FAS'S CONTRIBUTION TO ENDING THE COLD WAR NUCLEAR ARMS RACE

Frank von Hippel

When, at Jeremy Stone's instigation, I was elected chair of the Federation of American Scientists in 1979, I had no idea what an adventure that I was about to embark upon. This adventure was triggered by President Reagan taking office in 1981 and resulted in FAS making significant contributions to ending the U.S.-Soviet nuclear arms race and the Cold War.

THE REAGAN ADMINISTRATION AND THE MOVEMENT TO FREEZE THE NUCLEAR ARMS RACE

This was not the President Reagan we remember now as the partner of Mikhail Gorbachev in ending the Cold War. This was a president who had been convinced by the Committee on the Present Danger[1] that the United States was falling behind in the nuclear arms race and was in mortal danger of a Soviet first nuclear strike. Reagan appointed 33 members of the Committee to high-level positions in his administration, including those of National Security Advisor, Secretary of State, Director of the CIA, and numerous senior positions in the Department of Defense. Under this leadership, the Reagan Administration proposed a U.S. nuclear buildup that would deploy almost 10,000 new ballistic missile and cruise missile nuclear warheads, accurate enough to attack Soviet ballistic missiles in their hardened silos.

[1] For a history of the Committee on the Present Danger see, for example, http://www.sourcewatch.org/index.php/Committee_on_the_Present_Danger

Thus, it was clear that the Reagan Administration was responding to fears of a first strike by acquiring enhanced capabilities for a first strike against the Soviet Union.[2]

This move to resume the nuclear arms race was disturbing after the period of détente with the Soviet Union under Presidents Nixon and Ford, but the public image of the Soviet Union as a status quo power had already been shaken by the Soviet invasion of Afghanistan in 1979.

Public alarm escalated further when it became apparent that some of the new Reagan Administration officials shared a belief that they had been attributing to the Soviet Union: that it would be possible to fight and survive a nuclear war. T.K. Jones, the Reagan Administration's Deputy Under Secretary of Defense for strategic and theater nuclear forces, famously said, "If there are enough shovels to go around, everybody's going to make it."

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This cavalier attitude toward nuclear war galvanized a major grassroots movement that called for a "freeze" of the nuclear arms race. An estimated one million people came out to support this idea at a single demonstration in Central Park, New York in June 1982. That November, citizens in nine states, the District of Columbia, and 37 cities and counties voted for a Freeze in referenda. In Europe, a similar mass movement rose up against the deployment of a new generation of Soviet and U.S. nuclear missiles in Eastern and Western Europe.

FAS, under Stone's leadership, rose to the occasion and worked with Senator Edward Kennedy to try to get establishment support for the Freeze movement – including by holding its own hearings on the idea. I looked for an analytic contribution that I could make and decided to work with my colleague, Hal Feiveson, on the verification of a halt to the production of highly enriched uranium and separated plutonium for weapons.[3] We have been analyzing and advising on stopping production of fissile materials ever since.[4]

THE COMMITTEE OF SOVIET SCIENTISTS

In March 1983, President Reagan shifted from his advocacy of a nuclear buildup to a call for the nation's scientists to join in a Strategic Defense Initiative (quickly dubbed by critics as "Star Wars") that would render nuclear missiles "impotent and obsolete" by creating a space-based missile defense system. A few months later, FAS received a letter from a group of Soviet Academicians that asked whether FAS had changed its views on the desirability and feasibility of ballistic missile defense. Stone wrote back that, no, we had not.

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[2] Harold Feiveson and Frank von Hippel, "The Freeze and The Counterforce Race," *Physics Today*, January 1983, pp. 36, 38, 40, 42, 44, 46-49, reprinted in Frank von Hippel, *Citizen Scientist* (American Institute of Physics, Masters of Modern Physics Series, 1991; Simon and Schuster paperback, 1991; now Springer).

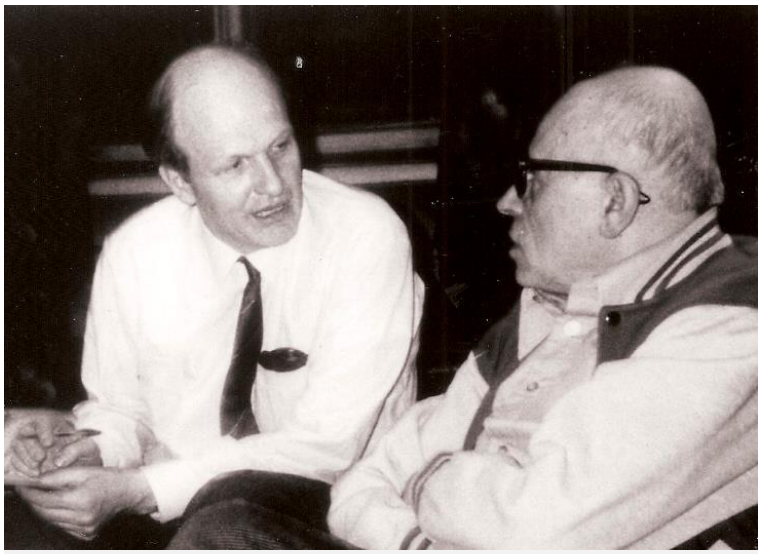
[3] Harold Feiveson and Frank von Hippel, "Cutting Off the Production of Fissile Material for Nuclear Weapons," *Federation of American Scientists Public Interest Report*, June 1982, pp. 10, 11.

