THE CARNEGIE PAPERS

GAMBIT OR ENDGAME?

The New State of Arms Control

Alexei Arbatov

NUCLEAR POLICY | MARCH 2011

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Summary

The pursuit of nuclear arms control has enjoyed something of a renaissance recently, with the signing of the New Strategic Arms Reduction Treaty (New START) in spring 2010 in Prague. Whether that momentum will dissipate after New START or lead to further nuclear arms control agreements depends on several factors:

1. **The new U.S. and Russian nuclear doctrines.** While there is always some distance between a state's declared policy and that policy's implementation, both documents show that, behind their more ambitious disarmament rhetoric, the United States and Russia maintain conservative nuclear policies that make radical nuclear disarmament unlikely—to say nothing of a nuclear-weapon-free world.
2. **The peculiarities of the recently signed and ratified New START agreement.** Among these are the modest cuts stipulated by the treaty relative to its predecessors; the acrimonious ratification debates in both the U.S. and Russian legislatures; and the dim prospects for a follow-on agreement (in sharp contrast to the mood prevailing after past START agreements).
3. **The dynamics of obsolescence and modernization of U.S. and Russian strategic offensive forces.** The United States should have little problem cutting its forces to get below New START's limits. Russia, however, will have problems, not in reducing its numbers, but in raising them to treaty ceilings, due to their removal of obsolete weapons from service and slow deployment of new systems. Either Russia can negotiate a New START follow-on treaty with even lower ceilings or it can accelerate the development and deployment of new systems. While the former is obviously a more attractive alternative, it would require the United States and Russia to resolve many thorny arms control issues, such as ballistic missile defense, conventional strategic weapons, and tactical nuclear weapons.
4. **Ballistic missile defense.** President Obama's decision to modify the Bush administration's ballistic missile defense plans in Central Europe opened the way for New START and eased Russian concerns, even if they could never have been allayed entirely. Moscow believes that U.S.

ballistic missile defense programs are ultimately designed to degrade Russia's nuclear deterrent, and it is far from clear that U.S. proposals to jointly develop such capabilities with Russia would allay those concerns—or that the idea even makes any sense.

5. **Russia's perceptions of U.S. *conventional strategic* weapons.** Russian officials are especially concerned about the U.S. Prompt Global Strike concept and do not trust American assurances that such capabilities are only directed at terrorists and rogue states. There has already been some progress made in dealing with these weapons in negotiations, and future progress on this issue will likely depend on legal agreements and confidence-building measures to scale U.S. capabilities in ways that would threaten Russia's (or China's) strategic deterrent.
6. **Joint development of ballistic missile defenses with Russia.** This issue could seriously complicate Washington's and Moscow's strategic relations with China and India. Officials on both sides would do well to start small and proceed step-by-step, using incremental successes to build the momentum necessary to work through more difficult issues.
7. **Non-strategic—that is, tactical—nuclear weapons.** During the Cold War, the United States and Europe relied on tactical nuclear weapons to counterbalance Warsaw Pact superiority in conventional forces in Europe; today, the situation is reversed, with Moscow relying on tactical nuclear weapons as a counterbalance not only to NATO conventional superiority but also to U.S. strategic nuclear superiority and long-range precision-guided weapons. No one now knows which weapons systems should be categorized as non-strategic, and how limits across regions could be accounted for and verified. In addition, reviving the moribund Conventional Forces in Europe (CFE) Treaty is essential to dealing with the issue of tactical nuclear weapons.

Working through these complicated factors will require painstaking effort by U.S. and Russian diplomats and experts. They will have to move past not just Cold War habits and prejudices but also the mistakes and misunderstandings of the past two decades of post–Cold War history. Commitment to this task will determine whether New START goes down in history as a mere gambit or as the first step of an endgame for U.S.-Russian security competition.

Gambit or Endgame?

Coming after ten years of stagnation and disintegration, the past two years have been reinvigorating for nuclear disarmament and nonproliferation. The four heralds of this disarmament renaissance, George P. Shultz, William J. Perry, Henry A. Kissinger, and Sam A. Nunn, set things in motion with a now celebrated op-ed in the *Wall Street Journal* in January 2007.[1] After a prolonged period of deliberation, four Russian wise men joined the American tetrad and further developed their initiative in an article in October 2010.[2] President Barack Obama's Prague speech in the spring of 2009 called for taking concrete steps toward a world free of nuclear weapons, and a short while later Russian President Dmitri Medvedev also took up that call.[3] A year later, the two leaders signed New START—once again, in Prague. This treaty was in short order followed by the 47-state Nuclear Security Summit in Washington, the Non-Proliferation Treaty (NPT) Review Conference in New York, the Lisbon NATO Summit Declaration, and finally the ratification of New START by the U.S. Senate in December 2010 and the Russian Federal Assembly in January 2011. Concurrent with these events, the United States and Russia have made several noteworthy changes in their nuclear doctrines and weapon programs.

The achievements of the past two years have set the stage for a new phase in nuclear policy that will significantly shape international security as a whole.

The disarmament process, to be sure, remains controversial and there are many potential pitfalls. But the achievements of the past two years have set the stage for a new phase in nuclear policy that will significantly shape international security as a whole. Some critics, of course, still seem to believe that the Cold War never ended (witness the ratification debates in the U.S. and Russian legislatures), but for all the heat these debates generated, the past decade has shown us that dismissing differences and disagreements doesn't generate any light, and indeed only deepens mutual mistrust and hostility.

Nuclear Doctrines and Strategic Concepts

Measured against expectations and early statements by government officials, the new Russian Military Doctrine of February 2010 and the U.S. Nuclear Posture Review of April 2010 were a source of several welcome surprises, as well as some disappointments. Generally, any state's military doctrine, even its nuclear aspects, is written for both domestic and foreign audiences. The relative importance of domestic and foreign policy goals—as well as the gap between policy as it is declared and policy as it is implemented—varies from state to state. Whereas the Russian Military Doctrine focused on broader military theory and posture along with some operational details, the U.S. Nuclear

Posture Review focused more intently on nuclear issues, including U.S. declaratory policy and deployment details. To judge these efforts in the simplest terms possible, the Russian Military Doctrine was not quite as bad as predicted and the U.S. Nuclear Posture Review was not nearly as good as expected.

Russian Federation

The new Military Doctrine of the Russian Federation, approved by President Medvedev on February 5, 2010, postulates that, although a large-scale nuclear or conventional war against Russia is not as likely today as it was in the past, certain types of military dangers are increasing. These include, "attempts to assign global functions to NATO military potential" in violation of international law

Main External Military Dangers

a) the desire to endow the military potential of the North Atlantic Treaty Organization (NATO) with global functions carried out in violation of the norms of international law and to move the military infrastructure of NATO member countries closer to the borders of the Russian Federation, including by expanding the alliance;

b) the attempts to destabilize the situation in individual states and regions and to undermine strategic stability;

c) the deployment (buildup) of armed forces of foreign states (groups of states) on the territories of states contiguous with the Russian Federation and its allies and in adjacent waters;

d) creation and deployment of strategic missile defense systems undermining global stability and violating the established balance of forces in the nuclear-missile sphere, the militarization of the outer space, and the deployment of strategic non-nuclear precision weapon systems;

e) territorial claims against the Russian Federation and its allies and interference in their internal affairs;

f) the proliferation of weapons of mass destruction, missiles, and missile technologies, and the expansion of the number of states possessing nuclear weapons;

g) the violation of international agreements by individual states and noncompliance with previously concluded international treaties in the field of arms limitation and reduction;

h) the use of military force on the territories of states contiguous with the Russian Federation in violation of the UN Charter and other norms of international law;

i) the presence (emergence) of spots of armed conflict and the escalation of such conflicts on the territories of states contiguous with the Russian Federation and its allies;

j) the spread of international terrorism;

k) the emergence of spots of ethnic (religious) tension, the activity of international armed radical groupings in areas adjacent to the state border of the Russian Federation and the borders of its allies, the presence of territorial disputes, and the growth of separatism and violent (religious) extremism in individual parts of the world.

and the "extension of the alliance and its military infrastructure to Russian borders." The doctrine also cites efforts to destabilize some regions and to deploy armed forces and military bases near the territory of Russia and its allies, as well as "the creation and deployment of strategic missile defenses, which undermine global stability and shift the balance of forces in the missile-nuclear sphere, the militarization of outer space, [and] the deployment of strategic conventional high-precision weapons." The danger of "proliferation of weapons of mass destruction, missiles and missile technologies" is only the sixth item on this list, while international terrorism and ethnic conflicts and religious extremism are tenth and eleventh, respectively.

This sequence of priorities is important to keep in mind, since it reflects the perceptions of the majority of the Russian political elite and strategic community. It is also important because, not only does it differ significantly from American priorities, but, worse still, it treats the policies, actions, and military programs of the United States and NATO as the biggest threats to Russia. These differences of perception will affect the prospects of further U.S.-Russian arms control and security cooperation, including proposals for the joint development of ballistic missile defenses.

The new Russian Military Doctrine clearly emphasizes deterrence as being the primary goal of defense policy:

> The Russian Federation ensures constant readiness of the Armed Forces and other troops for deterring and preventing armed conflicts [and] ensuring armed protection of the Russian Federation and its allies. . . . Preventing nuclear armed conflict, as well as any other armed conflict, is the main task of the Russian Federation.[4]

It goes on to envisage the Russian use of nuclear weapons "in response to the use of nuclear weapons and other weapons of mass destruction against it or its allies, as well as in case of aggression against the Russian Federation using conventional weapons, when the very existence of state is threatened."[5]

In other words, Russia maintains nuclear forces: first, to retaliate against a nuclear strike on Russia or its allies; second, to retaliate against a chemical, biological, or radiological attack against Russia or its allies; and, third, in case a conventional attack on Russia threatens the existence of the state. The latter contingency obviously refers to the threat posed by an expanding NATO's superiority in general-purpose forces and high-precision conventional arms, and possibly also to the strategic situation in the Far East, which is changing to the detriment of Russia. Notably, the doctrine does not envisage that Russia would use nuclear weapons in response to a conventional attack on Russia's allies.

