. Russia has typically preferred the formal approach: when, for example, the George W. Bush administration proposed a political agreement on reducing operationally deployed strategic nuclear warheads, Russia demurred and the Strategic Offensive Reductions Treaty emerged instead.⁶² Both approaches have notable costs and benefits. As nuclear weapons policy specialist Amy Woolf explains:

Formal treaties allow the participants to understand and predict future changes in forces and threats, allow for transparency in monitoring those forces, and allow for balanced and equitable trades between the forces of the participating parties. On the other hand, the search for balanced trades and the need for detailed definitions tends to lengthen the negotiating process, while the detailed provisions and requirements lengthen and add to the cost of the implementation process. Unilateral measures, on the other hand, can be devised and implemented more quickly, allow for more “sweeping changes,” and provide the participants with the flexibility to reverse their reductions, if necessary. However, they often do not provide transparency or predictability, and there is the potential for destabilizing reversals.⁶³

Informal/political agreements, however, can serve as precursors to more formal accords.⁶⁴ Furthermore, advances in intelligence collection or voluntary protocols that facilitate certain forms of observation could create additional diplomatic space for reciprocal arms reductions or limitations that do not entail technically defined, intrusive verification measures.⁶⁵

The informal/political route is also available for reciprocal restraints that do not take the form of nuclear force reductions, such as prelaunch notification agreements; curtailment of certain forms of observable military activity such as submarine patrols, exercises, or cyber intrusions; establishment of crisis communications procedures; and information sharing in the context of strategic stability dialogues. Some of these reciprocal restraints would be effective only if unilateral methods of verification are available, but others entail readily observable and inherently mutual behaviors like military-military engagements.⁶⁶ Any informal arms control would necessarily be more transient—and therefore less predictable—than formal agreements, but its flexibility, shorter time horizons, and less intrusive nature could also make such measures more achievable.

CONTENT: QUANTITATIVE, QUALITATIVE, OR BEHAVIORAL

The United States can design reciprocal restraints that are quantitative, qualitative, or behavioral. Negotiations over formal arms control treaties have recently centered on quantitative limitations to establish

a desired balance between U.S. and Russian nuclear forces, though the level of specificity for these limitations has varied over time.⁶⁷ The layered limits approach is more precise in the constraints placed on parties' nuclear force postures—which can further enhance predictability and limit particular systems that are viewed as especially destabilizing, like multiple independently targetable reentry vehicle-equipped missiles. Yet layered limits also has disadvantages: the approach's specificity makes it less flexible and therefore less able to subsume modernized systems within preexisting agreements.⁶⁸

New START demonstrates the benefits of a “freedom to mix” approach at a time of modernization and technological change, as Russia has already agreed to include its Avangard HGV within its treaty-defined ceiling on ICBMs. The example of HGVs also illustrates a further point: quantitative limits can shift arms racing from a numerical to qualitative competition, which benefits countries like the United States that excel at military-technological innovation.⁶⁹ During the late Cold War, as professor John Maurer argues, rough quantitative parity codified by strategic arms control agreements enabled the United States to press U.S. advantages by “dictating the pace of key military-technological developments; promoting competition in environments more conducive to U.S. organizational and cultural advantages; and denying the Soviets the ability to respond to U.S. qualitative improvements by increasing their numerical strength.”⁷⁰

An alternative approach to reciprocal restraints could center on qualitative limits or pursue qualitative limits in tandem with quantitative ones. Qualitative attributes could include the speed, precision, and range of delivery vehicles, the yield of nuclear warheads, or the survivability of command and control infrastructure—and ongoing nuclear modernization programs in the United States, China, and Russia have or will achieve such improvements. Restraints on the qualitative features of strategic nuclear systems could take several forms: commitments to avoid certain modernizations (e.g., the integration of AI into nuclear command and control), restriction of technological advancements to the conventional domain (e.g., a commitment to refrain from arming HGVs with nuclear weapons), or a proscription on research and development (R&D) or on testing of potentially destabilizing new technologies (e.g., nuclear-powered cruise missiles). Verifying qualitative restraints would likely entail intrusive inspections, which could prove politically or technically infeasible, especially in the realm of nuclear command and control or “invisible” technologies such as cyberweapons and AI; political

commitments and limits on observable forms of testing could create more bargaining space for reciprocal restraints of this kind.⁷¹

