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Beyond Arms Control: How to Deal with Nuclear Weapons

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SUMMARY

Nuclear arms control is often considered not worth the effort now that the Cold War is over. But the nuclear threat is anything but over. Several thousand strategic nuclear weapons remain on hair-trigger alert in U.S. and Russian arsenals. Many more are insecurely stored. Though the arms control problem needs to be faced by both countries, neither one has the stomach for another Cold War–style, 500-page treaty like START I. The new model is the 2002 Moscow Treaty—a simple, three-page commitment to reduction. Such short treaties now make sense because both countries have many ways to know what is going on inside each other's nuclear arsenal. START I is still very important, but it is no longer the only tool in the box. Today, Washington and Moscow can relegate negotiated treaties to a few essential fronts and pursue exciting, innovative arms control efforts involving threat reduction and technical cooperation.

Nuclear arms control, once the central preoccupation for Washington and Moscow, is today often considered to be old business, not worth the effort now that the Cold War is over. Some American experts even consider it antithetical to U.S. interests; in their opinion, with no country to threaten it, the United States should do nothing to limit its power. Both views are dead wrong.

The U.S. National Park Service may have turned the last remaining Minuteman missile silo in South Dakota into a museum exhibit (see photo, p. 3) but the nuclear threat is anything but over. For every Soviet and American missile that has been retired, several thousand strategic warheads remain on hair-trigger alert. Many more—especially thousands of Russian tactical weapons—are often stored insecurely. And huge stockpiles—hundreds of tons—of excess fissile material must be protected and eventually eliminated.

Some argue that U.S. policymakers can just build better fences around Russia's warheads and nuclear materials, leave the arsenals to decay, and turn their attention to other issues. But those measures would not be safe. As defense budgets shrink or are redirected to new priorities, strategic weapons in both countries will be kept operational for longer than they should be. Worse, the decay option poses huge risks that nuclear weapons—especially Russia's 15,000 tactical warheads—will fall into dangerous hands. Finally, spending often cannot shrink on its own because, on both sides, laws and regulations presume and often require a legally binding arms reduction agreement before funds can be cut.

Yet there is no stomach on either side for another round of Cold War–style arms control negotiations. The comparative tale of the 2002 Moscow Strategic Offensive Reduction Treaty (SORT, or the Moscow Treaty) and the 1991 Strategic Arms Reduction Treaty (START I) reveals how great the change in attitude has been. START I was the apogee of the formal, Cold War–inspired arms control process. As Mikhail Gorbachev brought reform to the Soviet Union, everything that was impossible between two Cold War adversaries suddenly became possible, and the negotiators went for broke. After several years of hard work, they produced 500 pages of highly detailed instructions to guide the verification and monitoring of START I reductions.

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The Moscow Treaty, by contrast, was negotiated in a few months and ended up at fewer than three pages. It is a straightforward, simple commitment to nuclear arms reduction, without the high level of detail in START I—which in fact points to START's Cold War limitations. Officials had no other way of attaining a high level of confidence in the reductions of the other side. They simply had to negotiate into the treaty every jot and tittle that they thought might be necessary.

This new era brings new opportunity: Although the United States and Russia still will make use of START I, they need not depend only on its rules. Today both countries have many means of knowing what is going on inside the nuclear arsenals of the other. New tools have become available since the Cold War. They can be combined with older approaches in a better and quicker way to achieve nuclear arms reduction than the old treaty system alone could provide.

Simple Steps toward Reduction

The path to achieving quicker nuclear arms reduction can be taken with four deceptively simple steps:

1. Make use of existing treaties and agreements, including cooperative unilateral arrangements.
2. Mine Cooperative Threat Reduction (CTR) and related programs for the special contributions they can make to reduction.
3. Use existing U.S.–Russian technical cooperation to develop innovative technologies and procedures for new arms control initiatives.
4. Negotiate, but only in high-priority areas.

The first step is to take advantage of the bulk of the Cold War treaties and agreements, which continue to serve both countries well. Some are legally binding documents, such as START, the Intermediate-Range Nuclear Forces Treaty, and the Conventional Forces in Europe Treaty (CFE). Others are executive agreements, such as the 1994 Russia–Ukraine–United States Trilateral Statement, which brought about the departure of nuclear weapons from Ukraine. Still others are unilateral undertakings, agreed to by U.S. and Russian presidents in parallel, such as the 1990–1991 Presidential Nuclear Initiatives aimed at removing tactical nuclear weapons from operational deployment.