Another noteworthy passage states that "In case of a military conflict involving conventional means of destruction (large-scale war, regional war) threatening the very existence of the nation, the availability of nuclear weapons can lead to the escalation of this conflict to a nuclear armed conflict."[6] A

conflict between Russia and NATO, or between Russia and the United States and Japan in the Far East, would be global rather than regional. One can hardly imagine such a conflict failing to spread from the Euro-Atlantic region to the Far East-Pacific (and vice versa).[7] Yet a conflict with other countries in the post-Soviet space or in adjacent regions would hardly threaten "the very existence" of the Russian state—with only one exception: China. A Sino-Russian war would be regional, there would be a very real risk of Russia's defeat by conventional means alone, and such a defeat could jeopardize "the very existence of the state" through the loss of territories in the Far East and Siberia. It is logical to expect that Russia would use nuclear weapons to prevent such a catastrophe. If China were to build up its long-range strategic forces, however, it would deprive Russia of the nuclear option by threatening a devastating retaliation on Russia's European urban-industrial zone. Thus, Russian fears of a Chinese strategic arms buildup will make Russia cautious about agreeing to a joint ballistic missile defense deployment with the West.

A conflict with other countries in the post-Soviet space or in adjacent regions would hardly threaten "the very existence" of the Russian state—with only one exception: China.

The new Russian Military Doctrine also lacks a number of the "novelties" that were included in the 2000 Military Doctrine and subsequent official documents—in particular the "de-escalation of aggression . . . through the threat of or direct delivery of strikes using conventional and/or nuclear weapons." Nor does it provide for "discriminating use of certain components of Strategic Deterrent Forces," demonstrating resolve by "increasing their combat readiness, conducting exercises and relocating certain components."[8] In short, the new Russian Military Doctrine soberly resists the temptations of overestimating the usefulness of nuclear weapons and nuclear saber-rattling.

What level of nuclear forces is enough, and how would Russia make use of them in a conflict? The Military Doctrine establishes a need

> to maintain the composition and state of combat and mobilization readiness and training of the strategic nuclear forces, their infrastructure and command and control systems at a level guaranteeing the infliction of the assigned level of damage on an aggressor under any conditions of war initiation.

The document makes no mention of "assured destruction," "unacceptable damage," or "devastating retaliation." Nor does it mention tactical nuclear weapons, or any criteria for strategic parity, or approximate equality, or the need to maintain a "nuclear triad" force structure (that is, nuclear-capable strategic bombers, land-based missiles, and ballistic missile submarines).

There was a lot of speculation about the existence of a secret appendix to the Military Doctrine that allegedly provides more detail about the circumstances in which Russia would use nuclear weapons first. A section of the public text of the doctrine, however, already gives some guidance on this subject. That section states,

> Other threats include hindering the functioning of civil and military authorities [and] disrupting the operations of strategic nuclear forces, missile attack early warning systems, space surveillance, nuclear weapons storage facilities, nuclear power facilities, nuclear and chemical industry facilities and other potentially hazardous installations.

Overall, the new Military Doctrine clearly uses more cautious language than the 2000 version to define the circumstances in which Russia would use nuclear weapons in a conventional war. The 2000 Military Doctrine contained a broader vision of nuclear "response to large-scale aggression with conventional weapons in situations critical to the national security of the Russian Federation."

The United States

The Nuclear Posture Review, released on April 6, 2010,[9] outlines the Obama administration's approach to promoting the president's Prague agenda for reducing nuclear dangers and moving toward a world free of nuclear weapons. Though this document is not directly equivalent to the Russian Military Doctrine, it does provide a specific focus on nuclear issues that complements the broader assessment of strategic priorities in the U.S. *National Security Strategy*, released in May 2010.

According to the Nuclear Posture Review, proliferation and terrorism pose today's most urgent nuclear threats. It cites as positive developments the easing of Cold War rivalries, the growth of unrivaled U.S. conventional military capabilities, and major improvements in missile defenses against regional threats. Given these and other changes to the nuclear threat environment, the new priorities of the United States are "discouraging additional countries from acquiring nuclear weapons capabilities and stopping terrorist groups from acquiring nuclear bombs or the materials to build them" (p. 6).

On a more traditional theme, the review notes the enduring challenge of preserving strategic stability with the existing nuclear powers, most notably Russia and China. (Moscow, for its part, doesn't appreciate being placed on par with China, an assessment that gives Russian opponents of further nuclear cuts an additional argument in their favor.) The review also speaks of the need to strengthen deterrence of regional threats while reassuring allies and partners that the American commitment to their defense remains strong.

The Nuclear Posture review states that America can meet all of these objectives with fewer nuclear weapons than it once needed. It states that "the fundamental role of U.S. nuclear weapons . . . is to deter nuclear attack on the United States, our allies, and partners" (p. vii). Hence the United States "would only consider the use of nuclear weapons in extreme circumstances to defend the vital interests of the United States or its allies and partners" (p. ix). As a means of reducing reliance on nuclear weapons, the review declares that "the United States will not use or threaten to use nuclear weapons against non-nuclear

weapons states that are party to the NPT and in compliance with their nuclear non-proliferation obligations" (p. viii).

One aspect of the Nuclear Posture Review is of particular importance to Russia (not to mention controversial, as this paper discusses elsewhere): its focus on strengthening deterrence while reducing the role of nuclear weapons, by means of investments in missile defenses, counter-WMD capabilities, and other conventional military capabilities. The objective of these investments, according to the review, is to help create "the conditions under which it would be prudent to shift to a policy under which deterring nuclear attack is the sole purpose of U.S. nuclear weapons" (p. 48).

The Nuclear Posture Review speaks in more concrete terms than the Russian Military Doctrine in its guidance for America's nuclear posture and programs. In particular, it specifies that under the lower force levels of New START the United States will retain a nuclear triad and will also "de-MIRV" its intercontinental ballistic missiles (ICBMs) to one warhead each in order to enhance the survivability of its forces and hence strategic stability.

The review also notes that, beyond the need to maintain strategic nuclear balance, the United States must maintain a nuclear component in its regional security architectures for as long as U.S. forces and allies face nuclear threats. In order to support its extended deterrence commitments, the United States must "retain the capability to forward deploy U.S. nuclear weapons on tactical fighter-bombers and heavy bombers, and proceed with full scope life extension of the B-61 bomb" (p. xiii). (This assessment does not preclude future decisions by NATO that might alter this policy.)

According to the Nuclear Posture Review, the United States will retire the nuclear-armed sea-launched cruise missile (TLAM-N), but it will maintain the nuclear umbrella by means of forward-deployable fighters and bombers, as well as U.S. ICBMs and submarine-launched ballistic missiles. The United States will maintain the current missile submarine patrol rate, which keeps about 60 percent of the submarine force at sea at any given time.

Comparing nuclear doctrines

To the extent that official military doctrines and statements have any bearing on the actual strategies of armed forces, the two documents do indicate some changes to Russian and U.S. policy.

The doctrines contain very similar language about the circumstances in which the United States and Russia would consider using nuclear weapons. According to the U.S. Nuclear Posture Review, "the fundamental role of U.S. nuclear weapons, which will continue as long as nuclear weapons exist, is to deter nuclear attack on the United States, our 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" (p. ix). The Russian Military Doctrine states: "Preventing nuclear armed conflict,

as well as any other armed conflict, is the main task of the Russian Federation." Besides deterring nuclear or other WMD attacks, Russia may decide to use nuclear weapons first "in case of aggression against the Russian Federation using conventional weapons, when the very existence of state is threatened."

The novelty of these statements is more rhetorical than substantive. Even during the worst years of the Cold War the two sides were never cavalier about nuclear weapons and both contemplated their use only in extreme circumstances and as a means of last resort. Both powers envision the use of nuclear weapons in the event of a nuclear attack on themselves or their allies, and the United States also extends this commitment to "partners" (probably Israel). Both nations also envision the possibility of nuclear retaliation in the event of a non-nuclear, non-conventional WMD attack on their allies (and partners).

Even during the worst years of the Cold War the two sides were never cavalier about nuclear weapons and both contemplated their use only in extreme circumstances and as a means of last resort.

In fact there is only one principal difference between the two doctrines regarding hypothetical first-use scenarios. Despite its massive conventional military superiority and the invulnerability of its territory to conventional attacks by other states, the United States retains the option of nuclear retaliation for "a narrow range of contingencies," which probably implies certain conventional (as well as chemical or biological) attacks against the United States and its allies and partners. The Russian Military Doctrine, on the other hand, emphasizes a first-use option in the event of a nuclear, chemical, or biological attack against Russia and its allies, or in the event of a catastrophic, large-scale conventional war against Russia itself—but not, in contrast to the United States, in the event of such a conventional attack against its allies.

The growing American reliance on ballistic missile defense and conventional weapons for deterrence, as specified in the Nuclear Posture Review, worries Russia (and China). There are no legal or technical restrictions that confine these capabilities to deterrence merely of rogue states. The Nuclear Posture Review declares that "missile defenses and any future U.S. conventionally-armed long-range ballistic missile systems are designed to address newly emerging regional threats, and are not intended to affect the strategic balance with Russia" (p. x). Nevertheless, Russian policy makers worry that future ballistic missile defense capabilities could undermine Russia's potential for strategic retaliation, and that U.S. strategic conventional precision-guided weapons (cruise and ballistic missiles) have a growing counterforce capability, meaning that they increasingly pose a threat to Russia's nuclear capabilities. One can hardly expect Russia (and China, for that matter) to endorse such weapons as instruments intended to facilitate a world that is free of nuclear weapons.

While Russia welcomes the U.S. decision to do away with the nuclear-armed sea-launched cruise missile (TLAM-N), it does not find encouraging America's

intention to retain some forward-based nuclear weapons and strike aircraft. Russia compares its tactical nuclear arsenal against all U.S. tactical nuclear arms, including those in the continental United States, not just forward-based weapons. Thus, by Russia's own calculations, it doesn't have an overwhelming superiority in tactical nuclear weapons, and U.S. forward-based arms appear especially provocative, coupled as they are with NATO's conventional superiority. In Russia's estimation, the U.S. plan to maintain its present high rate of ballistic-missile submarine patrols appears even more troubling and inexplicable, given that submarines pose an acute counterforce threat requiring Russia to keep its ICBMs on a high-alert status.

Finally Russia has serious doubts about the Nuclear Posture Review's declaration that the United States "will not use or threaten to use nuclear weapons against non-nuclear weapons states that are party to the NPT and in compliance with their nuclear non-proliferation obligations."[10] First, the review does not specify that the International Atomic Energy Agency (IAEA) is the sole legitimate authority for adjudicating compliance. In fact, following the release of the review, U.S. officials explicitly stated that the United States retains the right to judge a state's compliance with its non-proliferation obligations. Thus the review appears to permit the United States to use nuclear weapons on the basis of a unilateral decision by the American government. (In light of America's unjustified, unilateral conventional attack on Iraq in 2003, one can understand why this is a matter of some concern for Russian officials.)

