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SOVIET SCIENTISTS AND NUCLEAR TESTING, 1954-1963:
THE NEW ARCHIVAL EVIDENCE AND ITS LIMITATIONS

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EXECUTIVE SUMMARY

Newly available evidence from the archives of the Soviet foreign ministry and the Communist Party Central Committee sheds light on the role played by a transnational coalition of Soviet and Western scientists who promoted a ban on nuclear testing starting in the mid-1950s. The Soviet archival material reviewed for this paper addresses mainly the relationship between Soviet scientists and the Soviet government and Communist Party Central Committee. In some respects it reinforces the conventional wisdom that the scientists were primarily an instrument of official policy and that their contacts with Western colleagues were highly circumscribed and directed. At the same time, however, it is clear that East-West contacts under the auspices of such organizations as Pugwash produced valuable suggestions for arms control -- some of which policymakers adopted -- and, most importantly, set a precedent for transnational collaboration which bore fruit in later years, particularly under Gorbachev.

The current state of Soviet archival access does not allow for a comprehensive account of Soviet policy on nuclear testing drawing on primary documents. This paper serves as a guide to the material available and to the substantial remaining gaps in our understanding. In addition to its substantive contribution to the history of the test-ban debate, the paper serves in effect as a case study of the new opportunities and continuing limitations of using Soviet archival materials to study Soviet security policy.

Scientists played key roles in many aspects of the nuclear test-ban debates of the 1950s and 1960s: as creators of the nuclear weapons themselves; as experts warning about the dangers of radioactive fall-out; as activists mobilizing public support for a test moratorium; as government advisers, assessing the relative impact of a test ban on the nuclear technology of the two sides; as negotiators, working out the details of a verification scheme; and finally, as a transnational alliance of test-ban proponents, gathered under the umbrella of the Pugwash movement, seeking to influence the U.S. and Soviet governments through the force of their technical arguments.
As a cause of specific initiatives of Soviet moderation on the nuclear testing issue the scientists as transnational actors were probably less important than scientists (sometimes the same people) acting in their capacity as national advisers to their own governments. The Pugwash movement seems to have played a relatively insignificant role, for example, in inducing the Soviet government to suspend nuclear tests in 1958 and to join the moratorium from 1958 to 1961. Pugwash support for a continued moratorium and the anticipated negative reaction from the world scientific community were not enough to prevent the resumption of Soviet nuclear testing in September 1961. Nor, apparently, did Pugwash figure prominently in the Soviet decision to embrace the limited test ban treaty in 1963.

These conclusions are in sharp contrast to what one finds in examining the sources of Soviet moderation in other issues, such as the debates over antiballistic missile defenses in the 1960s, where the Pugwash movement and other transnational coalitions of scientists seem to have played a much more important role in persuading the Soviet leadership of the merits of a treaty banning ABM. The scientists' influence reached a high point in the Gorbachev period, as they successfully promoted such initiatives as the "asymmetrical" (non-) response to the Reagan "Star Wars" program; the restructuring of conventional forces for "nonoffensive defense;" and several breakthrough agreements concerning on-site verification of arms control.

Yet one should not underestimate the importance of the transnational scientists' movement for a test ban. Indirectly, through their influence on international public opinion, the scientists undoubtedly had an effect on government policy in the United States and the Soviet Union. The activities of Pugwash concerning nuclear testing provided an important precedent for the organization's future efforts. The smaller meetings and the groups that evolved out of Pugwash to provide direct Soviet-American contact proved especially valuable in promoting mutual understanding and restraint between the nuclear superpowers. Independent-minded Soviet scientists took advantage of their relationship with Western counterparts to gain new information that was useful in internal Soviet debates about disarmament and security policy. Soviet scientists did not bloom into full-fledged participants in the making of security policy until the second half of the 1980s, but the seeds were first planted during the test-ban debates of three decades earlier.
SOVIET SCIENTISTS AND NUCLEAR TESTING, 1954-1963: 
THE NEW ARCHIVAL EVIDENCE AND ITS LIMITATIONS

Matthew Evangelista

This paper is part of a larger study of the cooperative, transnational efforts of Soviet and Western scientists to influence Soviet security policy in the post-Stalin period. The project examines the scientists' attempts to moderate Soviet policy, to advocate initiatives of unilateral restraint and mutual agreements on arms control.

