Nonstrategic Nuclear Weapons

The Neglected Stepchild of Nuclear Arms Control

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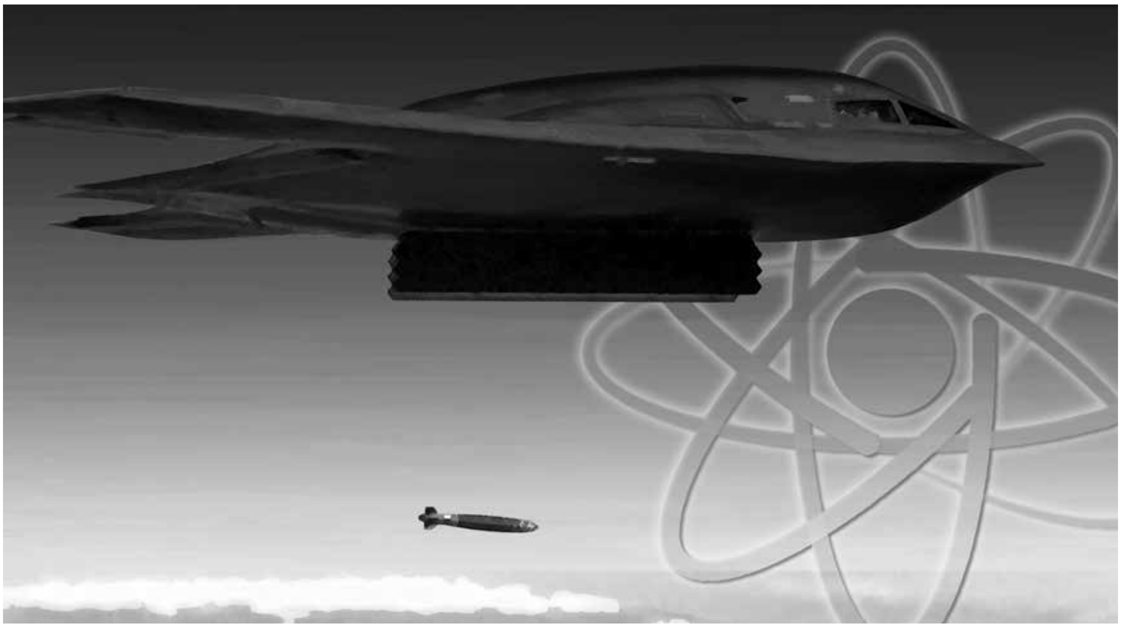

The Cuban missile crisis, which brought the United States and Soviet Union to the brink of nuclear war—as well as a dawning realization, now firmly enshrined, that neither side could gain a strategic advantage from the costly and destabilizing nuclear arms race—spawned a succession of strategic arms control treaties, starting with the 1972 Strategic Arms Limitation Treaty (SALT) and progressing through the current New Strategic Arms Reduction Treaty (New START). These agreements have reduced strategic nuclear arsenals dramatically, and—precisely because of that success—the United States must think very carefully about the next steps in this progression.

In particular, these treaties have focused on strategic (intercontinental-range) delivery vehicles and their nuclear weapons payloads. The 1988 Intermediate-Range Nuclear Forces (INF) Treaty—a notable exception—bans the entire category of ground-launched ballistic and cruise missiles with ranges from 500 to 5,500 kilometers. However, completely unconstrained are all other types of nonstrategic nuclear weapon systems.

The United States has withdrawn from Europe the great majority of its nonstrategic nuclear weapons, which now number several hundred, while Russia maintains thousands in its current arsenal. Understandable strategic reasons exist for both US and Russian choices, but *the implications of the resulting imbalance are not well understood and are thus potentially dangerous*.

A Brief History

The United States started deploying nuclear weapons in Europe in 1954 and accelerated deployments after 1956 during a period of increasing tension with the Soviet Union. West Germany had just gained admission to the North Atlantic Treaty Organization (NATO) while the Soviet Union's transparent ploy for membership was soundly rejected. In short order, the Soviet Union formed its own alliance of mutual defense and assistance that included eight central and eastern European states known as the Warsaw Pact. Over the next decade, the national armies of the Warsaw Pact states were consolidated into a formidable fighting force under Soviet leadership. NATO could ill afford to match the Warsaw Pact's conventional forces, banking instead on the numerically superior US nuclear arsenal to deter Soviet aggression in Europe. This asymmetric deterrence strategy was amplified by the gradual deployment of thousands more nuclear weapons to Europe, distributed among eight NATO member states. Concurrent with this dramatic rise in nonstrategic nuclear weapons, by the mid-1960s the Soviet Union had essentially achieved parity in strategic weapons with the United States, resulting in a perilous stalemate maintained by the specter of mutual assured destruction (MAD).

