

FROM ZERO TO 30,000 IN 60 YEARS: HOW DID WE GET FROM THERE TO HERE?

(Remarks given at the National Academy of Sciences CISAC event on July 14, 2005 to mark the 60th anniversary of the Trinity test)

By David Holloway, Raymond A. Spruance Professor of International History and Professor of Political Science, Stanford University, and Senior Fellow at the Stanford Institute for International Studies

Introduction

By the time of Trinity, four states had taken decisions about the atomic bomb. Churchill had decided in September 1941 that Britain should have the bomb, but the war made this impossible and Britain joined the Manhattan Project in August 1943 as very much the junior partner. Stalin had authorized a small project in September 1942 to investigate whether the atomic bomb was feasible. This grew during the war, but in July 1945 it was still a laboratory rather than an industrial project, and certainly not comparable to the American effort. Germany, for reasons that remain a matter of dispute, did not make a major effort to build the atomic bomb. It was the United States that mobilized the scientific and engineering resources, and the productive capacities, to make the atomic bomb. The Project demonstrated the immense scientific and industrial might of the United States.

The British of course knew of the Trinity test, because members of the British Mission took part in it. The Soviet Union also knew of the test. On July 2 Igor Kurchatov, the scientific director of the Soviet project, was briefed by Soviet intelligence about the impending test of the plutonium gadget. On July 10 Lavrentii Beria received from V. Merkulov, the people's commissar of state security, a letter indicating that according to "several reliable secret service sources" the United States would test the plutonium bomb in July, probably on the 10th. It is not clear when Stalin learned that the test had taken place, but we do know that on August 20, two weeks to the day after Hiroshima, he signed a decree setting up a Special Committee on the atomic bomb and giving it extraordinary powers to carry out what was now an overriding priority for the Soviet Union.

Although it would be some time before the British took a formal decision to build the bomb, there was a deep understanding in the British political class that Britain would have to have the bomb. At the end of World War II, then, three states were committed to the development of nuclear weapons.

The Failure of International Control

The atomic bomb was born into a world in which large-scale war among the great powers was a recurrent and apparently normal phenomenon. The destruction of Hiroshima and Nagasaki within a month of Trinity showed the world how destructive the atomic bomb was -- that one bomber could now deliver as much destructive power as 2,000 of the heaviest World War II bombers armed with conventional explosives. This was a huge increase in the efficiency of destruction.

Robert Oppenheimer argued after Hiroshima that the bomb would make war not only more destructive -- which was obvious -- but also more likely, because it would give the advantage to the aggressor. That was why he, along with many others, believed that international control of atomic energy -- or even some form of world government -- was essential if nuclear war was to be avoided. The international system that had given rise to World War I and World II could not, in this view, cope with nuclear weapons.

Oppenheimer was the principal intellectual force behind the Acheson-Lilienthal Report, which proposed that all "dangerous" nuclear activities (defined as those capable of leading to the making of nuclear bombs) be placed under the control of an international agency under the jurisdiction of the UN Security Council. The negotiations at the UN on international control soon failed. The United States and the Soviet Union could not reach agreement. I won't go into the reasons for failure, but its significance was that the development of atomic energy would now be determined by the national policies of sovereign states.

The United States slowly built up its nuclear stockpile and developed new designs. It incorporated nuclear weapons into U.S. military strategy; it established Strategic Air Command; by the late 1940s the atomic air offensive was the central element in plans for war against the Soviet Union. The Soviet Union worked furiously to develop its own bomb, which it tested in August 1949. This was much faster than Washington expected, but two years later than Kurchatov had initially promised. Britain too was making the bomb, though with less urgency. The first Soviet test and the first British test in October 1952 both detonated modified copies of the Trinity "gadget."

The Soviet test produced a shock in Washington. One of Truman's responses was to expand the production of fissile material, laying the basis for the massive buildup of nuclear forces over the next fifteen years.

The United States now faced a nuclear-armed Soviet Union sooner than expected. What was it to do? One option was a war to prevent the Soviet Union from building up its nuclear force. That option did not disappear with the Soviet test. In the early-to-mid 1950s U.S. military planners thought they had enough weapons to defeat the Soviet Union quickly and destroy its military power. Preventive war seemed to some senior military officers to be a realistic option. Eisenhower mulled it over but rejected it outright in a press conference in 1954: "there are all sorts of reasons, moral and political and everything else, against this theory," he said.