The second reason this particular passage gives Russia pause is not so much in what it says but in what it implies. The review states that the United States foreswears a nuclear attack on non-nuclear-weapon states party to the NPT in compliance with their nonproliferation obligations; by implication, then, the United States reserves the right to use nuclear weapons against NPT nuclear-weapon states. Besides Britain and France, this could only mean Russia and China. Furthermore, since the review does not specifically state that a nuclear attack would only be a retaliatory second strike, Russia must worry that the United States envisages the possibility of conducting a preemptive first strike in contradiction of the principle of strategic stability that is supposedly the basis of U.S. strategic arms reduction negotiations with Russia and strategic dialogue with China.

Whatever counterforce capability Russia has today will only steadily decline over the next decade or more, and the Military Doctrine does not identify the need to maintain or enhance this capability.

To be sure, the Russian Military Doctrine does imply that Russia would use nuclear weapons first under some extreme circumstances. Moreover, the doctrine does not clearly differentiate between preemptive and retaliatory strikes or between circumstances calling for the use of strategic or tactical nuclear arms. However, Russia clearly lacks the counterforce capability required to execute a first strike against the United States. Furthermore, whatever counterforce capability Russia has

today will only steadily decline over the next decade or more, and the Military Doctrine does not identify the need to maintain or enhance this capability.

It is for all these reasons that the innovations of the Nuclear Posture Review are not only somewhat controversial but also fail to live up to the ambitious agenda laid out by President Obama in the Prague speech and in his proposal to "reset" U.S.-Russian relations. Given the dramatic character of the Obama administration's early rhetoric, one might have expected America, for example, to unequivocally commit not to use nuclear weapons first against any NPT nuclear-weapon state; to abjure the use of nuclear weapons in response to conventional or other non-nuclear attacks against the United States and its allies; to reduce ballistic-missile submarine patrol rates and bring other U.S. strategic forces to a lower alert status; and to propose negotiations for tactical nuclear arms limitation with Russia, including withdrawing such weapons from Europe.

The Russian Military Doctrine, for its part, is also rather conservative, but it does outline a more limited role for nuclear weapons compared to the U.S. Nuclear Posture Review, Russia's 2000 Military Doctrine, and many recent political statements coming from Moscow. Remarkably, Russia is displaying this nuclear restraint even as its conventional forces grow weaker and its geostrategic position becomes more vulnerable.

Both the Russian Military Doctrine and the U.S. Nuclear Posture Review demonstrate that nuclear weapons will retain, for the foreseeable future, concrete strategic and political roles.

Both the Russian Military Doctrine and the U.S. Nuclear Posture Review demonstrate that nuclear weapons will retain, for the foreseeable future, concrete strategic and political roles. Radical nuclear disarmament, to say nothing of a world free of nuclear weapons, would require monumental shifts in nations' foreign and defense policies; nuclear-armed states would either have to abandon these roles or develop alternative means of fulfilling them that did not provoke their peers.

In many ways, New START and what it implies for the future of strategic arms negotiations reflects and embodies the differences between the conservative, pragmatic nuclear policies of Washington and Moscow and the ambitious, high-minded rhetoric that adorns them.

New START—Unique Features and Paradoxes

There have already been many official and expert assessments of the important political and strategic issues surrounding New START. These assessments, however, have left largely unremarked several circumstances that make the treaty unique in the history of disarmament. The treaty's uniqueness lies in

more than just the fact that it creates the lowest-ever ceilings on strategic arms: 700 deployed missiles and heavy bombers, 800 deployed and non-deployed missile launchers and bombers, and 1,550 warheads on deployed missiles and heavy bombers. New START was also unique because it marked the first time since the conclusion of SALT I in 1972 that an arms-control agreement will more directly affect projected U.S. strategic forces than it will those of the Soviet Union/Russia.

New START marked the first time since the conclusion of SALT I in 1972 that an arms-control agreement will more directly affect projected U.S. strategic forces than it will those of the Soviet Union/Russia.

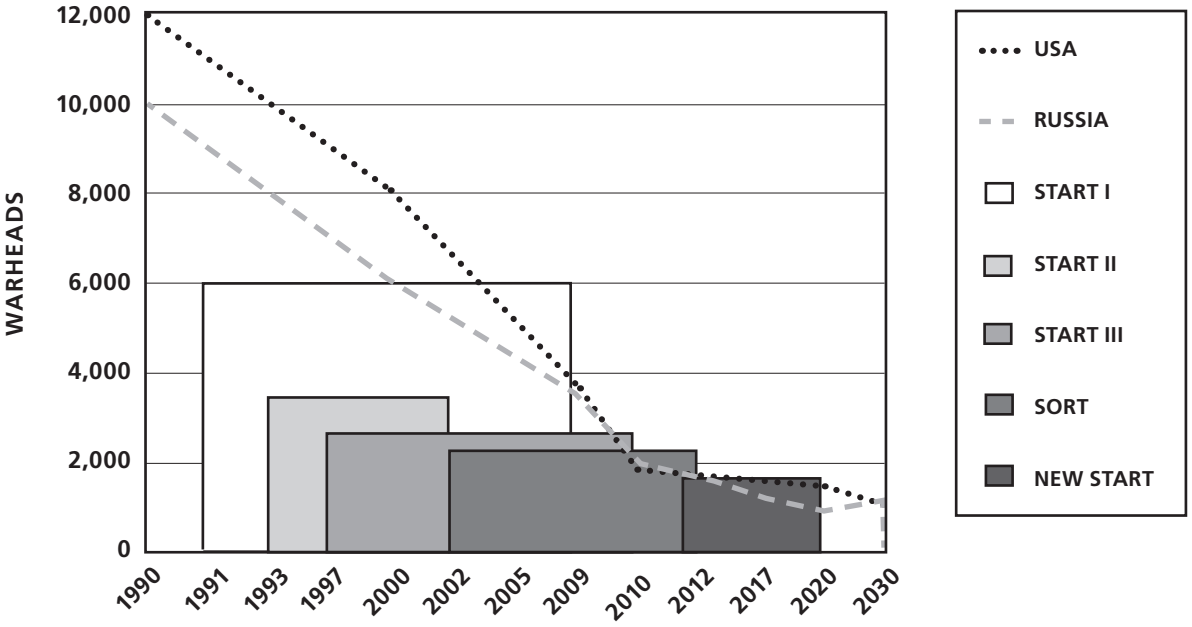
In terms of the absolute size of actual arms reductions, New START's numbers are the least ambitious since START-I of 1991. (The 2002 Moscow Treaty envisioned deep reductions of strategic forces down to 2,200 warheads, though the two sides never agreed upon counting rules.) During the seven years in which New START will be implemented, the United States will cut its strategic offensive forces by about 100 delivery vehicles and 200 warheads. These numbers are small because the agreed counting rules embrace only operationally deployed missiles, submarines, bombers, and warheads. Moreover, each bomber is counted as carrying only one warhead, so the United States will make most of its cuts by reducing the number of warheads on "MIRVed" missiles and by eliminating some launchers on ballistic missile submarines. The new treaty verification regime is also much less intrusive and burdensome than that of START-I, largely because the New START ceilings and limitations are relatively simple.

The terms of the treaty don't cut Russian forces at all. Instead, mass withdrawal of obsolete missiles, submarines, and bombers, coupled with a very limited deployment of new systems, will bring Russia's nuclear forces below the treaty's ceilings.

It is important to understand that the actual reductions are so small not just because the treaty was a modest one but also because the point of departure by 2010 was already so low: Strategic offensive forces overall were 75–80 percent lower than they were in the late 1980s. New START's ceilings are 75 percent lower than those contained in START-I and 30 percent lower than in the 2002 Treaty of Moscow, in terms of countable warheads. The low starting point for actual force numbers was thus a result of preceding arms reduction treaties (START-I, START-II, START-III Framework, and the Moscow Treaty), as well as force reductions that both countries unilaterally made during the last two decades (see figure 1).

Figure 1

Strategic Nuclear Warheads and Treaties' Ceilings (corresponding counting rules)



Another peculiarity of New START was the intensity of the controversy such a modest treaty provoked in the Russian and U.S. legislatures. The acrimony was a product of the peculiar domestic circumstances of both nations, as well as the slow divergence of security perceptions and priorities over a decade of inattention to arms control.

Finally, in contrast to the enthusiasm for negotiating a follow-on agreement after past treaties, a follow-up agreement to New START is in great doubt. Its feasibility depends not so much on offensive strategic nuclear forces themselves as on the handling of adjacent areas of discord—in particular ballistic missile defenses, conventional strategic weapons, tactical nuclear arms, and other nuclear weapon states.

Strategic Offensive Forces Dynamics

At the time New START was signed, U.S. operationally deployed strategic forces consisted of 798 delivery vehicles and 1,968 warheads, broken down as follows: 450 Minuteman III ICBMs with 500 warheads; 12 Ohio-class ballistic-missile submarines with 288 Trident D5 submarine-launched ballistic missiles and 1,152 warheads (there are 18 Ohio-class submarines in total);

and 60 B-52H and B-2A heavy bombers with 316 cruise missiles and gravity bombs (under New START, all of these count as only 60 warheads).[11]

The United States will have no problems adjusting to the 700–800–1,550 treaty ceilings. It will simply download some warheads from MIRVed ICBMs and submarine-launched ballistic missiles, and reduce the number of launchers on Ohio-class submarines. According to an official Pentagon statement, by 2020 the U.S. strategic offensive force will contain about 420 ICBMs, 12 submarines with 240 submarine-launched ballistic missiles (with two submarines in overhaul at any given time and thus not counted as deployed), and 60 bombers. The service lives of Minuteman III missiles will be extended to 2030, and that of Ohio-class submarines to 2030–2040. The U.S. Air Force may deploy a new bomber after 2020.[12]

In contrast, Russian forces face serious difficulties. For the first time in modern history, Russia's problem is not how to cut forces down to treaty ceilings but rather how to bring them up to those ceilings by 2020. When New START was signed, Russia had 600 missiles and bombers and 2,670 warheads. Owing to mass withdrawal of obsolete weapons (including all SS-18 heavy ICBMs) and a low deployment rate for new systems, by 2020 Russia may have just 230 ICBMs, three or four ballistic missile submarines with 44–60 deployed submarine-launched ballistic missiles, and 40–50 heavy bombers—altogether, 350–400 delivery vehicles and 1,000–1,100 warheads according to New START's counting rules (1,400–1,500 warheads if we count actual bomber loadings).