As valuable as these arrangements are, they should not be thought of as immutable but rather as a foundation that can be strengthened over time, as military conditions and strategic relationships change. Just such a process is already under way with the CFE Treaty, which is being adapted in the wake of the demise of the Warsaw Pact and the entry of many former pact members into NATO. Some Russian experts have also argued that START I should be adapted so that its complicated Cold War–era verification regime will be less expensive. Such adjustments are a natural development in response to new circumstances.

Mining U.S.–Russian Cooperative Experience

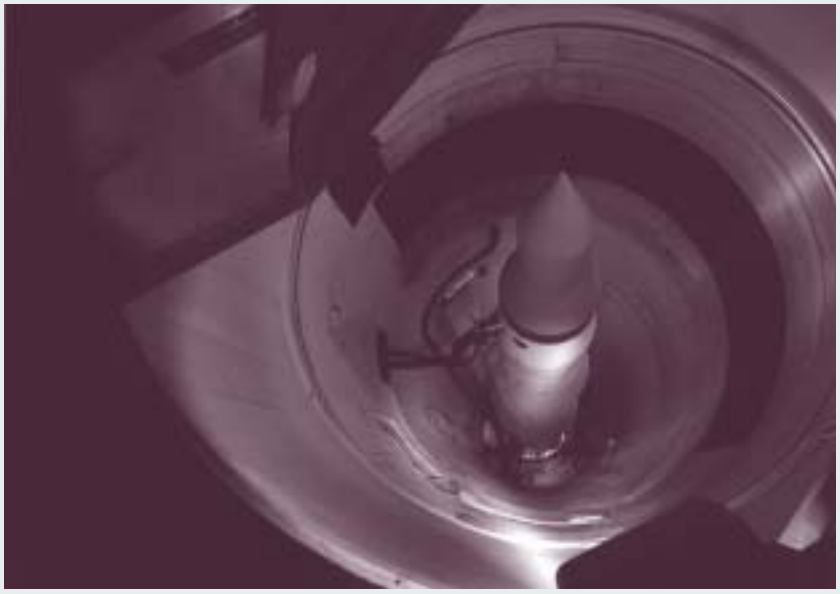
The second step in the process involves building on Cooperative Threat Reduction and related nonproliferation programs. These programs have enabled the United States to engage directly, inside the Russian defense complex, in cooperatively eliminating Russian weapons systems, as well as in protecting its nuclear materials and warheads. From the onset of CTR in 1992, the program depended on the reduction schedule of START I to provide it with a work program in Russia. START I contained a detailed, mutually agreed-on schedule for eliminating bombers, missiles, and submarines. When U.S. senators Sam Nunn and Richard Lugar wrote the original CTR legislation in 1992, they simply adopted that schedule as a way to define the work that would be done to eliminate weapon systems under the new cooperative program.

Now the shoe is on the other foot; CTR can bolster arms control. The new Moscow Treaty on strategic offensive force reductions, signed by presidents George W. Bush and Vladimir Putin in May 2002, does not have a built-in reduction schedule. But the CTR

contracting process has become so established that it could effectively become the means for transparent Russian reductions.

For example, a large U.S. firm might be working with a Russian shipyard to dismantle strategic strike submarines. Once the Russian government has decided which submarines to dismantle, the U.S. firm, as prime contractor, negotiates a contract with a Russian subcontractor to dismantle those submarines by a particular date. Thus CTR provides a high degree of natural transparency because U.S. and Russian companies work cooperatively. In fact, the CTR contract might contain more information than would have been available through START alone.

The problem with CTR is that it operates as a U.S. assistance program in Russia, so Russians do not have the same opportunities to develop industrial relationships at U.S. facilities. In effect, they lack the natural transparency that accrues from these relationships. In an ideal world, Russian companies would have an equal right to compete for contracts to eliminate U.S. weapons systems. But the competitiveness of U.S. defense contracting makes this outcome highly unlikely. Still, some small subcontracts might be awarded to Russian firms (for example, to dispose of scrap metal). Russian experts have argued that even a small symbolic project of this type would do much to bolster confidence in Moscow.



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A Minuteman missile in its silo at the Minuteman Missile National Historic Site in southwestern South Dakota. The National Park Service plans to open the site to the public in 2004.