Deterrence

In the United States the first formulations of nuclear deterrence were made (by Jacob Viner and Bernard Brodie) in direct response to Oppenheimer's claim that nuclear weapons would encourage aggression. They argued that if the aggressor feared retaliation in kind, he would not attack. Rather than encouraging war, nuclear weapons could help to prevent it.

Eisenhower made the judgment that deterrence would work when he ruled out preventive war. He thought that the United States could live with a nuclear Soviet Union and deter Soviet aggression with the help of nuclear weapons. He believed the Soviet leaders wanted to hold onto their power and were therefore not eager for war. He did not regard them as "early Christian martyrs," to quote an expression he used. He was convinced they understood what a nuclear war would mean. The U.S. had to be ready for competition "over the long haul."

At the Geneva summit meeting in July 1955 Eisenhower took pains to discuss with Soviet leaders just how destructive a nuclear war would be. And when he returned from Geneva he told a television audience: "there seems to be a growing realization by all that nuclear warfare, pursued to the ultimate, could be practically race suicide." The US-Soviet nuclear relationship from then on rested on what game theorists call "common knowledge" that an all-out nuclear war would be, in some profound though imprecise sense, unacceptable. This realization followed the U.S. and Soviet thermonuclear tests of 1952-55, which shocked the leaders of the three nuclear powers. The U.S. Bravo test of March 1954 had an explosive yield more than 1,000 times greater than the bomb that destroyed Hiroshima.

The Nuclear Buildup

Eisenhower nevertheless placed heavy emphasis on nuclear weapons in his "New Look." He thought that the conventional buildup of the Korean War was unsustainable and that the attempt to sustain it would lead to fiscal ruin for the United States. NSC 162/2 in October 1953 declared: "in the event of hostilities the United States will consider nuclear weapons to be as available for use as other munitions." Eisenhower hoped that nuclear weapons could be used to deter Communist aggression, no matter what form that aggression took. He and Dulles were nevertheless frustrated by what they referred to as "the tabu which surrounds the use of atomic weapons."

Although the basic idea of deterrence is simple – that the threat of retaliation in kind will deter an enemy from launching a nuclear strike – it was not simple to put into practice. The policy of extended deterrence in Europe posed a particular problem for the United States. How could a credible threat be made to use nuclear weapons in response to a conventional attack, when the use of nuclear weapons by NATO would be likely to meet

nuclear retaliation by the Soviet Union? The different strategies adopted by the United States over the years – “flexible response,” “limited strategic options,” “countervailing strategy,” and so on, were largely designed to answer that question.

As the US-Soviet deterrent relationship took shape, the United States planned not merely to retaliate if attacked. (The United States did think also about the survivability of its forces. The Killian Committee on surprise attack, which reported in 1955, did recommend the speeding up of ICBM and SLBM development, as well as the U-2 and spy satellite programs.) The United States and the Soviet Union each developed strategies for war, and each placed a heavy stress on preemption in the event of war. This emphasis reflected the experience of Pearl Harbor and Operation Barbarossa. But it also reflected the strategic balance of the time. If the United States struck first it had a good chance of destroying most of the Soviet strategic forces. If the Soviet Union struck first, it could destroy U.S. bomber bases around the periphery of the Soviet Union. If it did not strike first, it ran the risk of losing most of its strategic forces.

The US stockpile grew rapidly in the 1950s – from under 500 in 1950 to a peak of over 30,000 in the mid-1960s. The Soviet stockpile grew with a lag of ten or more years to perhaps as high as 40,000 in the mid-1980s.¹ The growth on both sides was driven, first, by the “nuclear plenty” created by the expansion of fissile material production. Second, the military wanted to be able to destroy many different kinds of targets, tactical as well as strategic, in the event of war. Third, uncertainties about what the Soviet Union was doing encouraged worst-case analysis, which could be exploited by inter-service rivalries, by bureaucratic politics, and by ambitious political figures (see John F. Kennedy and the “missile gap”).

The Soviet Union followed suit, with a significant lag. The Soviet Union had abandoned in 1956 the Leninist position that war was inevitable as long as imperialism existed, but it still took the view that a new world war as possible, and that it would end in the collapse of imperialism. The Soviet Armed Forces had therefore to focus not merely on deterring a new world war, but on winning it if it should occur. The Soviet Union could not adopt a policy of “minimum deterrence,” as some in Washington hoped in 1963-64. It proceeded to build up its nuclear forces throughout the 1960s and 1970s. The desire to achieve parity, or even superiority, was reinforced by the traditional Stalinist slogan of “catching up and overtaking” the advanced capitalist countries.