Fearful that a conventional conflict in Europe would inevitably trigger a nuclear Armageddon, NATO adopted a policy of "flexible response" in 1967. The premise behind flexible response was that in an attempt to avoid an all-out nuclear conflict, a limited number of US nonstrategic nuclear weapons would be used in a situation in which NATO forces found themselves in danger of being overrun by superior Warsaw Pact conventional forces. Notwithstanding the dubious presumption of being able to maintain escalation control in such a scenario, flexible response was largely regarded as a stabilizing influence on the uneasy standoff between NATO and Warsaw Pact forces throughout the remainder of the Cold War.

The number of US nonstrategic nuclear weapons deployed in Europe peaked in 1971 at more than 7,000, including aircraft-delivered gravity bombs, artillery rounds, atomic demolition munitions, gun projectiles, and warheads on surface-to-air missiles and short- as well as medium-range surface-to-surface missiles (Pershing I and IA). Later, in the 1980s, the United States deployed ground-launched cruise missiles (GLCM) and the intermediate-range Pershing II in response to Soviet deployments of the SS-20. Significant unilateral reductions also started in the 1980s, driven in part by physical security concerns but also in response to public opposition to nuclear weapons in many NATO countries. The INF Treaty contributed to further reductions, importantly including the Soviet SS-4, SS-5, and SS-20 together with US Pershing II ballistic missiles and the US GLCM. With the end of the Cold War, the dissolution of the Soviet Union, and the disappearance of the Warsaw Pact, the United States turned its attention to further bilateral strategic arms reductions while continuing its unilateral reductions of nonstrategic nuclear weapons, removing all but the B-61 bombs by 1991. Further reductions in the intervening years have resulted in a present-day arsenal of only several hundred forward-deployed nonstrategic nuclear weapons—a still-tangible sign of the continuing US commitment to European security.

In the post–Cold War period, Russia has come to rely on its nonstrategic nuclear arsenal as the only affordable means to offset superior NATO conventional forces and to protect its extensive borders from potential military incursions—a reversal of the US and Soviet postures during the Cold War. Although both the United States and Russia appear committed to maintaining the strategic balance, Russia also seems intent on modernizing its nonstrategic nuclear arsenal, unconstrained by self-imposed numerical or technological limitations.

Policy makers and experts alike are evidently divided in their reactions to the current situation. Many are not concerned, arguing that US conventional superiority has obviated the need for nonstrategic nuclear weapons, that strategic nuclear forces continue to provide all of the necessary deterrent, and that the likelihood of Russian nuclear aggression is extremely low. Others are much more concerned, pointing to recent Russian bellicosity in Ukraine, Russian doctrinal reliance on nonstrategic nuclear weapons, and the continuation of Russian modernization efforts. We are not convinced by either side's arguments, but we believe that concern is sufficiently warranted and that debate at the national level, supported by in-depth analysis, is imperative.

The Uncertain Future

Our concerns are amplified by the fact that the current situation is by no means static. How the future of nonstrategic nuclear weapons will evolve and the degree to which it may represent an increased or reduced threat are largely unknown. Nevertheless, at least one development appears predictable: the asymmetry in current stockpile numbers is likely to grow. Faced with the push of Russian insistence on the withdrawal of all forward-deployed US nonstrategic nuclear weapons and the pull of continuing unilateral drawdown, America could find that a "nuclear zero" might well be a realistic prospect for at least this component of its nuclear arsenal.

Russian military doctrine for the use of nuclear weapons has also continued to develop, even disavowing the long-standing Soviet pledge of no first use. Indeed, Russian military planners have argued that limited use of low-yield nuclear weapons could reasonably be expected to de-escalate a conflict and curtail a conventional war of attrition. If the United States eliminates its remaining nonstrategic nuclear weapons, it must rely on threats of direct escalation to strategic nuclear war if Russia vows to use its nonstrategic nuclear weapons. MAD has been the hallmark of nuclear deterrence throughout most of the Cold War and is still generally considered sufficiently credible for attacks against the United States. However, it is not as easy to credit the notion that the United States might respond to first use of a nonstrategic nuclear weapon on a battlefield with either a civilization-ending barrage or even a single strategic nuclear weapon.