Finally, reciprocal restraints could address behavior: rather than placing qualitative or quantitative limitations on nuclear forces or their supporting command and control systems, behavioral restraints would address the doctrine guiding those forces' employment or posture.⁷² Such constraints could manifest as reciprocal changes to declaratory policy; they could also be explicit or even tacit agreements to restrict the geographic scope of nuclear deployments—such as an agreement by the United States and Russia not to base intermediate-range missiles in Europe, to remove nonstrategic nuclear weapons from Europe, to constrain the geographic scope of missile defense systems, or to keep nuclear drones in port during peacetime.⁷³ Behavioral restraints could also be obtained in the cyber domain—as physicist and nuclear policy specialist James Acton puts it, “a consciously risk-averse approach to authorizing potentially escalatory cyber operations, particularly those that are targeted directly against nuclear forces or C3I [command control communications and intelligence] systems, including dual-use networks” or even a multilateral agreement to avoid such behaviors entirely.⁷⁴

BALANCE: SYMMETRICAL OR ASYMMETRICAL

Reciprocal restraints can be exactly symmetrical or they can include asymmetrical features. Arms control, when pursued via formal treaties, faces legal requirements for symmetry. After backlash against the asymmetrical nature of the SALT I treaty, Congress adopted the “Jackson amendment,” which mandated that future arms control treaties must include equal limits for the United States and Russia.⁷⁵ Absent lawmakers' decision to overturn this provision, future arms control treaties will likely be subject to this constraint. Nevertheless, a freedom to mix approach to quantitative limitations can exist alongside qualitative asymmetries, and political commitments could circumvent this congressional requirement.

Embracing asymmetric arms control opens a host of new possibilities for the design of reciprocal restraints. As defense studies scholar Heather Williams argues, asymmetric arms control could entail “asymmetry of reductions,” whereby parties agree to an equal ceiling but one state makes deeper cuts to existing forces to reach the specified limits; “asymmetry of ceilings,” or unequal quantitative limits; and “asymmetry of domains,” which “would see states reciprocate reductions but of

dissimilar capabilities” according to ratios designed to achieve qualitative balance across domains.⁷⁶ Given existing imbalances, flexible, asymmetric schemes could work best to bring Chinese intermediate-range missiles or Russian nonstrategic nuclear weapons into an arms control regime—but such an approach could face strong political headwinds if the schemes appear to accept or codify strategically disadvantageous imbalances.

SCOPE: BROAD OR NARROW

In designing a reciprocal restraint regime, the United States should decide whether to seek a broad agreement or pursue a narrower, more piecemeal approach. Membership is one element of a comprehensive agreement, but the other element is the scope of the restraints. A broad agreement would go beyond the traditional emphasis on strategic systems and could include nonstrategic nuclear weapons, missile defense systems, and emerging technologies. With every incremental increase in scope comes a possibility for more creative bargaining—especially within an asymmetry of domains approach—as the number and type of “chips” increase, but also more complexity and grounds for disagreement, both among parties and within states themselves. Missile defense, for example, is widely viewed as a necessary component of a comprehensive follow-on to New START because of its importance to both China and Russia, but the political barriers to limitations are high, perhaps prohibitively so, within the United States.

An alternative to an omnibus arms control agreement is a regime with multiple, diverse forms of reciprocal restraint.⁷⁷ This piecemeal approach would likely prove simpler, faster, and more politically feasible—but it also creates the risk that negotiators would dedicate their attention to easier problems and skirt the most consequential areas of disagreement, leaving significant sources of instability unaddressed. Further, narrowing the scope of any discrete negotiation provides fewer possibilities for creative bargaining or linkages that could reach across domains and construct a new framework for strategic stability.

PROGRESS: THE WAY FORWARD FOR U.S. POLICY

Progress toward a new regime of reciprocal restraints will be more likely if the United States, China, and Russia can agree on regulating strategic rivalry, including through nuclear risk reduction, as a shared objective. However, arms control will not transform the United States' relationship with either China or Russia; rather, it will exist alongside Chinese and Russian behavior that undermines U.S. interests and values. The United States should recognize that arms control is an instrument of strategy, rather than an end in itself, and that none of the arms control measures proposed below would address the instability that could arise from the behavior of other nuclear weapon states, including India, North Korea, and Pakistan.⁷⁸

Still, well-crafted reciprocal restraints could offer numerous, mutually reinforcing benefits:

- By bolstering crisis stability, they establish guardrails that ensure competition or even crises do not spiral into catastrophic conflict.⁷⁹
- In promoting both crisis and arms race stability, they can help the United States to minimize the role of nuclear weapons in its national security strategy.⁸⁰
- They can also diminish wasteful spending on nuclear forces at a time when the economic fallout from COVID-19 could place downward pressure on discretionary spending, when the United States should prioritize domestic investment, when national security budgets should rebalance away from defense spending, and when defense dollars would be better used on nonnuclear programs.

Further, arms control could build confidence between the United States and its great power rivals, enabling other forms of strategic regulation or limited cooperation, while also advancing U.S. nonproliferation objectives by upholding the core NPT bargain.