Thus, in contrast with past arms control treaties, Russian strategic forces will "dive" deep under the New START ceilings and then gradually rise back up. According to official Ministry of Defense statements, Russia will only get back up to its ceilings by 2028![13]

These circumstances suggest two alternative futures for arms control and the evolution of strategic forces. One possibility is a New START follow-on treaty that reduces the strategic offensive forces ceiling down to about 1,000–1,100 warheads and 400–500 delivery vehicles by 2025–2030 (using the same counting rules as New START). In this scenario, the natural evolution of Russia's forces will not be widely out-of-step with treaty ceilings. The United States would be able to adjust to the lower ceilings by further reducing its ICBMs (for instance, down to between 200 and 250), by converting additional ballistic-missile submarines to a conventional-only role, or by removing more ballistic missile launch tubes from each submarine.

The other alternative is for Russia to accelerate the modernization of its strategic offensive forces by more rapidly deploying SS-27 mobile- and silo-based ICBMs, or by developing and deploying a new heavy silo-based liquid-fueled ICBM with a large MIRV load (up to ten warheads) to replace SS-18. These measures are currently a subject of heated debate in the Russian defense industrial complex and strategic community.

A powerful coalition inside Russia is pushing for a new heavy ICBM, and the government has already released the funding for research and development for such a system. The main argument in favor of a new heavy missile is necessity: Russia needs to quickly raise its strategic offensive force levels up to the 700–1,550 ceilings (and possibly to higher levels after 2020), to preserve a robust counterforce and launch-on-warning capability, and to retain the ability to penetrate ballistic missile defenses regardless of the scale of future U.S./NATO programs in case of failure of the U.S.-Russian joint ballistic missile defense project.

The development of a new heavy ICBM system would clearly have a negative impact on strategic stability (such a system would be highly vulnerable and have great counterforce potential). It would siphon funding away from other, more urgent defense needs like military reform and the modernization of Russia's general purpose forces. And it would render follow-on strategic offensive force reductions virtually impossible due to the concomitant growth in Russian force levels (100 missiles would carry up to 1,000 warheads) and an inevitably negative political reaction in the United States.

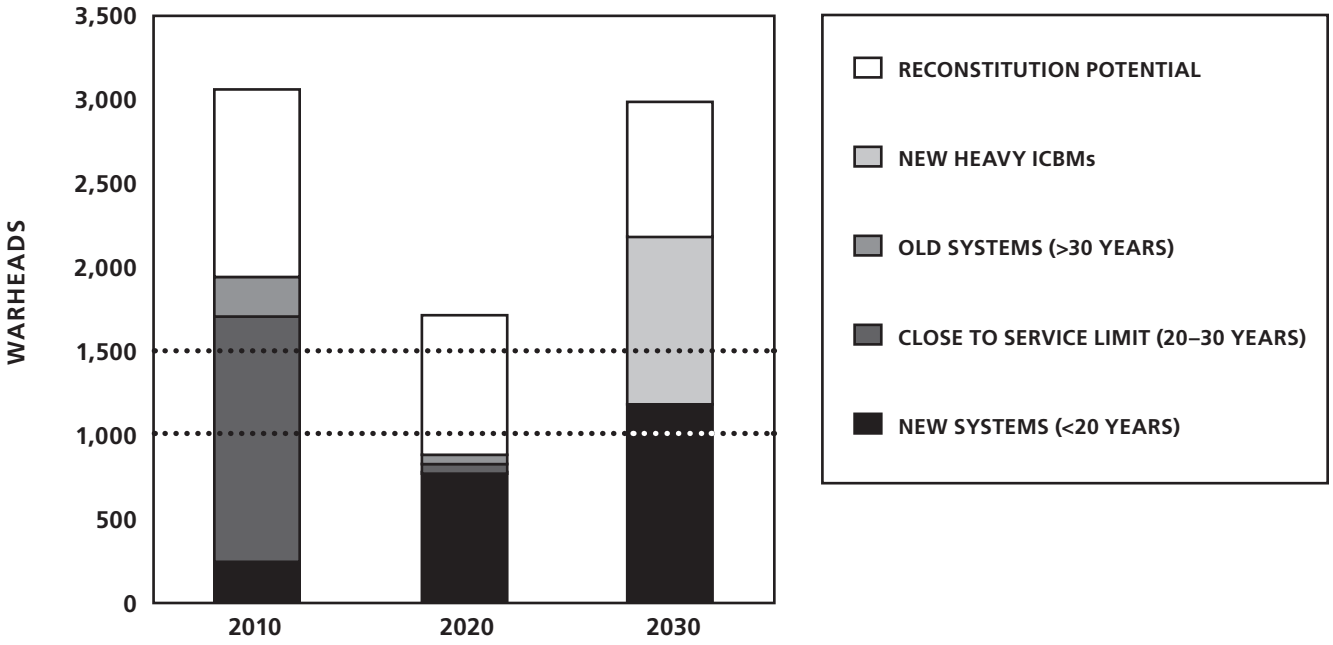
Reaching a U.S.-Russian compromise on ballistic missile defense and agreeing on some limitations on conventional strategic arms would greatly weaken the arguments in Moscow in favor of the new heavy ICBM program. This would also be conducive to achieving a follow-up to New START, which in turn might be a more constructive and stabilizing way to resolve the problem of Russia's declining force levels.

By 2020, almost all Russian strategic offensive forces will be brand new, so Moscow will be understandably reluctant to agree to reduce their numbers immediately (see figure 2). It would therefore be better to adjust the Russian modernization program (preferably through a higher SS-27 deployment rate) to meet the lower ceilings of a follow-up to New START well in advance. Besides, Russia would probably be interested in implementing further warhead reductions by de-loading warheads from MIRVed missiles and converting some systems to conventional missions.

The United States, on the contrary, will be facing the prospect of decommissioning its present strategic arms from about 2020 to 2040 and replacing them with a new generation of weapons. Hence, to save money, it may prefer lower ceilings on delivery vehicles and warheads and less freedom on de-loading and conversion. The two sides may once again, as they have many times in the past, swap arms control preferences.

Figure 2

Russian Strategic Forces, 2010–2030



Be that as it may, negotiating a follow-on to START is obviously a more attractive alternative—both because of what it would mean for resetting U.S.-Russian relations and enhancing strategic stability, and because it would be a step toward a nuclear-weapon-free world (in line with NPT Article VI commitments). But many other issues have to be resolved first.

One such issue is the development of new offensive systems in New START and its putative successor treaty. Russia is particularly concerned about the new U.S. "space bomber" project (including the X-37 system tested in 2009), which will allegedly carry precision-guided conventional weapons capable of rapidly striking ground targets. Moscow sees such weapons as being associated with the Prompt Global Strike program. The U.S. position, which was endorsed by the Senate when it ratified New START, is that all Prompt Global Strike systems—except for ballistic missiles armed with unguided conventional warheads—are exempt from the treaty's limitations. In contrast to ICBMs and submarine-launched ballistic missiles, such systems are to be deployed in low-earth orbit and would not follow a ballistic trajectory for most of their flight (which is how strategic missiles are defined in the New START Protocol). Officially, the United States justifies Prompt Global Strike by saying that it is designed to target international terrorist bases and rogue states. Russia,

however, understandably believes that both ballistic missiles and orbital precision-guided conventional systems could be used in a decapitation strike.

The solution to this particular issue may be to agree in the Bilateral Consultative Commission to count orbiting (or fractionally orbital) systems that use ballistic missile boosters and have ranges in excess of 5,500 kilometers (as applied to the definition of ICBMs) against the 700–1,550 ceilings. If such weapons are indeed directed against terrorists, the United States does not need a large number of them, and they should easily fit under the New START ceilings. Russia, for its part, would agree to include possible new systems using ICBM boosters and long-range gliding and maneuverable reentry vehicles ("birds") against the 700–1,550 ceilings, even though they, too, do not follow a ballistic trajectory for most of their flight.

The ballistic missile defense issue may pose a bigger challenge. This issue, more than any other, affects the possibility of a follow-on START and the likelihood that Russia will develop a new heavy ICBM. One of Russia's main justifications for developing a new ICBM is that it would have an enhanced capability to penetrate any foreseeable U.S. anti-missile system.

Missile Defense Controversy

Whatever its true motivations, the Obama administration made the right call when it cancelled its predecessor's plans to deploy an X-band radar in the Czech Republic and ten ground-based missile interceptors in Poland. In that singular move, it opened the way for New START, encouraged Russia to cancel the sale of its S-300 air defense missile system to Tehran in 2010, and convinced it to agree to tougher UN Security Council sanctions against Iran.

However, the missile defense issue hasn't gone away; the new U.S. Phased Adaptive Approach to missile defense deployment in Europe has merely dampened it for the time being. Russia does not believe it can afford to take at face value U.S. claims that ballistic missile defense is only meant to protect the West against Iran, and its doubts are only reinforced by the fact that some U.S. and many European politicians and experts criticize the U.S. program as unnecessary or misguided. Moreover, Iran does not now have nuclear weapons, and at this point it seems likely that the United States or Israel would act to prevent any attempt by Tehran to withdraw from the NPT—with or without UN approval.

The majority of the Russian strategic community believes that the U.S. ballistic missile defense program is really designed to degrade Russia's nuclear deterrence, thus giving America strategic superiority and an instrument of political pressure.

This is why the majority of the Russian strategic community believes that the U.S. ballistic missile defense program is really designed to degrade Russia's nuclear deterrence, thus giving America strategic superiority and an instrument of political pressure. One of the most

authoritative Russian military journals states this view plainly: "If U.S. and NATO BMD consists of 1,500–2,000 missile interceptors, part of which may be deployed near [Russian Federation] borders, while Russia fulfills its obligations under the new START (700 delivery vehicles, 1,550 nuclear warheads) the United States may be capable of preventing the threat of a ballistic missile strike against the territories of the U.S.A. and NATO."[14] This assessment is certainly wrong, both in projected U.S. interceptor numbers and in their defense capabilities. Nevertheless, it is an accurate reflection of what most Russian strategic thinkers believe.

For the time being, Russia and the United States have reached a compromise through the concept of joint U.S.-NATO-Russia development of ballistic missile defenses. The parties reconfirmed their commitment to this concept at the NATO-Russia summit in Lisbon in November 2010. This compromise remains quite fragile, however, and susceptible to breaking under the strain of weighty controversies, perhaps even leading to a new crisis. Presently, Russia demands full equality with the United States and NATO in elaborating a ballistic missile defense program for Europe. Moscow has proposed a so-called "sectoral" joint defense, which apparently means that Russia would intercept all missiles flying over its territory from the south, while NATO would take care of missiles flying over its territories. This would place responsibility for most Iranian missile launches with Russia, implying a much more limited missile defense deployment by the United States and NATO.