A second future development, potentially also extremely important but the subject of less commentary, concerns innovation in the design of nonstrategic nuclear weapons. Up until about 20 years ago, the United States was in the vanguard of exploring and extending the boundaries of such design. Since then the US nuclear design community has been constrained merely to sustain the aging remnants of the Cold War stockpile during an era that has seen billionfold strides in computing power, quantum leaps in precision navigation and timing, and striking improvements in engineering methods and material fabrication. It should come as no surprise that nuclear capabilities under development in other countries could be approaching—and in the case of Russia, could have surpassed—those of the United States. Most notably, Russia has made no secret of its intent to pursue highly accurate, low-yield nonstrategic nuclear weapons. Public statements by senior Russian officials have hinted at the possibility that these weapons might represent a new generation of high-fusion fraction weapons with lethal effects considerably more discriminate than those of current weapons.

The effects of advanced high-fusion fraction nuclear weapons can be markedly different than those from fission weapons of equivalent yield, with attributes that give them a decided advantage in certain war-fighting scenarios. Of particular significance, high-fusion fraction weapons have enhanced lethal-radiation footprints and reduced blast and shock footprints compared to those of fission weapons of equivalent yield.

The possibility that high-fusion fraction devices could undergo further refinement to attain pure fusion status poses additional dilemmas. Current legal proscriptions may not even cover such hypothetical designs. The United States has been resolute about excluding fusion research from all arms control treaties so as not to hinder research in inertial confinement fusion, most notably at the National Ignition Facility. Thus, the Comprehensive Nuclear-Test-Ban Treaty (CTBT), signed but not ratified by the United States, contains no provisions for limiting any testing involving nuclear energy release from pure fusion reactions. This treaty loophole opens the unintended possibility that treaty parties could legally develop and test pure fusion designs.

In any event, such tests would lack the standard radionuclide signature, effectively evading the only nuclear-unique CTBT monitoring protocol. Thus, pure fusion designs, if achievable, would also be inherently subversive of prospects for negotiating arms control treaties by undermining traditional verification regimes.

A pure fusion device would also pose a complementary detection problem for global surveillance efforts during development and production. The extant global nuclear detection architecture, designed to recognize the radiative signatures of uranium and plutonium, would prove totally ineffective against pure deuterium-tritium fusion devices. Currently no US investment exists in developing detection systems tuned to deuterium-tritium fusion fuel.

Conclusion

Nonstrategic weapons have largely been ignored in the drive to control the strategic arms competition, resulting in a significant numerical disparity in current US-Russian arsenals. We are aware that other individuals have expressed concerns about this asymmetry and that this subject is on the US agenda for consideration in a potential successor to the New START Treaty. To provide a proper assessment of these concerns and evaluate candidate policies to address them, we see the need for much more in-depth analysis. We call for a concerted intellectual focus on the full spectrum of issues raised by nonstrategic nuclear weapons—of which the US-Russian imbalance is the primary, but not the only, one—before any further reductions in strategic or nonstrategic nuclear weapons occur. Studying these issues requires appropriately challenging the conventional wisdom about nonstrategic nuclear weapons, much of which was born and honed during the Cold War. Examples of such conventional wisdom include the following:

- *The asymmetry in US and Russian nonstrategic nuclear forces does (or does not) matter*. Without justification supported by analysis, either assertion is vacuous. Most worrisome is the unjustified extrapolation of the argument that since asymmetry does not matter, we can and should unilaterally remove all nonstrategic nuclear weapons from Europe.
- *The strategic nuclear balance trumps the nonstrategic nuclear imbalance*. This statement places extreme confidence in the prediction that Russian leaders will believe that their use of nonstrategic nuclear weapons will inevitably lead to strategic nuclear war and thus be deterred from such use.
- *We have conventional superiority, so nonstrategic nuclear weapons are not important*. We do not have conventional superiority everywhere, at all times, and in all circumstances. Further, even if the location, time, and circumstances all align in our favor, higher Russian stakes in any conflict on its border could motivate Russia to use nonstrategic nuclear weapons *because* of our conventional superiority.
- *US nonstrategic nuclear weapons in Europe help maintain cohesion within the NATO alliance, discourage other NATO states from acquiring their own nuclear weapons, and represent a critical rung, short of Armageddon, in the escalation ladder*. An alternative plausible perspective is that they are an anachronism from the Cold War without strategic purpose.
- *An important distinction exists between strategic and nonstrategic weapons*. Much was made of this distinction during the Cold War although it was never entirely clear just what the distinction was. It is increasingly apparent that the terminology is artificial and serves more to muddy thinking than clarify it.

We cannot rely forever on what we once thought was true. The world is continuously changing, and our thinking must do so as well. ✪

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