The conventional wisdom on the subject holds that the scientists had little effect, that moderation in Soviet policy was caused by other factors, including economic constraints, changing military priorities, and a U.S. policy of "peace through strength." The case of nuclear testing is a particularly important one for this question, because it represented the first effort of a new international movement of scientists to influence the security policies of the nuclear powers. In a sense the nuclear testing debate played to the scientists' strengths. It entailed consideration of technical issues ranging from the health and environmental effects of atmospheric test explosions of nuclear weapons to the prospects for reliable verification of a test-ban agreement using seismic monitoring and other techniques. Scientists were involved in discussions of the merits of a test ban at many levels, and some of them were of course engaged in the actual development and testing of the nuclear weapons themselves.

To what extent did scientists influence Soviet government policy on nuclear testing? In order to show that they had any influence, we would have, at the very least, to demonstrate that other, more common, explanations for Soviet behavior do not tell the whole story. The approach I adopt in the larger project is to consider particular Soviet initiatives and examine the various explanations that could be put forward to account for them. The questions I examine include: Why did the Soviet Union put a nuclear test ban on the disarmament agenda in the first place? What led the government to consider a test ban as a distinct "first step" towards disarmament rather than as an inseparable part of a

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comprehensive agreement, as it had previously maintained? Why did the Soviet government initiate a six-month unilateral moratorium on nuclear testing in March 1958? Why did it break the trilateral (U.S., Britain, USSR) moratorium in September 1961? What accounts for the fluctuations in the Soviet position on on-site monitoring and inspection of possible test-ban violations, for the initial reluctance and then final acceptance of a partial test ban that allowed continued underground testing?

So far, unfortunately, none of the documents I have examined in the former Soviet archives provide any definitive answers to these questions. My larger study of transnational relations and Soviet security policy therefore relies on a wide range of sources besides archival ones. The Soviet archival material to which I have had access addresses mainly the relationship between Soviet scientists and the Soviet government and Communist Party Central Committee. If anything it reinforces the conventional wisdom that the scientists were primarily an instrument of official policy and that their contacts with Western colleagues were highly circumscribed and directed. Some documents from the Soviet foreign and defense ministry archives provide tentative evidence to address the role of military, economic, and political considerations in Soviet test-ban policy, but we are far from able to draw firm conclusions.

Rather than present a comprehensive account of the Soviet policy on nuclear testing, then, this paper serves more as a guide to the material that I have reviewed and to the substantial remaining gaps in our understanding of these issues. In addition to its substantive contribution to the history of the test-ban debate, this paper serves in effect as a case study of the new opportunities and continuing limitations of using Soviet archival materials to study Soviet security policy.

MOTIVATIONS FOR SOVIET TEST-BAN INITIATIVES

Putting the Test Ban on the Agenda

In an important respect scientists deserve credit for bringing the problem of nuclear testing to the attention of the international public and governments. The event that mobilized the scientists and subsequently world opinion to promote a test ban was the U.S. explosion of a hydrogen bomb, code-named BRAVO, at the Bikini Atoll on 1 March 1954. Radioactive
fall-out from the test doused a Japanese fishing boat, the Lucky Dragon, causing severe symptoms of radiation sickness and one death among the crew, and setting off a panic in Japan over the risk of radioactive tuna.²

In response to the BRAVO test, a public campaign for a halt to nuclear testing was organized by groups such as the Federation of American Scientists and Norman Cousin's Committee for a SANE Nuclear Policy. The campaign took off so quickly that by April more than a hundred letters, telegrams, and postcards were arriving at the White House every day protesting the explosions.³ Prominent international figures -- scientists, politicians, and religious leaders -- began to speak out against the tests. They included Dr. Albert Schweitzer and Prime Minister Jawaharlal Nehru of India.⁴

The Soviet government and Communist Party followed closely the growth of international public concern about nuclear testing. In January 1955 an official at the Soviet embassy in Washington DC compiled a short history of the movement for a nuclear test ban. It stressed the activities of parliamentarians, the labor movement, and peace activists in countries closely allied to the United States, such as England and Japan, and mentioned Prime Minister Nehru's call in April 1954 for the United Nations to secure a halt to nuclear testing. The report reviewed the main arguments in favor of a test ban, culled largely from TASS, but also from western sources such as the New York Times. The secret report was sent to the American department of the Foreign Ministry.⁵