The West has expressed confusion and skepticism about the concept of "sectoral" missile defense—and this despite Europe's doubts about the U.S. missile defense program in the first place. NATO does not want to depend on Russia for its security against missile strikes, and vice versa. Moreover, Russia's present and projected air and missile defense capabilities aren't effective enough to protect its own territory from medium-range ballistic missiles, much less NATO's. Aside from the old A-135 anti-missile complex, which is designed to protect the Moscow region, and a prospective S-500 surface-to-air system, which would be comparable to the U.S. Theater High-Altitude Air Defense (THAAD) system, Russia does not now and in the near future will not possess any protection from such a threat.

Apart from technological problems, there are also serious political and strategic obstacles to a joint missile defense system. To put it bluntly, Moscow is just not concerned enough about Iranian (or North Korean) missiles to warrant a joint Russia-NATO anti-missile program. It is, however, worried that a joint missile defense program could provoke China, possibly leading to Sino-Russian estrangement and a Chinese nuclear arms build-up. In such an eventuality, Russia couldn't count on substantive Western support and protection.

In absolute terms, Russia is certainly more vulnerable to nuclear and missile proliferation, due to its proximity to the vast zone of such proliferation

stretching from the Middle East through South Asia to the Far East. But this threat is familiar to Russia: Since the early 1950s, Russian territory has been within reach of nuclear missiles from an increasing number of countries (Britain, France, China, Israel, India, Pakistan, and North Korea); the United States has experienced this particular contingency only quite recently (from Chinese ICBMs). Moscow sees new and dangerous threats in other quarters: NATO's and China's conventional superiority, U.S. missile defense and space systems, and strategic conventional precision-guided weapons.

Russia prefers to rely on traditional nuclear deterrence, NPT diplomacy, and forging good relations with new nuclear states (Israel, India, Iran, and North Korea) to deal with new proliferation threats. This attitude may change in the future, but at present there are only the faintest of signs that Russia will make nonproliferation and closer cooperation with the United States and NATO its top priorities.

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Conventional Strategic Weapons

Russia's Military Doctrine points to a set of security priorities that are very different than those of Washington. The threat of a U.S./NATO "air-space strike" capability falls near the top of the list, and Russia's threat assessments and defense programs reflect this priority. The Military Doctrine states that one of the key tasks of the Russian armed forces, second only to nuclear deterrence, is "to ensure the air defense of most important military facilities of the Russian Federation and (provide for) readiness to rebuff strikes by means of air and space attack."[15] The notion of "air and space attack" apparently refers to conventionally armed cruise missiles and ballistic missiles that use high-precision guidance provided by space navigation, reconnaissance, and communications satellites.

This philosophy is reflected in the Aerospace Defense Concept, which President Medvedev approved in 2006, and the State Arms Procurement Program for 2011–2020. In his 2010 Annual Address to the Federal Assembly, Medvedev emphasized that strengthening air-space defense and integrating ballistic missile defense, air defense, early warning, and space control systems was one of Russia's highest priorities.[16]

Reports by the institutes of the Ministry of Defense and articles in specialized magazines and newspapers show that the Russian expert community is intently focused on the increased ability of such weapons to disarm Russia's strategic nuclear forces, missile early warning systems, and combat command centers in a counterforce strike.[17] There is little mystery as to the identity of

the adversary in most of the literature. One periodical emphasizes as the main requirement for aerospace defense "the survivability of basic main forces of the Armed Forces while countering *massive strikes* (emphasis added) of airspace attack weapons with no significant loss in efficiency within the required period of time."[18] Neither rogue states nor terrorists can mount "massive strikes."

Guided bombs and missiles accounted for more than 60 percent of all munitions used during Operation Iraqi Freedom in 2003.[19] One Russian expert speaks for the general mood about such capabilities:

> The high-precision weapons in the U.S. armed forces' arsenal today can be used to destroy a wide range of targets, including hardened fixed facilities (underground bunkers, reinforced structures and bridges), and mobile armored targets (tanks, armored vehicles and artillery). With due targeting, the existing types of cluster bombs can effectively destroy mobile land-based ICBMs. High-precision weapons could also pose a threat to existing silo-based launchers.[20]

The Prompt Global Strike operational concept is especially worrying to the Russian expert community. The United States officially claims otherwise, but Russia considers conventional cruise missiles, as well as future ballistic and orbital systems with accurate conventional warheads, as part of the concept. More importantly, Russians just cannot believe that such complicated and expensive systems are only meant to target terrorists, who can be dealt with by much cheaper and simpler weapons. The idea that America needs weapons with short flight times to destroy reckless state leaders and terrorists looks ridiculous to most Russian experts. They consider the hardest and most time-consuming problem to be locating the target in the first place; the few hours of advantage in timing provided by ballistic or orbital systems isn't enough to make them cost effective compared to supersonic aircraft or long-range cruise missiles.

The U.S. Air Force converted strategic bombers to non-nuclear missions as early as the 1990s. The U.S. Navy is almost finished retrofitting four Ohio-class nuclear ballistic missile submarines to carry about 600 non-nuclear long-range sea-launched cruise missiles. And both the Air Force and Navy are researching conventional warheads that can be delivered by strategic ballistic missiles, boost-glide, or orbital systems. Thus, for the foreseeable future, there may eventually be as many as 2,900 U.S. high-precision long-range cruise missiles on strategic delivery vehicles and attack nuclear submarines.[21] If the Navy and Air Force go forward with plans to put conventional warheads on ballistic missiles, then the number of weapons that pose a threat to Russia's strategic nuclear forces may increase by another 100 to 200.[22]

From Russia's perspective, four converted Ohio-class submarines and B-1B and B-2A strategic bombers armed with precision-guided conventional weapons pose a new kind of counterforce threat to its shrinking numbers of strategic forces sites. Ohio-class submarines are designed to stay on patrol for long periods of time and to remain undetectable even to sophisticated anti-submarine

warfare systems, and heavy bombers are capable of penetrating advanced air defenses. Rogue states and terrorists possess neither anti-submarine warfare nor serious air-defense systems.

Moscow's concerns apparently stem from its observation of NATO's 1999 operations in Yugoslavia and America's 2003 operations in Iraq. The main unspoken assumption behind this threat perception is that traditional nuclear deterrence may not be effective against conventional counterforce threats, since nuclear retaliation in case of such an attack would invite suicide by follow-on nuclear strikes and thus lacks credibility.

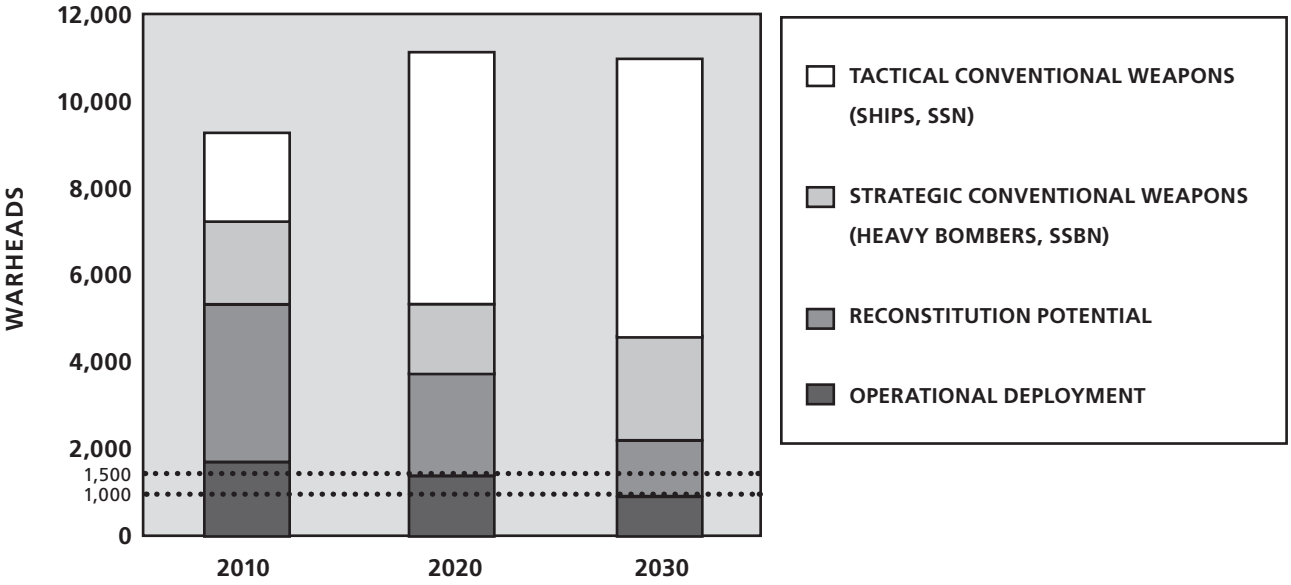
To be sure, in contrast with a nuclear counterforce strike, a massive, high-precision strike would require prolonged and visible preparations. Even operations against much weaker adversaries such as Iraq, Yugoslavia, and Afghanistan required several months. Furthermore, such a strike against strategic forces would take much longer than a nuclear counterforce strike due to the need to confirm hits and conduct repeated strikes. And such an aggressor could never be certain that his attack would not provoke a nuclear response—an uncertainty not mitigated by the fact that missile-warning systems cannot distinguish between nuclear and non-nuclear attacks.

Russia's tactical nuclear weapons pose another element of uncertainty for a conventional counterforce aggressor. Tactical weapons are much more difficult to rapidly search and destroy, and they can strike forward air force and navy targets involved in the airspace mission. According to experts' estimates, Russia currently has as many as 1,400 nuclear bombs, missiles, and torpedoes available to its naval and air forces.

Nevertheless, the U.S. high-precision weapons capability clearly presents certain military and strategic problems for Russia. And there are three additional reasons for not ignoring this issue. First and foremost, the deployment of long-range, high-precision non-nuclear weapons would hamper further nuclear disarmament and missile defense cooperation among the great powers. If the United States shifted resources (primarily cruise missiles) from its strategic nuclear forces to high-precision weapons, it would effectively remove such resources from the scope of strategic offensive arms limitations. This would inevitably provoke serious objections on Russia's part as early as the next phase of negotiations on strategic arms reductions. One can hardly expect Moscow to consent to lowering the ceiling for strategic nuclear forces to, say, 1,000 warheads, even as the United States maintains anywhere from 2,000 to 3,000 conventional weapons on strategic platforms (mostly on converted nuclear missile submarines and B-52H and B-1B heavy bombers[23]) and as many as 2,000 conventional warheads on ships and nuclear attack submarines (see figure 3).

Figure 3

U.S. Strategic Forces, 2010–2030



Moscow's most likely reaction to this move would be to maintain its strategic nuclear assets at the levels permitted by New START (1,550 warheads) and modernize them within these limits—or even above them after 2020—for the next generation of systems. Just as with the prospect of unilateral U.S./NATO ballistic missile defense deployment, the deployment of long-range high-precision weapons would become an obstacle to nuclear disarmament at the strategic level.

