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# The Future of the U.S. Nuclear Deterrent



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Washington's nuclear experts must come to a consensus on the future of U.S. nuclear deterrent architecture.

by **John Deutch**

The future role of the U.S. nuclear deterrent may not seem as urgent an issue as health care, terrorism, energy and the environment, because nuclear weapons do not touch the daily lives of Americans. But, as a wag once said: “a single nuclear weapon can ruin your whole day.” The essence of nuclear-weapons policy is to avoid a catastrophe that could easily destroy the lives and property of tens of thousands, if not millions, of people. So there is widespread agreement among public officials, military leaders and knowledgeable outside experts that the ultimate goal that must guide all policy efforts is to avoid the explosion in anger of even a single nuclear weapon.

Hiroshima and Nagasaki remain a vivid reminder of the extraordinary destructive power of nuclear weapons and the certainty that the world would never be the same after any nuclear weapons use. The corollary is that nuclear weapons are not—and never should be—credible instruments of war. No country or subnational group should ever

be permitted to consider such weapons usable in any conflict. The ultimate purpose of nuclear-weapons policy is to deter their use.

## **Early History**

This view of nuclear weapons was not always accepted. In the early days of the Cold War, in the 1950s, Secretary of State John Foster Dulles and Air Force Chief of Staff Curtis Lemay advanced a doctrine of massive retaliation. This doctrine rested on the assumption the threat of instant and large-scale nuclear reprisals would serve as an effective deterrent to conventional war. Widespread deployment of nuclear weapons in theater, such as nuclear artillery, mines and surface-to-surface missiles, would ensure escalation if war began, thus deterring any Soviet use of conventional military superiority in Europe, while avoiding the cost of matching that Soviet force.

It took two decades for the United States and Soviet Union to understand that nuclear weapons alone were not a credible deterrent to conventional war. Both sides undertook “war games,” detailed theoretical exchanges of long-range (strategic) nuclear weapons. Computer simulations defined the number and type of nuclear forces required to survive a “first strike,” with sufficient capability to impose unacceptable damage on an adversary in a retaliatory strike. These simulations became credible in arms limitations negotiations and were the basis of a series of nuclear agreements between the United States and the USSR that did reduce the number of deployed long-range (strategic) delivery vehicles.

After India tested a nuclear bomb in 1974, President Carter drew the world’s attention to the danger of the spread of nuclear weapons. A successful diplomatic initiative slowed the pace at which advanced countries, such as France, Germany and Japan, were introducing spent fuel reprocessing and enrichment activities to the nuclear fuel cycle, because these activities would introduce weapons-usable material into commerce.

## **Recent History**

With the fall of the Soviet Union and the end of the Cold War in 1992, and the growing terrorist threat, the nuclear-security agenda has shifted sharply to encompass both the U.S. nuclear-weapons posture and counterproliferation efforts to prevent the spread of nuclear materials and technology to nations or subnational groups that seek to acquire a nuclear weapons capability.

The change in security threats and the nature of conflict reduces the role of nuclear weapons in the U.S. national-security posture. As the number of weapons required for the United States to execute its obsolete Cold War strike plans decreases, the pace of retirement and dismantlement of unneeded nuclear weapons should correspondingly increase. Policy concerns shift to counter proliferation: detecting, deterring and destroying efforts of rogue nations and terrorist groups to acquire nuclear devices, bomb usable materials, such as highly enriched uranium and plutonium, and radiological substances. Current U.S. counter-proliferation programs include improved security for the stewardship of nuclear material and weapons stockpiles and multilateral efforts to control international trade in nuclear-weapons-associated technology, expertise and information.

Efforts to encourage countries to give up their nuclear weapons and/or their nuclear aspirations have been somewhat successful. Some states have retreated from the nuclear brink: South Africa, all the states of the former Soviet Union, and potentially Iran, which has agreed to postpone but not abandon the nuclear option.

Counter-proliferation does not ignore the implications of the global spread of commercial nuclear power, especially enrichment and reprocessing (the front and back end of the nuclear fuel cycle respectively).

Just as there is general agreement on the ultimate goal of nuclear policy today, there is also consensus regarding the agenda of issues that require immediate attention. But there is a striking division of opinion on how to approach long-term nuclear weapons goals.

### **Division of Vision**

Views differ about how best to address two realities: nuclear weapons are only usable by irrational or desperate state and sub-state actors, but their existence cannot be wished away.

How best to protect civilization from the use of nuclear weapons? The idealistic view is to work diligently for the complete elimination of nuclear weapons. The pragmatic view is to accept the existence of these weapons in order to maintain their deterrent value while working to reduce the inherent risks in possessing them.

The idealist believes that any inventory of nuclear weapons, no matter how small, presents inevitable risks of catastrophic accidental, unauthorized use and theft.

The pragmatist believes it is impossible to reverse the knowledge of how nuclear weapons are made and to reach agreement on their elimination as long as there are irreconcilable political differences and security concerns among national and subnational groups. A small and feeble U.S. nuclear posture could encourage other nations to acquire a larger and politically more influential force.