Deterrence and War-fighting

In the United States there was throughout the Cold War a debate about the relationship between war planning and deterrence. For many, they were in contradiction because the ultimate goal of war planning was to find a way of being able to “win” a nuclear war (or “prevail” in it), and the drive to achieve this goal would, it was feared, either destabilize the deterrent relationship or result in an arms race with the Soviet Union. For others,

¹ <http://www.nrdc.org/nuclear/nudb/dafig11.asp>

deterrence was enhanced by the preparation for war, because only if the Soviet leaders understood they could not win a nuclear war would they be deterred from aggression. At the same time, however, it was clear to almost everyone that the country that “won” a nuclear war, or “prevailed” in it, could not avoid itself suffering immense destruction. In that sense one can say that nuclear strategy in the Cold War was a dead end.

Deterrence, Defense, and Arms Control

Deterrence was central to the US-Soviet nuclear relationship. Defenses provided no escape. The ABM Treaty of 1972 was based on the realization that such defenses would be immensely costly as well as ineffective against an opponent who could adopt countermeasures.

Arms control became a central feature of the relationship in the 1960s. Limitations on offensive systems were much less effective than the ABM Treaty. SALT I froze the number of launchers, but did not control warheads. In the late 1970s the combination of multiple warheads and greater accuracy in the Soviet strategic force seemed to some Americans to open up a “window of vulnerability” for the United States. And on the Soviet side, the build-up of U.S. nuclear forces in the early 1980s, coupled with plans for SDI, produced anxiety about “nuclear decapitation.” There may or not have been a “war scare” in Moscow in December 1983, but anxiety about the direction of U.S. policy was at a very high level.

The arms control process itself was arguably an important mechanism for managing the nuclear relationship, but decisive progress came only after the summit at Reykjavik in October 1986. Although the summit seemed at the time to be a failure, it made a key intellectual breakthrough. Ronald Reagan and Mikhail Gorbachev stepped back from the nuclear confrontation. The INF and START treaties followed, as well as a number of other important agreements. These started the process of reduction that we are still engaged in.

A Variety of Approaches

I have sketched here a number of approaches that states – individually and collectively – have adopted or considered in dealing with the nuclear challenge:

- International control of atomic energy;
- Preventive force (considered by the US against the Soviet Union, Cuba, and China);
- Deterrence;
- Arms control to stabilize deterrence;
- Incorporation of nuclear weapons into military strategy;
- Shared understandings about nuclear weapons and nuclear war;
- Legal and normative restraints on use.

We still live in a world of states, but we have created practices and institutions that modify the international system in our effort to deal with the challenge of nuclear weapons. These modifications do not remove or resolve the challenge, but they have – however inadequately – helped us to deal with it.

Deconstructing Deterrence

I have not talked about nuclear proliferation or the strains in the nonproliferation regime. As the last three years have made clear, the Bush Doctrine of preemption (i.e. preventive force) provides no panacea for proliferation. And the failure of the NPT Review Conference in May to reach any substantive agreements is a great disappointment. Nor have I said anything about the nuclear terrorism, which is a problem that needs new approaches, very different from those adopted in the Cold War.

But it is worth noting that even today, with the reductions that have taken place, the United States and Russia have 95 percent of the world's 30,000 nuclear weapons, and 95 percent of the world's stockpile of fissile materials. There are now 8 (probably 9) nuclear weapon states. None of the others have attempted to follow the United States or the Soviet Union in amassing huge arsenals. Stockpiles do not exceed 500 in any other case.

We are now witnessing the deconstruction of the US-Soviet deterrent relationship built up during the Cold War. The political relationship between the two countries has been transformed. Presidents Bush and Putin have declared: "neither country regards the other as an enemy or threat." Why then do the forces remain so large on either side?

We should take this opportunity to see how low the forces could go, to see the complete dismantling of the relationship of nuclear deterrence. That would be good in itself. It would also help with the problems of proliferation and terrorism, by showing the commitment of the United States and Russia to carry out their obligations under Article VI of the Nuclear Nonproliferation Treaty, and by making it possible to reduce the number of weapons in the world that might fall into the hands of terrorists.

Conclusion

The men at Trinity 60 years ago set us a challenge with which we are still grappling. The challenge may change its shape, but not its intensity.