Second, in addition to NATO's superiority over Russia in general-purpose forces in Europe, the deployment of high-precision weapons would hinder negotiations on Russian and U.S. non-strategic (tactical) nuclear weapons. Moscow evidently considers such weapons as a counterbalance to U.S. high-precision conventional weapons. They give Russia a way to strike the forward bases of U.S. Air Force and Navy groups and thus constitute an asymmetrical deterrent of the "threat of aerospace attack." There is an opinion that using tactical nuclear weapons at early stages in response to the use of high-precision weapons is a more credible option than mounting a retaliatory strike with strategic nuclear forces, thus provoking the adversary to respond in kind.

Third, high-precision systems would constitute an additional obstacle to U.S.-Russian cooperation on ballistic missile defense. As mentioned, the military community in Moscow today views the development by Russia of missile, air, and aerospace defense primarily as a means of holding off an aerospace

attack rather than a way to defend against missiles from rogue states or terrorists. Obviously, "aerospace attacks" could only come from the United States and its allies.

Russia is developing its defenses not against the medium-range ballistic missiles of rogue states but rather against U.S./NATO conventional long-range cruise missiles and strike aircraft. The only system that might protect Russia against rogue states' missiles is the A-135 missile defense complex for the area around Moscow, a legacy of the Cold War and the 1972 Anti-Ballistic Missile Treaty. Otherwise, the present Russian defense forces consist of about 2,000 S-300/400 missile interceptors and 500–600 air defense fighters. This force is being modernized with S-400 and, in the long run, S-500 missiles. In the more distant future, Moscow will modernize the A-135 system and anti-satellite weapons and integrate command structures, early warning, and battle-management assets in order to counter U.S. ballistic missiles, hypothetical space-based missile defenses, and orbital space bombers.

Russia is developing its defenses not against the medium-range ballistic missiles of rogue states but rather against U.S./ NATO conventional long-range cruise missiles and strike aircraft.

Whether or not these plans ever go forward, it would be the ultimate absurdity for Russia to have two defense systems: a joint one with NATO directed against rogue states and another to use against air-space attack by the United States and NATO.

Given the attitudes of Russia's political elite, military agencies, and military industrial complex, one can hardly expect Moscow to engage in meaningful missile defense cooperation with the potential "aerospace aggressor." The military establishment would find a variety of pretexts to obstruct such undertakings given their vested interests and shared understanding of the country's security needs. In fact, we should also expect the U.S. military industrial complex to evince a similar attitude as it strives to retain maximum freedom to develop missile defenses and protect sensitive technologies.

Dealing With Conventional Strategic Arms

With respect to U.S. high-precision weapons, New START has already made some progress. Russia and the United States agreed to apply the same counting rules to ballistic missiles with conventional warheads as to nuclear missiles (Article III), which prevents large-scale deployment of submarine-launched ballistic missiles and ICBMs with conventional high-precision munitions. Yet the issue of long-range cruise missiles with high-precision weaponry will remain unsolved without further negotiations on arms limitations,

confidence-building, and transparency measures. In fact, the United States will reduce its strategic nuclear forces not only through "de-loading" MIRVed missiles but also by retrofitting some strategic submarines and bombers for non-nuclear cruise missiles (see figure 3).

The issue of long-range cruise missiles with high-precision weaponry will remain unsolved without further negotiations on arms limitations, confidence-building, and transparency measures.

If the parties exercise due political will, they can resolve or ease the problems of high-precision weapons by means of legal agreements. This implies, in particular, a ban on basing converted heavy bombers, strike aircraft, and nuclear weapons in the territories of new NATO members, or anywhere near Russia, except by mutual agreement. Russia may assume similar obligations with respect to its allies in the Collective Security Treaty Organization and the Commonwealth of Independent States, as well as in its Kaliningrad region.

The hypothetical threat posed by Ohio-class submarines equipped with sea-launched cruise missiles may be considerably diminished if they are based only on the west coast of the United States. Deployment to the Pacific and Indian oceans would put most Russian ICBM bases, early warning sites, and command centers outside their range; deployment to the Arctic Ocean presents serious operational difficulties and thus would not pose a serious problem.

It would also be helpful to introduce confidence-building measures involving information and observer exchanges related to the practice of deploying high-precision weapons on ships, submarines, and aircraft, and to the operational principles of their deployment and use in local conflicts. In the long term, the United States and Russia could hold joint air force and navy exercises related to counterproliferation, peace-enforcement, counterterrorism, and anti-piracy operations. Given that the United States claims that its high-precision weapons are aimed at third countries and terrorists, Russia may insist on extensive though reciprocal confidence-building and cooperation measures.

In any case, it is obviously up to the United States to solve a problem it created: to take the initiative and propose arms limitation, confidence-building measures, and cooperative steps regarding high-precision weapons.

Joint Defense Options

The primary U.S. interest in joint ballistic missile defense with Russia appears to lie in making sure that Moscow does not object to the American program too strongly or make it the subject of a new political crisis. For that matter, "Old Europe's" interest is similarly aimed at managing attitudes: to prevent political tensions with both the United States and Russia. "New Europe's" interest, meanwhile, is to enhance its role in NATO and to upset Russia (as a fringe benefit). Russia's main interest is to make sure that these capabilities don't

undermine Russia's nuclear deterrence potential. Bridging the gaps between these divergent interests will be a challenge, to say the least.

Since technological developments will blur the line between theater and strategic defenses (in particular in future systems like the SM-3 Block IIB), and since deployment patterns will emphasize maximum efficiency (including basing missiles in Poland and possibly on ships in the Baltic, Northern, and Barents seas), it will be very difficult to assure Russia that missile defense after 2020 would not undermine its deterrence posture, especially when judged against Moscow's conservative threat assessments. It will be no less problematic to adjust enhanced missile defense systems to the U.S.-Russian relationship of mutual nuclear deterrence, strategic stability, and the next START agreement. Since Russia holds large amounts of territory in Asia, it would find it hard to protect only its European part from Iran via a joint missile defense system with NATO while leaving the rest of its territory exposed to missiles from Pakistan and North Korea. On the other hand, any Russian ballistic missile defense in Asia developed jointly with the United States, Japan, and South Korea would provoke China. And inviting China to join the endeavor would raise questions about accepting India and, consequently, Pakistan.

Attempting to resolve all those problems in advance would be a futile exercise. As a matter of pragmatism, Moscow has to be more concrete and selective in voicing its concerns about missile defense. The United States, in turn, should be more forthcoming in reassuring Russia technically and operationally, not just rhetorically. For instance, Russia should not be worried about the first three phases of ballistic missile defense in Europe. The main concern is about possible U.S. SM-3 Block IIB deployments in Poland and the northern seas, which would occur closer to 2020. If such missiles in fact are not deployed on ships due to their use of liquid fuel, it will be easier to reach an agreement. Hence, it may be agreed that such deployments would happen only if Russia and NATO consent, and only in case of the emergence of a real threat, such as if Iran or any other state in the region acquired nuclear weapons and tested a medium-range ballistic missile. U.S. freedom of action in the absence of such a commitment would be a dubious advantage if weighed against the benefits of Russian cooperation on ballistic missile defense early warning and monitoring systems, as well as general counter-proliferation policies.

A starting point for cooperation on missile defense, therefore, should be something uncontroversial, clearly beneficial to both sides, and adjustable to mutual nuclear deterrence.

A starting point for cooperation on missile defense, therefore, should be something uncontroversial, clearly beneficial to both sides, and adjustable to mutual nuclear deterrence. For instance, one option would be to restore the Joint Data Exchange Center project and turn it into a real-time system. This proposal is attractive on the one hand because it is merely an enhanced "hot line" to prevent false alarms or miscalculation in the

age of proliferation. On the other hand, if it was developed further, it would mean taking a step beyond the traditional mutual deterrence barrier to create a joint missile early warning system, typically only for military allies. Further steps could include interfacing early warning radars and satellites, launching space-missile tracking systems, and jointly building new advanced radars in the most suitable locations (including on Russian territory).

Early resumption of joint intercept exercises should lead to them being transferred from computers to test ranges, and from shooting short-range rockets to intercepting medium-range and intercontinental missiles. After that, it would be easier to work on interoperability of air defenses and missile defenses, and forge overlapping sections of responsibility for ballistic missile defense.

Such step-by-step progress would open up many new "backchannels" in U.S.-Russian political and strategic relations. Eventually, political and strategic obstacles that now seem insuperable would no longer seem so. And the state of mutual nuclear deterrence might gradually transform to a state of mutual strategic defense with a diminishing offensive nuclear component.

Non-Strategic Nuclear Weapons

In terms of further reductions of nuclear weapons after New START, an important question will be the extension of this process to non-strategic nuclear weapons. Even during the New START negotiations, the U.S. Senate insisted that tactical nuclear weapons be included in the reductions (in the end, they were not). The U.S. Nuclear Posture Review also stresses concerns about Russia's non-strategic nuclear weapons and indicates the importance of including these weapons in the agenda for future negotiations.[24] Therefore, there is every indication that the United States and NATO will intensify their efforts in this area. In particular, there are several specific arguments about tactical nuclear weapons:

- It is assumed that Russia still has a considerable advantage over the United States and NATO in this nuclear weapons class. At lower levels of strategic nuclear forces, this advantage will be even more significant.
- The systems for preventing unauthorized use are allegedly less robust for tactical nuclear weapons than they are for strategic nuclear weapons. Therefore, there is a greater danger for unauthorized nuclear strikes.
- It is generally accepted that forward-based tactical nuclear weapons (especially older versions) are more vulnerable to theft, are lighter, and have less efficient locking devices—all of which are features that make them attractive for terrorists.

- Russia's position on tactical nuclear weapons has been extremely reserved and vague. As a precondition for any talks on this issue, it has demanded that the United States remove its Europe-based tactical nuclear weapons to its national territory.

The subject of discussion

Defining the subject of future negotiations presents certain difficulties. It would be logical from a legal point of view to include nuclear weapons that are not covered by existing treaties—namely, the START Treaty and, in the non-strategic systems category, the Intermediate-Range Nuclear Forces (INF) Treaty.

According to this logic, the delivery vehicles of nuclear weapons should include ground-launched ballistic missiles and ground-launched cruise missiles with ranges of less than 500 kilometers, combat aircraft with ranges of less than 8,000 kilometers that cannot carry long-range (that is, more than 600 kilometers) air-launched cruise missiles, and submarine-launched ballistic missiles with ranges of less than 600 kilometers.