The two views have endured through dramatic geopolitical shifts—from the Cold War and the arms race between the United States and the USSR, to today's terror and cyber threats. There is no way to choose conclusively between these two views; both positions deserve respect.

### **Divisive issues**

A few examples illustrate the extent and depth of this division.

Idealists believe that the United States should pledge that it will not be the first to use nuclear weapons in a conflict. They argue that the United States dominance in conventional weapons assures that the use of nuclear weapons will never be necessary. To leave open the possibility that the United States might use nuclear weapons first is destabilizing, because in a crisis the fear of attack could cause an adversary to launch a preemptive strike.

Pragmatists believe that because declaratory statements of intent can be reversed when the occasion demands, declaratory statements have no predictable effect on how opponents might react. Moreover the ambiguity of potential first use, on balance, contributes to deterrence, since an adversary cannot rule out the possibility of a preventive strike. Distinguished leaders support both positions. But, in my opinion, it is hard to believe that a no first use declaration is the first step to nuclear abolition.

### **Article VI of the Nuclear Nonproliferation Treaty**

In signing the NPT in 1970, the United States agreed to Article VI: "Each of the Parties to the Treaty undertakes to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early

date and to nuclear disarmament, and on a treaty on general and complete disarmament under strict and effective international control.” The comma in this expression importantly separates nuclear from general disarmament; and from international control.

Idealists view this article as committing the United States to a path of zero nuclear weapons, perhaps in the distant future. Pragmatists see this provision as an empty promise made by the United States in order to conclude a very lengthy and contentious international negotiation among 190 countries. The strong support for Article VI came less from widespread concern about possible nuclear use than from countries such as Brazil, Egypt, India and Mexico, who understandably did not see the logic of the NPT that allowed the United States and four other nuclear weapons states to possess nuclear weapons while proscribing them for all others.

### **The Comprehensive Test Ban Treaty**

The United States has not ratified the CTBT since the UN General Assembly adopted the treaty over twenty years ago, although it has had a moratorium on nuclear testing throughout this period. It is unlikely that the Senate will take up the treaty in the next four years and there is no prospect of passage unless a new path is found to bridge the bitter divide between the idealists who support and the pragmatists who oppose the CTBT.

The idealists believe that U.S. adoption of the CTBT will slow the spread of nuclear weapons and strengthen the resolve of its signatories to take robust actions, such as sanctions against those who seek to acquire weapons, without risking the safety or reliability of the U.S. nuclear stockpile.

Pragmatists believe that confidence in the performance of U.S. nuclear weapons underlies the credibility of the deterrent, and this confidence will erode if nuclear testing is foregone forever. The purpose of the test is not to validate stockpile reliability (that would take a long testing campaign), but rather to confirm that the country’s weapon experts have the knowledge and ability to predict in quantitative detail the outcome of an underground nuclear explosion. The pragmatists also doubt that U.S. accession to the treaty will dissuade some countries, such as North Korea, or subnational groups, such as ISIS, from pursuing the bomb.

Some supporters of the CTBT believe an aggressive stockpile stewardship program based on nonnuclear experiments and computer simulation can maintain the credibility of the deterrent. Other supporters, perhaps unwittingly, believe the CTBT is a pathway to making the U.S. nuclear deterrent incredible, and therefore irrelevant over time.

The CTBT debate has gone on so long and with such intensity that it is hard to avoid the impression that the proponents and opponents would rather fight than win. It has become a symbolic, if not a cynical, issue.

Although the past twenty years indicates that the United States is not able to resolve this divide; there is another way. Several years ago Arnold Kanter, former undersecretary of state for political affairs and a nuclear policy expert joined with Brent Scowcroft, the former national security advisor for both Presidents Ford and George H.W. Bush, to suggest a modification of the treaty designed to win Senate ratification.

This modification would make the treaty renewable rather than of indefinite term and subject to Senate confirmation every five years. Since few believe that there is an urgency to test, it opens common ground for an agreement on a continuing U.S. test moratorium for a five-year term subject to extension after review and

ratification by the Senate. The Nuclear Nonproliferation Treaty originally ratified by forty-three states entered into force in 1970 (now with 190 signatories) and is subject to a five-year review. In 1995, because of the successful experience with the treaty's operation, the parties agreed to extend the treaty indefinitely.

In general, pragmatists are more skeptical of arms limitations treaties as a durable way to resolve the differences between countries whose effort to acquire a bomb is the result of perceived security concerns, for example, India-Pakistan, Iran, Israel and North Korea. This difference may reflect the underlying optimistic view of human nature of idealists, compared to that of pragmatists.

### **Force Modernization**

In today's geopolitical circumstance the question is what is the deployment of nuclear weapons and policy actions that will ensure deterrence and at what level of expenditure.

The big nuclear issue on the table today is force modernization. Few deny that the existing U.S. nuclear delivery systems and the supporting nuclear weapons program managed by the Department of Energy are aging and need modernization. The big policy question is how large a force is needed, and its composition.