Another option might be to open the U.S. contracting process to Russian eyes. Once a contract for the elimination of a U.S. weapons system was negotiated with a U.S. company, Russians could be brought in for a government–industry briefing on the schedule and venue for the work. Depending on confidentiality requirements, Russians might also be permitted to retain copies of the contract documents to help them keep track of the work.

The point is that though U.S. and Russian CTR mechanisms cannot be equivalent, the experience gained in the program can nevertheless be mined to develop new ways for Russia to have confidence that U.S. weapons are being eliminated. Ensuring

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Comparison of U.S. and Russian Nuclear Forces, 2002

WEAPON OR MATERIAL	UNITED STATES QUANTITY	UNITED STATES COMMENTS AND SOURCE	RUSSIA QUANTITY	RUSSIA COMMENTS AND SOURCE
STRATEGIC WARHEADS	**7,013**	START Treaty Memorandum of Understanding Data for the United States, July 31, 2001.	**5,858**	START Treaty Memorandum of Understanding Data for the Russian Federation, July 31, 2001. A recent study released by the Institute for Strategic Stability of the Russian Ministry of Atomic Energy and the Sarov Analytical Center for Nonproliferation Problems puts this number at 5,906; see *Iadernoe razoruzhenie, nerasprostranenie i natsional'naia bezopasnost'* (Moscow: Krasnyi Oktiabr', 2001), p. 68; partial translation at www.ceip.org/sarov.
TACTICAL WARHEADS	**1,620**	Jeffrey A. Larsen, "Introduction," in Larsen and Kurt J. Klingenberger, eds., *Controlling Non-Strategic Nuclear Weapons: Obstacles and Opportunities* (Washington, D.C.: U.S. Air Force Institute for National Security Studies, 2001), p. 7.	**4,000**	The source for the 4,000 figure is *Iadernoe razoruzhenie*, p. 69. Other estimates range from 3,800 (Alexei Arbatov) to 5,710 (Anatolii Diakov); see Andrea Gabbitas, "Non-Strategic Nuclear Weapons: Problems of Definition," in *Controlling Non-Strategic Nuclear Weapons*, p. 25.
WARHEADS IN STORAGE	**~ 5,000**	The number of weapons in storage remains classified, but the 1994 U.S. Nuclear Posture Review (NPR) provides for 2,500 "hedge" weapons and 2,500 "inactive" weapons to be maintained. It remains unclear if and how these numbers were modified by the 2002 NPR. (For the 1994 NPR executive summary, see "1995 Annual Defense Report: Nuclear Posture Review;" www.defenselink.mil/execsec/adr95/npr_.html.) Many experts interpret START II as permitting 2,500 hedge warheads and up to 3,000 weapons on inactive reserve; e.g., see Thomas B. Cochran, "The Future of Plutonium," presentation delivered at Plutonium Futures Conference, Los Alamos National Laboratory (July 9–13, 2000).	**9,421**	Natural Resources Defense Council, "Table of USSR/Russian Nuclear Warheads, 1949–2002;" www.nrdc.org/nuclear/nudb/datab10.asp.This figure is roughly consistent with that cited in *Iadernoe razoruzhenie*. That source notes that the Russian Federation possessed about 20,000 warheads in 2000, half of which were in storage (*Iadernoe razoruzhenie*, p. 64). It is unclear how many of these weapons are in inactive reserve and how many are in the dismantlement queue.
TOTAL PLUTONIUM INVENTORY	**99.5** metric tons (equivalent to **12,437** warheads)	The United States produced and acquired 111.4 metric tons of plutonium and disposed of 12 metric tons between 1944 and 1994, leaving an actual inventory of 99.5 metric tons as of September 30, 1994. Precise statistics on the amount of plutonium needed to achieve critical mass in weapons remain classified, and estimates vary. The figures here are based on the International Atomic Energy Agency's (IAEA's) significant quantity threshold, which falls at 8 kilograms. U.S. Department of Energy, "Plutonium: The First 50 Years" (1996); www.osti.gov/html/osti/opennet/document/pu50yrs/pu50y.html#zz0.	**< 150** metric tons (equivalent to **18,750** warheads)	This figure is the upper bound of reliable estimates of the total Russian nuclear material stockpile, which vary widely. Joseph Cirincione, with Jon B. Wolfsthal and Miriam Rajkumar, *Deadly Arsenals: Tracking Weapons of Mass Destruction* (Washington, D.C.: Carnegie Endowment for International Peace, 2002), p. 115.
HIGHLY-ENRICHED URANIUM (HEU) INVENTORY	**994** metric tons (equivalent to **39,760** warheads)	This figure refers to the total amount of HEU produced by the nuclear complex, and it remains unclear how much material might have been consumed in nuclear tests or reactors. Of this amount, 174 metric tons of HEU have been declared in excess to defense needs, and will be diluted for use as reactor fuel or disposal. The exact amount of HEU needed to achieve critical mass is also classified. This figure is based on the IAEA's estimate of 25 kilograms. U.S. Department of Energy, *Declassification of the United States Total Production of Highly Enriched Uranium* (1994); www.osti.gov/html/osti/opennet/document/press/pc13.html.	**< 1,500** metric tons (equivalent to **60,000** warheads)	Under the 1993 government-to-government agreement between Russia and the United States, 150 tons of weapons-grade uranium have been converted to low-enriched-uranium power plant fuel; see USEC Inc., "US–Russian Megatons to Megawatts Program: Turning Nuclear Warheads into Electricity (As of September 2002);" www.usec.com/v2001_02/html/megatons_fact.asp. The source for the figure of 1,500 metric tons is *Deadly Arsenals*, p. 115.