In addition, negotiations should be in line with parallel commitments by the United States and the Soviet Union/Russia on the reduction and elimination of tactical nuclear weapons dating back to the early 1990s. These include: artillery shells and nuclear mines (demolition munitions) assigned to the ground forces; land-based and air-launched anti-aircraft missiles; air-to-surface missiles and bombs (including depth charges) assigned to non-strategic strike air force and navy aircraft; and various surface-to-air, anti-ship, and anti-submarine missiles and torpedoes of surface ships and attack submarines, as well as depth charges and artillery shells of surface ships.

However, even such a broad interpretation poses a number of questions. For example, how should we define long-range (more than 600 kilometers) nuclear sea-launched cruise missiles that may be deployed on ships and attack submarines? The START I Treaty provided for a separate ceiling of 880 kilometers for nuclear sea-launched cruise missiles, whereas New START makes no mention of this category.

Further, both heavy bombers and tactical strike aircraft can carry some types of nuclear gravity bombs, such as the U.S. B-61 and B-83.

Finally, along with the United States and Russia, other nuclear states (France, China, India, Pakistan, Israel, and North Korea) also have short- and medium-range aircraft and missiles in their inventory. In some of these states, these systems comprise a major portion, if not all, of their nuclear capability.

Still more important is the fact that tactical nuclear weapons employ dual-use platforms, launchers, and delivery vehicles: medium bombers, fighter-bombers, ships and attack submarines, short-range offensive missiles and surface-to-air missiles, naval weapons, and heavy artillery.

Any substantial reduction of tactical nuclear weapons by their launchers and delivery vehicles would lead to drastic cuts in combat equipment and arms associated with the air forces, navies, ground forces, and air/missile defense systems of the nuclear powers, including those assigned missions in local conflicts.

Therefore, unlike strategic nuclear forces, it is impossible to limit, reduce, or eliminate tactical nuclear weapons by getting rid of launchers, delivery vehicles, or platforms (such as nuclear-powered ballistic missile submarines), since they all fall in the category of general-purpose forces. They are designed mainly for conventional military operations and are partially covered by other agreements (such as the Conventional Forces in Europe Treaty, which limits non-strategic combat aircraft and artillery in Europe). Thus, any substantial reduction of tactical nuclear weapons by their launchers and delivery vehicles would lead to drastic cuts in combat equipment and arms associated with the air forces, navies, ground forces, and air/missile defense systems of the nuclear powers, including those assigned missions in local conflicts.

Non-strategic nuclear weapons of the United States and Russia

Neither of the two powers publishes official information on its non-strategic nuclear weapons. According to unofficial estimates, the United States currently has about 500 tactical nuclear weapon units. Included in this number are 100 Tomahawk sea-launched cruise missiles (TLAM-N) for the nuclear-powered attack submarines based at Kings Bay and Bangor in the United States. An additional 190 sea-launched cruise missile warheads (W80-0) are in storage. There are also some 400 gravity bombs (B-61-3 and B-61-4), with 200 of these being located at six U.S. Air Force special storages in five NATO member-states (Belgium, Italy, the Netherlands, Turkey, and Germany). These bombs are to be delivered by U.S. Air Force F-16 fighter-bombers, as well as by Belgian and British airplanes of the same type and by German-Italian Tornado strike aircraft.[25]

According to the Nuclear Posture Review, the United States will retire all Tomahawk nuclear sea-launched cruise missiles. However the B-61 gravity bombs will undergo a life extension program to enhance safety, security, and prevention of unauthorized use, and the new F-35 fighter aircraft will be certified to deliver these bombs. The review addresses these weapons in the context of nuclear guarantees to U.S. allies, and their future deployment in Europe will be subject to consultation among the allies.[26]

There is no reasonably reliable information on nuclear warheads stored in central sites on U.S. territory. These warheads are known to be stored in several storage facilities at air and naval bases, in separate central locations, and in depots at the Pantex nuclear manufacturing plant near Amarillo, Texas. They are subdivided into various reserve categories: Part of the warheads may be quickly made operational, while other warheads are meant to be used for

spare parts. Still another portion consists of warheads awaiting dismantling and removal of nuclear material for long-term storage for peaceful or military purposes (the assembly of new warheads).

According to recent official data, the U.S. strategic nuclear forces, tactical nuclear force, and the active stockpiled reserve consist of 5,113 nuclear warheads. Independent experts estimate that another 4,200 weapons have been de-activated and are intended for disposal.[27] This number may increase due to strategic nuclear forces reductions under New START, which permits the United States to reduce its numbers by removing some warheads from MIRVed missiles and sending them to storage.

Unlike its strategic nuclear forces, Russia's non-strategic nuclear assets are hidden behind a veil of even greater secrecy than those of the United States.

Unlike its strategic nuclear forces, Russia's non-strategic nuclear assets are hidden behind a veil of even greater secrecy than those of the United States. Currently, unofficial estimates by experts and foreign sources give Russia an active stockpile of about 2,000 tactical nuclear weapons.[28] These include about 500 tactical nuclear air-to-surface missiles and gravity bombs for 120 Tu-22M medium-range bombers and 400 Su-24 tactical bombers. In addition, there are about 300 air-to-surface missiles, gravity bombs, and depth charges available to Russian naval aviation, deliverable by 180 Tu-22M, Su-24, and Il-38 aircraft. More than 500 tactical nuclear weapons are in the form of anti-ship, anti-submarine, and anti-aircraft missiles and torpedoes for surface ships and submarines, including long-range, sea-launched cruise missiles for attack submarines. Allegedly, about 100 nuclear warheads are assigned to the missile interceptors of the A-135 anti-ballistic missile complex protecting the Moscow region; another 630 pieces are assigned to C-300/400 surface-to-air and other air defense missile systems.[29] Most analysts assume that, in times of peace, all these nuclear weapons are stored at designated depots at air, naval, and air defense bases.

During the 1990s, all Russian ground force and air defense tactical nuclear weapons, as well as most of those belonging to the air force and navy, were sent into centralized storage at the 12th Main Directorate of the Ministry of Defense (12th GUMO), where they are kept in reserve or await disassembly and disposal. Representatives of the military and political authorities have declared that all non-strategic nuclear weapons are stored at centralized facilities.[30]

However, it is unclear whether "centralized facilities" refers to storage facilities at air and naval bases placed under the management of the 12th GUMO, or to the special centralized large storage facilities ("S-sites") of the 12th GUMO. The latter also store warheads and other weapons of the strategic nuclear forces. Although the total number of weapons in centralized storage is secret, foreign experts estimate it to be about 8,000.[31]

Equally questionable is the calculation method used by some independent experts. In particular, experts typically include the 630 warheads assigned to air defense missiles in the total number of tactical nuclear weapons, while Moscow insists that these warheads have been moved to central storage locations.

Russian tactical nuclear weapon systems have been modernized through the deployment of Iskander tactical ground-mobile missiles, which apparently may be equipped with either a nuclear or a conventional warhead. In addition, the new Su-34 fighter-bomber will probably be a dual-use aircraft.

Other nuclear powers shroud information about their non-strategic nuclear assets behind a veil of total secrecy. According to expert estimates, China has about 100–200 such weapons, Israel has 60–200, Pakistan and India have approximately 60 and 50, respectively, and the Democratic People's Republic of Korea has 6–10 weapons.[32] These include medium and short-range ballistic and cruise missiles, as well as gravity bombs for use by strike aircraft. Some of these countries regard these weapons as strategic since they can reach their principal opponents or their military bases on foreign soil.

Russian and U.S. strategic priorities

With the Cold War over, Germany united, the Warsaw Pact dissolved, the Soviet Union collapsed, and Soviet troops withdrawn from Central and Eastern Europe, NATO member-states were freed of the threat of an attack by general purpose forces. This had been the principal threat to Europe for forty years after 1945—the threat that U.S. nuclear deterrence and nuclear guarantees addressed. The deployment of tactical nuclear weapons in Europe and the notion of first-use of these weapons in case of an attack by conventional armed forces and weapons played a key part in the U.S. game plan.

Yet despite the waning of this conventional threat, the United States alone still has approximately 200 tactical nuclear gravity bombs based on the territory of five NATO member-states. In recent years, the United States has withdrawn tactical nuclear weapons from Greece and the United Kingdom. The removal of tactical nuclear weapons from U.S. ships and submarines effectively struck from the list Japan, which houses the U.S. Navy's Seventh Fleet. Thus it should come as no surprise that NATO member-countries have seriously discussed the withdrawal of U.S. tactical nuclear weapons from Europe.

With NATO's expansion east, Warsaw Pact supremacy in general-purpose forces gave way to NATO supremacy over Russia. In this light, it is evident that Russia perceives tactical nuclear weapons primarily as an instrument to neutralize this supremacy. This is why Moscow has not been enthusiastic about negotiations on the subject. In the past, the United States has also tried to avoid the issue in hopes of maintaining its forward-based nuclear forces in Europe.

Second, Russia apparently believes that its advantage in non-strategic nuclear arms compensates for the fact that it is falling behind the United States in strategic weapons—a gap that New START will narrow but not bridge.[33]

Third, Russia regards tactical nuclear weapons as a counterbalance to the nuclear forces of third nuclear states, all of which can reach Russian territory with their weapons. The reduction of strategic nuclear forces in line with U.S.-Russia agreements relatively increases the role of Russia's non-strategic weapons as a deterrent against the nuclear powers in Eurasia.

Fourth, Russian tactical nuclear weapons are a deterrent and a wartime counter to an attack by U.S. long-range precision-guided conventional weapons supported by advanced space information systems (reconnaissance, targeting, navigation, and communications). Russia considers deterrence by such weapons more credible than the threat of strategic nuclear retaliation in response to a conventional weapons strike.

Meanwhile, Russia cannot disregard China, with its increasing military power and a 5,000-kilometer shared border. However, Russia's official papers have sidestepped this issue for reasons of political correctness.

Conditions and options for negotiating tactical nuclear weapons

Addressing this issue will initially require the parties to revive the Conventional Forces in Europe Treaty in order to reduce and limit conventional forces in Europe. This huge and complex task requires special research and goes far beyond the scope of this paper. Let it suffice for our purposes here to point out that the national and territorial quotas of the Adapted CFE Treaty of 1999 on heavy ground forces armament would remove the possibility of redeploying NATO's superior conventional forces on Russia's borders. This would obviate Russia's need for tactical nuclear weapons.

Besides assorted military problems (that is, the Baltic region, which is not included in treaty limitations), the main obstacle to the revival of the Adapted CFE Treaty is political: Moscow's recognition of the secession of Abkhazia and South Ossetia from Georgia after the August 2008 conflict. However, provided that the parties make some progress in reviving the Adapted CFE Treaty (by restoring its system of transparency, taking unilateral national commitments not to exceed the quotas, and other such moves), it might be possible to move forward with negotiations on tactical nuclear weapons.