Given the myriad challenges the world faces, spectacular arms control breakthroughs are highly improbable in the next few years. Instead, the Biden administration should pursue incremental measures that will benefit strategic stability while also laying the groundwork for more dramatic future progress—including the possibility that windows of opportunity could emerge unexpectedly. Alongside these efforts, the United States should consider how it can continue to reap some of the benefits of arms control even if New START proves to be the last formal agreement of its kind.

TRILATERAL

The Biden administration should take the following steps to pursue trilateral stability and a future trilateral agreement with China and Russia:

- As a political framework for negotiations with China and Russia, President Biden should seek a joint statement with Vladimir Putin and Xi Jinping reaffirming the Reagan-Gorbachev commitment that “a nuclear war cannot be won and must never be fought.”
- In bilateral and multilateral formats, explore the potential for restraints on missile defense that would provide reassurance to China and/or Russia without compromising the United States’ and its allies’ ability to defend against other ballistic missile threats, including geographic restrictions on the deployment and radar capabilities of missile defense systems, on-site visits, and reciprocal transparency measures.⁸¹ These restraints could be used as a bargaining chip in a future trilateral agreement.

BILATERAL: U.S.-RUSSIA

The Biden administration should take the following steps to bolster bilateral strategic stability with Russia:

- Begin negotiating a bilateral follow-on to New START that aims to secure further bilateral reductions to deployed strategic nuclear warheads, missiles, bombers, and launchers. As part of these negotiations,

the United States should seek to incorporate Russia's nonstrategic nuclear weapons, intermediate-range nuclear systems that were previously covered by the INF Treaty, and exotic new nuclear systems. Through these negotiations, the United States should explore the possibility of using supplemental, informal agreements that could open new avenues for reciprocal restraints, particularly related to limitations on Russia's nonstrategic nuclear forces.⁸²

- Pursue an interim political agreement that builds confidence in novel dimensions of arms control that go beyond New START, potentially including new forms of transparency and cooperation on missile defense; a short-term freeze on all nuclear warheads akin to the one Russia agreed to in October 2020, with voluntary disclosures (supplemented by NTM) as an initial basis for verification; and agreement to geographically limit the deployment of intermediate-range missiles in Europe.⁸³
- Seek broader and more frequent discussions of strategic stability and crisis management at all levels of the bilateral relationship including expanded "strategic security" dialogues, NATO-Russia Council dialogues about crisis management, and technical expert dialogues about nuclear security.⁸⁴

BILATERAL: U.S.-CHINA

The Biden administration should take the following steps to bolster bilateral strategic stability with China:

- Make strategic stability dialogues a bilateral priority as part of a broader set of high-level dialogues about bilateral security issues. Strategic stability dialogues should cover a range of nuclear and nuclear-adjacent issues, including nuclear doctrine, forces, and policy; emerging technology (cyber technology, AI, space, and hypersonics); and crisis communications procedures.
- Use strategic stability dialogues to identify areas to establish confidence-building mechanisms, including information exchanges, and crisis communications hotlines.
- Explore the possibility of a joint statement about the desirability of crisis management and nuclear risk reduction to be made at an early meeting between senior members of the Biden administration and

Chinese counterparts. A statement signaling acceptance of mutual vulnerability could serve as a bargaining chip to incentivize China's participation in strategic stability dialogues.⁸⁵

MULTILATERAL

The Biden administration should take the following steps to pursue multilateral diplomacy and agreements by engaging the P5 in strategic dialogues on arms control:

- Continue and significantly expand P5 strategic stability dialogues, including new information sharing about nuclear modernization programs and plans; expanded working group discussions of verifying nuclear reductions, including the possibility of mock inspections or joint verification exercises among the P5; and a new working group on reducing risks posed by emerging technologies, including cyber technology, AI, space, and HGVs.⁸⁶
- Pursue informal multilateral agreement on prenotification of missile flight tests for all P5 nations, expanding upon U.S.-Russia and China-Russia prelaunch notification agreements that already exist for long-range ballistic missile launches.⁸⁷ Such a P5 agreement could help regularize information exchanges and offer a foundation for more intensive or intrusive information exchanges in the future.