[4] Harold Feiveson, Alexander Glaser, Zia Mian and Frank von Hippel, *Unmaking the Bomb: A Fissile Material Approach to Nuclear Disarmament and Nonproliferation* (MIT Press, 2014).

The Soviet response was an invitation to Moscow. Four of us accepted the invitation to visit over Thanksgiving weekend of that year: Jeremy, John Holdren (then Vice Chair of FAS, now President Obama's Science Advisor), John Pike, an FAS staffer who had become a leading critic of ballistic missile defense, and me.

In Moscow, we were greeted by the leadership of the Soviet Committee for Peace and Against the Nuclear Threat, chaired by Evgeny Velikhov, the head of the Soviet Union's fusion program and Vice Chair of the Soviet Academy of Sciences. The Committee's Deputy Chairs were Roald Sagdeev, the head of the Academy's Space Research Institute; Sergei Kapitza, a physicist who had become famous in the Soviet Union as the host of a TV science program; and Andrei Kokoshin, the Deputy Director of the Academy's Institute on the U.S. and Canada. We brainstormed with this group on how to end the nuclear arms race.[5] A year and a half later we learned that Velikhov and Sagdeev were also brainstorming with Mikhail Gorbachev, who became General Secretary of the Communist Party in March 1985.

Gorbachev's first initiative to halt the nuclear arms race was to declare a unilateral Soviet moratorium on nuclear testing in August 1985. The Reagan Administration refused to join in the moratorium and suggested that the Soviets were still testing at low yields. In October 1985, Velikhov suggested to me that we find some seismologists willing to monitor the Soviet test site in Kazakhstan. I invited three groups to meet with Velikhov at the Soviet Academy's headquarters in May 1986. One of the groups, the Natural Resources Defense Council (NRDC) declared itself ready and, under Tom Cochran and with the help of seismologist Charles Archambeau, had seismologists from UC San Diego on the ground in Kazakhstan two months later. The sudden Soviet openness to in-country monitoring convinced Congress that the verification problems of an underground nuclear test ban could be dealt with. This eventually resulted in the Hatfield-Exon-Mitchell amendment to the Fiscal Year 1993 Energy and Water Appropriations bill that resulted in the end of U.S. nuclear testing in 1992.



Frank von Hippel and Andrei Sakharov discuss the possibility of cutting U.S. and Soviet nuclear forces (without changing the basic war fighting approaches of the two) in Sakharov's apartment, just after his release from seven years of internal exile in Gorky, January 1987.

GORBACHEV

One of Stone's most ardent campaigns during this period was to free Andrei Sakharov from his exile in Gorky (now Nizhny Novgorod) where Sakharov had been banished, out of reach

[5] Frank von Hippel, "The Committee of Soviet Scientists Against the Nuclear Threat," *Federation of American Scientists Public Interest Report,* January 1984, pp. 1-4. See also the more recent retrospective, Frank von Hippel, "Gorbachev's unofficial arms-control advisers," *Physics Today,* September 2013, pp. 41-47.

of foreigners, in 1980, after denouncing the Soviet invasion of Afghanistan. Now, with Velikhov as a captive audience, Stone redoubled his efforts – and his determination paid off. In December 1986, Gorbachev allowed Sakharov to return to his apartment in Moscow.

In Moscow that January, Velikhov organized simultaneous conferences on nuclear disarmament of scientists, religious leaders, writers, actors, medical doctors, and business people. Stone, Pike, and I participated in the scientists' conference, as did Sakharov. During a visit with the Sakharovs the evening before, Sakharov and Stone agreed to urge Gorbachev to ignore Reagan's Star Wars program, due to it likely collapsing under its own weight, and take advantage of Reagan's willingness to negotiate deep cuts in offensive nuclear weapons (what later became the START and Intermediate Nuclear Forces Treaties [INF]). Velikhov asked me to address Gorbachev on behalf of the scientists' conference. I emphasized deep cuts and the removal of offensive forces along the inter-German border.[6] One reason why I was given such a prominent role may have been the name of our organization, the Federation of American Scientists, which can conjure up much more than the small albeit important NGO that we know FAS to actually be.