According to the New START precedent, no tactical nuclear weapons are currently "operationally deployed," since they are not normally deployed on delivery vehicles in peacetime, but rather are stored at air and naval bases or centralized facilities in Russia and the United States. Hence, the technical and operational characteristics of tactical nuclear weapons will force the parties to elaborate specific counting rules, reduction and limitation provisions, and verification regimes.

As mentioned, tactical nuclear weapons limitations cannot be accomplished solely through reduction of delivery vehicles, launchers, and platforms, since such weapons employ dual-use systems. Reducing tactical weapons would also

require inspection of containers of bombs and warheads at storage facilities, as well as inspection of deployed (and non-deployed) weapons on launchers and delivery vehicles. Getting the parties to agree to such inspections will be particularly tricky, since tactical weapons are often stored with strategic warheads and bombs removed from missiles and bombers under the START treaties and since there are dozens of such sites and many thousands of munitions in containers. This is why the parties will have to focus on storage sites more than actual, deployed weapons.

The first step may be to negotiate a definition of tactical nuclear weapons. For instance, should we count B-61 and B-83 gravity bombs? These were initially designed for both strategic and tactical aircraft.

Using unknown criteria, Western analysts count as "deployed" about 2,000 Russian weapons in storage sites throughout its national territory (including the Asian part), but count only 200 weapons in storage in Europe. This accounting method is not logical, and Russia will not accept it. Moreover, Russia would not be satisfied if the United States counted only 300 weapons on U.S. territory: 200 B-61 bombs and 100 TLAM-N missiles.[34] Some estimates say that the United States produced about 2,000 B-61 bombs altogether. If there really are only 200 of these in Europe and 200 in U.S. storage facilities, where are the rest? If they are among the 4,200 weapons earmarked for elimination, how can the United States convince Russia that they should not be counted in the active stockpile? (Verbal assurances that these weapons have been transferred from the Pentagon to the Department of Energy are not sufficient for Moscow.) The same problem exists for all other tactical nuclear weapons not counted in its active stockpile of 5,113 warheads but in storage elsewhere.

Another example of the problems of ambiguous definition is the many thousands of U.S. conventional Tomahawk SLCMs on four Ohio-class submarines, surface ships, and nuclear attack submarines. Externally, this weapon is indistinguishable from the nuclear TLAM-N missile, so Russia would demand the right to inspect all storage at U.S. naval bases, as well as selectively check launchers on ships and submarines in ports to make sure that the United States lives up to its 2010 Nuclear Posture Review commitment to eliminate such weapons. Of course, these same requirements would apply to Russian air force and naval storage sites and dual-purpose operational launchers and arms.

Thus the next step in resolving this complex issue may be to reach an agreement to relocate all tactical nuclear weapons from forward bases to central storage locations in their national territories (that is, to place them into reserve). Before doing that, the parties would have to exchange information on existing weapons. They could initially start with air force assets and then move on to naval assets.

It doesn't really matter where centralized storage sites are located in the United States and Russia, but it does matter whether they are at or close to airfields, from which they could be quickly and quietly returned to active use.

From this point of view, NATO's November 2010 proposal to remove Russian tactical nuclear weapons from its European territory to Asia makes no sense. First of all, China and Japan would probably object. Second, if the arms are relocated to storage sites near airfields, they could be returned to Europe in a matter of hours, rather than the weeks that would be required to deploy weapons from centralized "S-type" facilities—actions that should be easily detectable—even if such facilities are located in Russia's European territory.

Given this context, the United States would initially withdraw its 200 air bombs from six storage sites in five European countries, while Russia would send a total of about 500 bombs and air-launched missiles from air bases to central storage locations. The principle of equality would require not only relocating U.S. tactical nuclear weapons to American national territory, but also banning their presence at air bases, naval bases, or in any areas other than specifically designated central storage locations.

It should be a relatively simple matter to verify the complete withdrawal of tactical nuclear weapons from forward bases, as the storage facilities at those locations would be empty. The parties will also have to come to an agreement on short-notice challenge inspections similar to those for strategic arms at air and naval bases in the territories of Russia, the United States, and probably also in the national territories of their allies, where such weapons had been located in the past. Therefore, in practical terms, the potential agreement may be a more complicated and delicate issue for the United States than for Russia.

Relocating tactical nuclear weapons to centralized storage locations would make them less likely to be stolen by terrorists or used without authorization. Theoretically, Russia could return the weapons to service if there were a security threat on its western or eastern borders, and NATO could do likewise. Provided there is reliable verification of storage facilities, neither side would be able to return weapons to service without the other side knowing well in advance. Moreover, according to Pentagon officials and senior Russian military officers, such a step would not cost much, as most tactical nuclear weapons are already in centralized storage in the United States and Russia.

Tactical nuclear weapons can be kept safely in reserve at centralized storage sites until such time as disarmament talks are extended to actual elimination of nuclear warheads and utilization of the resulting nuclear materials for peaceful purposes. From a technical and verification perspective, dismantling and eliminating tactical nuclear weapons pose the same issues as they do for strategic weapons. In the future, if the parties broaden the scope of nuclear disarmament to include the elimination of nuclear warheads, they will probably deal with both tactical and strategic warheads simultaneously.

Conclusion

There is much more confusion and doubt about the future of strategic arms control and adjacent disarmament issues today than there was in the past. The acrimonious ratification debates over New START in both parliaments cast a dark shadow over the prospects for arms control. Furthermore, over the past decade Russia and the United States have drifted far apart in their foreign policy priorities and security perceptions. In both Russia and the United States, Cold War veterans who remember the horrors of living under the constant threat of nuclear conflagration have given way to a new elite who do not appreciate the value of negotiated arms control.

In both Russia and the United States, Cold War veterans who remember the horrors of living under the constant threat of nuclear conflagration have given way to a new elite who do not appreciate the value of negotiated arms control.

As demonstrated by the 2010 U.S. Nuclear Posture Review and Russian Military Doctrine, nuclear weapons will retain strategic and political salience for the foreseeable future. Thus, there is no consensus within the American or Russian strategic communities on proceeding with radical cuts below New START's ceilings. At best, the two sides will have to resolve a number of hard military problems before proceeding with the next phase of New START: cooperation on ballistic missile development, dealing with conventional strategic weapons, tactical nuclear arms (and conventional arms control in Europe), and third nuclear weapon and threshold states, among other issues. Hence, strategic arms control faces serious international and domestic obstacles aside from the familiar problems of reaching a compromise on complex technical issues of offensive strategic arms. These obstacles include the need to fix lower ceilings, incorporate boost-glide and orbital systems, and agree on more stringent counting, reduction, and conversion rules, as well as a more intrusive verification regime.

The experience of the past decade has demonstrated that not being enemies is not the same thing as being good friends and partners. In order to achieve real partnership, U.S.-Russian mutual deterrence at relatively high levels of nuclear weapons must be painstakingly managed, stabilized, and downgraded. For Russia nuclear weapons are also a matter of global prestige and compensation for conventional military weaknesses. Strategic arms control, confidence building, verifiable de-alerting, transparency, and predictability regimes provide ways to address Russia's complex interests, as well as those of the United States.

Recognizing and mutually accommodating fundamental interests is the sine qua non for forging a genuine strategic partnership that would extend beyond UN Security Council votes on Iran or transit rights for Afghanistan. This will require substantial and consistent efforts by both sides not just to do away with Cold War legacies, but to come to grips with post–Cold War

misunderstandings and misgivings. Whether the United States and Russia can make this commitment will determine whether history remembers New START as a gambit or a twenty-first century endgame for U.S.-Russian security cooperation.

Notes

1 George P. Shultz, William J. Perry, Henry A. Kissinger, Sam A. Nunn, "A World Free of Nuclear Weapons," *Wall Street Journal,* January 4, 2007.

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4 President of Russia, *Military Doctrine of the Russian Federation,* February 5, 2010, http://news.kremlin.ru/ref_notes/461 (Russian); available in English at www.sras.org/military_doctrine_russian_federation_2010.

5 Ibid.

6 Ibid.

7 To understand why a NATO-Russia war inevitably would expand to a two-front conflict consider the following questions: Would the United States permit Russia to relocate air, ground, and naval forces from the Pacific to the Euro-Atlantic region to reinforce its position in the west? Would the United States refrain from attacking Russian strategic forces (including SSBNs), C^3I (command, control, communications, and intelligence) assets as well as other targets to the east of the Urals? Would the United States let Russia use industrial assets and raw materials from Siberia to help the war effort in Europe? Would the United States let Russia deploy its navy into the open ocean through the choke points of Kamchatka and Okhotsk to attack sea-lanes in the Pacific as well as Alaska, Hawaii, and California? Would Russia wait for a U.S. attack on its vulnerable Far East assets instead of launching a preemptive strike against the U.S. 7th Fleet and its bases in Japan? Would Japan resist the temptation to regain the Kuriles?

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22 The current plans of the U.S. Navy include the deployment of up to four conventional warheads on each of the 28 *Trident* SLBMs (with each of the 14 submarines equipped to carry 2 SLBMs). The U.S. Air Force is considering the possibility of deploying several tens of *Minuteman II* or *MX* conventional ICBMs. See Anatoly Dyakov and Evgeny Myasnikov, "Prompt Global Strike as Part of the Plans of US Strategic Forces Development," Center for Arms Control, Energy and Environmental Studies at the Moscow Institute of Physics and Technology (September 14, 2007): 9.

23 The figure 2,000–3,000 long-range conventional cruise missiles assumes that in addition to four Ohio SSBNs 2 more may be converted for SLCMs (altogether 924), plus 38 B-52H and 67 B-1B bombers with average of 20 ALCMs each (up to 2,100 missiles), and 80 conventional warheads on 20 converted Trident-2 SLBMs (two per each of ten remaining ballistic missile submarines).

24 See U.S. Department of Defense, *Nuclear Posture Review Report, April 2010*, x–xi.

25 See *SIPRI Yearbook, Armaments, Disarmament and International Security* (Oxford: Oxford University Press, 2008) 367–69.

26 See U.S. Department of Defense, *Nuclear Posture Review Report*, xii–xiv.

27 See International Commission on Nuclear Non-Proliferation and Disarmament, *Eliminating Nuclear Threats: A Practical Agenda for Global Policymakers*, Gareth Evans and Yoriko Kawaguchi, co-chairs (Canberra, ICNND, 2009) 20.

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Zero Possible?" *Voenno-Promyshlenny Kurier* no. 6, February 17–23, 2010, 3.

31 See *Eliminating Nuclear Threats*, 20.

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