equal *confidence* on both sides will be important. The information gained in this way will often go beyond what would have been produced as a consequence of data exchanged under START I.

Jointly Developing New Techniques

The third step in the process is to capitalize on current U.S.–Russian technical cooperation to develop innovative technologies and procedures for new arms control initiatives. A whole series of technical arrangements have been made in the past decade, beginning with the cooperation between U.S. and Russian weapons laboratories that began in 1992 and now extends to formal bilateral agreements—for example, the Warhead Safety and Security Exchange Agreement (WSSX) and the transparency arrangements under the Highly Enriched Uranium (HEU) Purchase Agreement.

WSSX involves the U.S. Departments of Defense and Energy and the Russian Ministries of Defense and Atomic Energy in joint work on technologies and procedures to improve the safety and security of nuclear warheads. The HEU transparency arrangements were designed to enhance confidence that the enriched uranium blended down under the agreement in fact comes from dismantled weapons and not from other stockpiles.

The significance of these agreements is that they have created a web of scientific and technical relationships between the United States and Russia that provide a context for efficiently tackling even the most complicated arms control task. How, for example, might a system be developed to closely monitor warhead dismantlement without compromising sensitive information? Joint U.S.–Russian teams are already working on this issue. What about a means of distinguishing weapons from nonweapons material, again without divulging sensitive information? Russian and U.S. experts have been developing just such a system, an information barrier technology, in preparation for the opening of the Mayak plutonium storage facility.

There is no arms control or reduction task to which the U.S. and Russian scientific and technical communities could not immediately contribute as a team. This is a radical departure from earlier arms control talks, when technologies or procedures were developed in their initial form by one side, then proposed to the other and laboriously negotiated over many months or even years. Thus, the two countries have an opportunity for rapid progress in new areas.

The remaining barriers to progress in this arena are classic bureaucratic problems, such as inadequate funding and leadership to ensure that priorities are kept. If these problems can be solved, the contribution of U.S.–Russian technical cooperation to new and faster arms reductions will be considerable.

Negotiating Only for Top Priorities

Existing arms control agreements, when married to new tools such as CTR and technical cooperation, will produce accelerated progress in nuclear arms reduction. For that reason, the fourth step, negotiation, need only be taken selectively for the highest-priority goals.

One prize has long been sought by even the most dogged enemies of arms control diplomacy: control and elimination of tactical nuclear weapons. And today interest in it is higher than ever because of the potential link between tactical weapons and nuclear terrorism.

There is no stomach on either side for another round of Cold War–style arms control negotiations.

Tactical nuclear weapons are likely to be the weapons most attractive to terrorists because they are smaller and more mobile than strategic nuclear warheads. Often—in the Soviet arsenal—they were constructed without special security locking devices. In addition, huge numbers were built—about 20,000 by Russia alone. By a wide margin, they are the nuclear weapons that a terrorist is most likely to acquire.