The Obama administration proposed an ambitious and costly life extension and modernization for all elements of the U.S. nuclear deterrent, including a new long-range land-based missile (Ground Based Strategic System), a new submarine-launched ballistic missile system (fourteen new Columbia class submarines, carrying sixteen missiles each to replace nineteen Ohio-class submarine, carrying up to twenty-four Trident missiles each), a new dual use intercontinental bomber, the B-21, a long-range nuclear capable standoff air-launched cruise missile, an upgrade of the nuclear command and control, and modernization of the Department of Energy's nuclear weapons research and development and production infrastructure.

It is not easy to assess the cost of this multiyear program. The cost of the existing base program must be defined; this base program would require additional investment (without the modernization program), for dual-purpose systems, costs need to be allocated between the nuclear and conventional missions. By law, the Congressional Budget Office must provide an estimate of the ten-year budget authority required to carry out the nuclear modernization program. The 2017–26 estimate is \$400 billion; the annual rate of expenditure increases from about 5 percent in 2017 to nearly 7 percent in 2026 of the DOD total budget, although far below the cold war levels of 15 percent.

Three aspects of the proposed modernization astonish me. First, the Cold War triad of bombers, land-based intercontinental ballistic missile (ICBM) and submarine-launched ballistic missile (SLBM) systems would be replicated (although at a somewhat smaller scale). I expected greater discussion of dropping one leg of the triad, now that the bipolar Cold War standoff is over, although Russia is aggressively modernizing its nuclear forces. Curiously, when there is discussion of a dyad, dropping the ICBM is most frequently mentioned, which is by far, the least costly leg. Those urging that it be dropped do so on the basis of its vulnerability, ignoring the presence of the other legs of the triad whose threat of launch would make the attack against fixed land based ICBMs dangerous indeed.

Second, there is a startling contrast between the rhetoric of President Obama's groundbreaking 2009 speech in Prague stressing "America's commitment to stopping the spread of nuclear weapons and seeking the ultimate goal

of a world without them . . .” and the enormous nuclear modernization program that his administration proposed. I speculate that the administration proposed a fulsome program in order to avoid the U.S. nuclear posture becoming a 2016 election issue.

Third, I expected the Obama administration’s modernization program to be supported by detailed analysis of the relationship of the recommended force structure to the deterrent purpose of nuclear forces.

Put starkly, the pragmatist’s position is that now and for the foreseeable future a dominant U.S. nuclear force posture that credibly can deliver nuclear weapons with precision to targets around the world deters nuclear ambition, possession and use by other nations, as well as other actions that disturb regional stability or commerce among nations. [The deterrent value of nuclear weapons for non-state actors is more problematic, because these groups have less identification and loyalty to communities. However non-state actors do have political objectives and hence will likely consider the nuclear power of the United States in planning and executing their most dangerous terrorist acts.]

However, the pragmatist’s strong belief in the value of a robust nuclear force posture certainly does not mean that analysis is not needed or useful in the decisionmaking process about the purpose, the size and composition of the nuclear force. Thorough analysis is particularly important for explaining and convincing Congress and the public that a robust posture provides for deterrence that better assures that these weapons are never used. Pragmatists also do not believe “the more nuclear weapons the better” since defense resources are not infinite.

Analysis does not lead inexorably to a specific force posture. Rather, the analysis informs decisionmaking by comparing a number of force structures that differ in number, composition and cost to possible future conflict scenarios. This process allows military leaders, national security and international affairs experts to discuss with policy makers the influence of nuclear weapons on deterring, military conflict.

The analytic process should include assigning hypothetical delivery systems to target sets. Important Cold War variables, such as surprise attacks, secure basing and alert status, should be augmented by variables appropriate to today’s threats, such as a rapid capability to reconfigure targeting plans, flexible response and a capability for small attacks with low yield precision guided weapons. Of course, pragmatists will see plausible deployment as contributing to stability, while idealists will see deployments as destabilizing because they invite use and preemption by adversaries. Some aspects of the process I have described should remain classified. But transparency, informs the public about these questions, which are so vital to the country’s future.

We should be thinking about future nuclear deterrent architecture, which is very different and more flexible. My analysis leads to a dyad composed of SLBMs and ICBMs. A new bomber for conventional missions armed with penetrating precision weapons may well be justified to replace the aging B-52 and B-1 fleet. I have not seen analysis that supports the proposition that the cost of adding nuclear capability would not be large compared to the ICBM over the lifetime of these systems. Moreover, technology is inexorably progressing toward unmanned aerial combat vehicles for both conventional and nuclear missions.

The total number of nuclear warheads that must be deployed over the next several decades needs to be defined. The future is uncertain, so it is sensible to have a plan that accommodates a range of deployment. But the high end

of the proposed range is an important cost driver of the entire program. I have not seen any analysis but my guess is that total deployed warhead could be well below one thousand.

There is no consensus on any of these complex nuclear modernization questions. The main point is that much more analysis and discussion is needed on a broad set of alternative future nuclear force postures for the United States. It is unfortunate that there are few security experts, scholars and public officials who dedicate the necessary time, attention and work to understand and shape the public discourse and policy decisionmaking in the debate about the country's future nuclear posture.

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*Image: B-2 stealth bomber. Pixabay/Public domain*

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