UNILATERAL

The Biden administration holds power to act unilaterally in ways that immediately advance strategic stability. Here are the steps it should take:

- At an appropriate time, as part of the political framework for New START follow-on negotiations, build confidence by announcing an intent “to deploy no more than 1,400 strategic warheads (fewer than the treaty’s ceiling of 1,550) and invite Russia to make a reciprocal commitment.”⁸⁸
- Conduct a Nuclear Posture Review (NPR) in the first year of the Biden administration and as part of the NPR process
 - assess the nuclear modernization program of record in light of evolving strategic challenges and budgetary pressures, and consider

how U.S. declaratory policy, strategic posture, and force structure can best serve national security objectives. These determinations should establish the parameters for subsequent arms control efforts, including by distinguishing between capabilities to preserve or develop, capabilities to unilaterally eliminate, and capabilities that could serve as bargaining chips;

- consider arms control priorities with regard to China and Russia, including an assessment of the highest-priority capabilities and the range of bargains the United States should prepare to consider in future negotiation;
 - evaluate the United States' global ballistic missile defense requirements, with particular attention to the feasibility and costs of ongoing programs, as well as the possibility of restrictions that could reassure China and/or Russia without compromising defense against other missile threats; and
 - evaluate unilateral changes to declaratory policy, such as a “sole purpose” or “no first use” declaration. In particular, the NPR should assess the operational implications of these declaratory policy changes, their likely effects on the United States' allies and extended deterrence commitments, and their expected implications for the behavior of other nuclear powers.
- Increase intelligence collection and analytical capacity of Chinese and Russian nuclear forces—including through the integration of emerging and/or commercial technologies such as commercial satellites, nanosatellites, and long-range reconnaissance drones—to increase the options for informal arms control agreements in the event New START expires without replacement in 2026.⁸⁹
 - Build a foundation for bipartisan support for possible future arms control treaties by encouraging congressional action on nuclear and strategic stability issues and seeking bipartisan statements of support for significant diplomatic initiatives.

Arms control is a limited, but useful, tool of U.S. strategy. The Biden administration inherits a near *tabula rasa*, which is dangerous but also replete with opportunity. Rather than restricting strategic arms control only to what is achievable within legacy frameworks, the United States

will find greater success by allowing function to dictate form. Constructing a regime of reciprocal restraints will be diplomatically taxing, but it has the potential to regulate strategic competition between the United States and its major power rivals while also restoring some measure of strategic stability for a new age of domestic and international politics. Given the specter of nuclear Armageddon that could accompany failure, this moment demands nothing less.

ENDNOTES

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62. Acton and Gerson, “Beyond New START,” 22; Brooks, “The End of Arms Control?,” 91; Manzo, “Nuclear Arms Control Without a Treaty?,” 69; Woolf, “Russia’s Nuclear Weapons,” 30.
63. “Arms Control and Strategic Nuclear Weapons: Unilateral vs. Bilateral Reductions,” Congressional Research Service, May 16, 2002, <http://everycrsreport.com/reports/RL31222.html>. On the verification benefits of New START specifically, see: “The Prospects for Russia–US Arms Control Ahead of New START’s Expiry,” International Institute for Strategic Studies, October 2020; Timbie, “A Way Forward,” 195.
64. Examples include the preliminary agreement on nuclear reductions that preceded New START or the Joint Plan of Action that preceded the Joint Comprehensive Plan of Action; see “Joint Plan of Action,” U.S. Government, November 24, 2013, <http://home.treasury.gov/system/files/126/jpoa.pdf>.
65. On the risks and benefits of emerging technology for verification, see Vaynman, “The Transparency-Security Tradeoff in Arms Control.”
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81. Acton and Gerson, "Beyond New START," 19; Ernest Moniz and Sam Nunn, "The Return of Doomsday: The New Nuclear Arms Race—and How Washington and Moscow Can Stop It," *Foreign Affairs* 98, no. 5 (September/October 2019).
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Rebecca Lissner

ABOUT THE AUTHOR

Rebecca Lissner is an assistant professor in the strategic and operational research department at the U.S. Naval War College and non-resident scholar at Georgetown University's Center for Security Studies. She has held research positions at the University of Pennsylvania's Perry World House, the Council on Foreign Relations, and Yale University and served as special advisor to the deputy secretary at the U.S. Department of Energy. Lissner is author of the forthcoming book *Wars of Revelation: The Transformative Effects of Military Intervention on Grand Strategy* and the coauthor, with Mira Rapp-Hooper, of *An Open World: How America Can Win the Contest for Twenty-First Century Order*. Her research and writing have appeared in *Political Science Quarterly*, *Presidential Studies Quarterly*, *Foreign Affairs*, *Survival*, the *Washington Quarterly*, *Foreign Policy*, and the *Atlantic*, among other publications. Lissner received her AB in social studies from Harvard University and an MA and PhD in government from Georgetown University.

Cover photo: A Russian naval ensign flies atop the K-18 Karelia nuclear-powered ballistic missile submarine during a training in the Barents Sea on April 26, 2018.
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58 East 68th Street
New York, NY 10065
tel 212.434.9400

1777 F Street, NW
Washington, DC 20006
tel 202.509.8400