Controlling tactical nuclear weapons has not so far been a part of negotiated treaties such as START or SORT, mostly because monitoring such weapons is difficult without divulging sensitive information. The first attempt to control them was a unilateral approach, the Presidential Nuclear Initiatives that the United States and Russia undertook to pursue in parallel in the early 1990s. These initiatives have not been wholly successful; the United States has been concerned that Russia has done little to implement them. In particular, the United States has complained that Russia has held back data on its tactical warhead holdings. Russia, for its part, has been concerned about U.S. nonstrategic nuclear warheads remaining in European countries that belong to NATO. Although both countries have agreed in principle to undertake new negotiations to limit and reduce these weapons, their wide differences have kept talks from even getting under way.

The agenda for controlling tactical nuclear weapons is further complicated by the very different priorities that the United States and Russia followed in eliminating nuclear weapons in the 1990s. Russia placed first priority on eliminating the nearly 4,000 strategic nuclear warheads that were removed from Ukraine and Kazakhstan after the collapse of the Soviet Union. The United States, by contrast, emphasized eliminating tactical nuclear weapons and brought its arsenal of such weapons down to a level of about 2,000 warheads.

These different priorities mean that no neat "package" of trades can be made to reduce U.S. and Russian warheads equally—strategic one for strategic one, tactical for tactical. Though this approach would be taken in a traditional arms control process, the two arsenals today are simply too different. In effect, Russia and the United States have each exercised a "freedom to mix" that has created very different arsenals.

If each side can accept this fact, the differences need not impede control of warheads. To make progress, the concept of arms control will simply have to be broadened from the traditional one.

Such a conceptual broadening might begin with the fact that the United States and Russia are already working closely together to enhance the physical protection of Russian tactical nuclear warheads and to consolidate them in fewer, well-guarded storage facilities. This cooperation is essentially the leading edge of an arms control process. The measures have not only enhanced physical protection but have also increased joint understanding of how warhead control might work and given a clearer picture of the status of Russian warhead holdings.

The next step might involve renewing the Presidential Nuclear Initiatives—which would go beyond tactical nuclear warheads to include strategic warheads being placed in reserve or readied for elimination. Russia and the United States would unilaterally undertake to control and eliminate certain warheads. Naturally, because there has already been freedom to mix, Russia would eliminate more tactical weapons and the United States more strategic ones. Each country would

Negotiation only needs to be done for the highest-priority goals.

declare these warheads and exchange data on them; they might also back up these statements with transparency measures at warhead storage facilities. The data exchange could be augmented over time by transparency activities at warhead elimination facilities.

Such an approach would do more than begin to tackle the control of tactical nuclear weapons. It would also begin to address a concern that Russia has expressed in the aftermath of the Moscow Treaty. Russian experts have complained that they do not understand the balance that the United States will strike between reserve warheads—which might be returned to operational status on strategic weapon systems—and warheads that will be eliminated. If the United States promised Russia some data on this issue, that might seem a worthy trade for the data on its tactical warhead holdings, which it has long withheld.

Progress on tactical nuclear weapons control also will probably require some way of addressing the estimated 180 tactical warheads deployed in NATO countries. These have long been a concern to Russia, which has often insisted that they be dealt with before control of tactical nuclear weapons can be discussed bilaterally.

One method of addressing these concerns might be to shift primary responsibility for them to the new NATO at Twenty arrangement, in which Russia has an equal seat at the table and equal opportunity to advance its interests. Significant progress has already been made in the NATO–Russia dialogue on confidence building related to nonstrategic nuclear warheads. Russia has pushed for transparency measures involving warhead safety and security. If Russian concerns about NATO's nuclear weapons are acknowledged and placed on the agenda of NATO at Twenty, this might permit bilateral progress on controlling tactical nuclear weapons.

Conclusion: Toward Innovative Arms Control

Nuclear weapons will not magically go away without direct attention from policymakers, notwithstanding the absence of threats between the United States and Russia. Negotiation, for better or worse, has historically been the major facilitator of nuclear arms reduction by both countries. In the future, however, cooperation need not be limited by past models. In fact, adherence to such models is no longer desirable, given the much more powerful tools now available. If these tools are fully exploited, nuclear arms control can be accelerated and further deep reductions can be achieved.

Washington and Moscow can relegate cumbersome, formal arms control negotiations to a few essential fronts and realize nuclear arms control with a battery of new tools. This is a daunting task, given the recent lack of attention to arms control in both capitals. Nevertheless, success would make for an exciting, innovative arms control effort, which would involve combining industrial cooperation with joint efforts in science and technology to reduce and eliminate Russian and U.S. nuclear arsenals. When considered in this light, nuclear arms control is a vital step toward a stable future, not a fading vestige of the past.

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