In July 1987, I joined in a letter to Gorbachev with three Western European members of a Pugwash working group that had for years been promoting the idea of non-offensive defense. Kokoshin had been promoting similar ideas in Moscow, but he felt the need for foreign support.[7] Kokoshin had urged me to include these ideas in my speech to Gorbachev. Gorbachev replied to our letter in November 1987, stating that "You approach this in conceptual and practical terms which might well provide the basis of a solution to the problem."[8] In December 1988, at the United Nations, Gorbachev announced that 5,000 Soviet tanks would be unilaterally withdrawn from East Germany, Czechoslovakia, and Hungary. This laid the basis for the 1990 Treaty on Conventional Forces in Europe under which the Warsaw Pact reduced its forces to approximate numerical parity with NATO with strict regional limits to prevent massing at the inter-bloc boundary.

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JOINT STUDIES

In February 1987, the Federation of American Scientists and the Committee of Soviet Scientists entered into an "Agreement to Carry Out a Joint Scientific Study of the Feasibility of Implementing and Maintaining Disarmament." The primary focus of the study was on detecting warheads and verifying their elimination – something that the Bush Sr. Administration had previously claimed was impossible when asked during the Senate ratification hearings "why only missiles, but no warheads" were being destroyed under the INF Treaty.

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[6] "A U.S. Scientist Addresses Gorbachev, *Bulletin of the Atomic Scientists*," May 1987, pp. 12-13, reprinted in Frank von Hippel, *Citizen Scientist, op. cit.*

[7] Matthew Evangelista, *Unarmed Forces: The Transnational Movement to End the Cold War* (Cornell University Press, 1999) chapter 14.

[8] "Analysts Address Gorbachev" (with a response from Gorbachev) in Federation of American Scientists. *Public Interest Report*. February 1988, pp. 14-15.

The bulk of the analytical work was done by Steve Fetter of the University of Maryland and Robert Mozley of Stanford on the U.S. side and by Stanislav Rodionov and Oleg Prilutsky from Sagdeev's institute on the Soviet side. The result was a pioneering analysis on warhead verification and a spectacular demonstration of the detection of gamma and neutron radiation from an actual Soviet warhead on a cruiser in July 1989 by a U.S. team organized by Tom Cochran and a Soviet team from Velikhov's Kurchatov Institute.[9]

During this period, another issue arose. In 1988, the Soviet Union lost radio contact with a low-earth-orbit, nuclear-reactor-powered satellite, Cosmos-1900, which began to spiral down into the earth's atmosphere. Just before reentry, its controllers managed to boost the reactor into a higher, long-lived orbit where its radioactive inventory could decay safely.

A concern at the time was that reactors with much higher power might be launched to power the space-based beam weapons that had been promoted as a part of the Reagan Administration's Strategic Defense. Sagdeev suggested a joint study on space reactor arms control. The resulting report proposed a number of possible limitations on orbiting reactors, ranging from a ban in low-earth orbit to a renewable total ban for 15 years. Dan Hirsch, Steve Aftergood, David Hafemeister, and Joel Primack played major roles on the FAS side of the study and Prilutsky and Rodionov on the Soviet side.[10]

My engagement with FAS as chairman of either the lobbying arm or the tax exempt arm continued until 2003, with a two-year break during 1984-86 while John Holdren was chairman and again during 1993-1994 while I was in the White House.[11]

FAS, in partnership with Velikhov's Committee of Soviet Scientists, made vital contributions to ending the U.S.-Soviet nuclear arms race and the Cold War. The political conditions that made this possible were created by the grassroots Nuclear Weapons Freeze Movement in the United States and the fortuitous appointment of Mikhail Gorbachev as General Secretary of the Soviet Communist Party. I regret that we weren't able to make more significant cuts in nuclear weapons and take U.S. and Soviet missiles off alert with the end of the Cold War. FAS and other NGOs committed to nuclear disarmament must be prepared should such a window of political opportunity open up again.

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[9] *Reversing the Arms Race: How to Achieve and Verify Deep Reductions in the Nuclear Arsenals,* Frank von Hippel and Roald Sagdeev, eds (Gordon and Breach Science Publishers, 1990); S.T. Belyaev et al, "The Use of Helicopter-borne Neutron Detectors to Detect Nuclear Warheads in the USSR-US Black Sea Experiment," *Science & Global Security* Vol. 1 (1990) pp. 328-333; and Steve Fetter et al, "Measurements of Gamma Rays from a Soviet Cruise Missile," *Science,* 18 May 1990, pp. 828-834.

[10] Six articles on "Space Reactor Arms Control" in a special section of *Science & Global Security,* Vol. 1, Nos. 1-2 (1989).

[11] Frank von Hippel, "Working in the White House on Nuclear Nonproliferation and Arms Control: A Personal Report," *F.A.S. Public Interest Report 48, #2,* March/April 1995, pp. 1, 3-8.