Although organizations such as the Federation of American Scientists and SANE were important in disseminating information about the dangers of fall-out from nuclear tests -- and Soviet officials kept track of their activities -- the Soviet government was already aware of


the dangers well before the March 1954 BRAVO test. As Andrei Sakharov reported, in July 1953, concern for the effects of radioactive fall-out caused the Soviet military authorities to evacuate some ten thousand people near the nuclear test site in Kazakhstan. Residents of the settlement at Kara-aul were not allowed to return home for eight months. Thus, while the international outcry against nuclear testing was amplified by the scientists’ warnings about the effects of fall-out, the phenomenon was already understood by the Soviet authorities.

The Role of U.S. Behavior, Economic and Military Factors

The USSR first proposed a nuclear test ban as part of its sweeping disarmament proposal of 10 May 1955. At the time, representatives of the Soviet embassy in Washington DC were reporting back to Moscow that the U.S. government was basically uninterested in dealing with the problem of nuclear weapons by coming to an agreement with the Soviet Union. At the same time, however, embassy officials pointed to the growing pressure from U.S. allies and public opinion concerned about the threat of nuclear war. Overall, they argued, the international atmosphere had improved in 1954 and opened the possibility for negotiated solutions to major East-West conflicts. They cited the Geneva agreement on Indochina as having disproved the U.S. claim that it is impossible to negotiate with communists, and showed "that the most complicated international questions can be resolved on a mutually acceptable basis."

At the time the Soviet government was preparing to present its May 1955 disarmament proposal, the Soviet embassy in Washington was reporting a mood of optimism

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in the United States about the economic situation there. Foreign minister Viacheslav Molotov marked that passage in red in his copy of the embassy’s quarterly report.\textsuperscript{11} He also marked an extensive discussion of the recent nuclearization of U.S. military forces, including a list of new nuclear-capable weapons.\textsuperscript{12} This is the sort of material that one would cite as evidence of Soviet attention to economic and military considerations and the role of U.S. behavior, but one would need more direct evidence of cause and effect before drawing any conclusions. Such evidence is not yet readily available in the archives that are open to scholars.

**Negotiation from Strength?**

The Soviet reaction to U.S. bargaining “from positions of strength” suggests that it might not have been very effective in eliciting Soviet moderation. The 1954 embassy report equated negotiation from strength with U.S. intransigence and saw the policy as an indication that the Eisenhower administration was not serious about wanting to reduce international tensions. The State Department consistently reacted to Soviet disarmament initiatives and proposals by arguing that they were “nothing new” or that they were proposed “for propaganda reasons.”\textsuperscript{13} Overall, the report argued, the year 1954 demonstrated the failure of the U.S. policy of positions of strength. World opinion forced the United States to attend the Berlin meeting of foreign ministers, for example. Moreover, in the words of the report, measures of the Soviet government to maintain and strengthen peace were meeting with greater and greater support throughout the world among various circles concerned about preventing a new war.\textsuperscript{14}

\textsuperscript{11}“Political Report of the Embassy of the USSR in the USA for 1954,” written on 25 February 1955, sent to Molotov (this is his copy), received in the foreign ministry 3 March 1955 and classified top secret, note appended from Molotov to Soldatov, 9 April 1955, to prepare for the foreign ministry collegium to discuss the report at the end of April. The discussion of the atmosphere on the economy in the U.S. is on p. 21. AVP, op. 38, por. 15, pap. 276.

\textsuperscript{12}Ibid., p. 43.

\textsuperscript{13}Ibid., p. 84.

\textsuperscript{14}Ibid., pp. 86-88.
In 1958, when the Soviets were preparing to negotiate on nuclear testing, their notion of "positions of strength" underwent a curious role reversal. Soviet officials began to be concerned that the United States considered itself to be in a position of relative weakness vis-à-vis the USSR and was reluctant to negotiate until it had regained its strength. In his letter of 8 January 1958 to President Eisenhower, for example, Marshal Bulganin sought to persuade the president to enter negotiations despite Soviet gains in missile and space technology. Positions of strength was never our policy, he argued. We will negotiate fairly even though we are strong. At about the same time, an official in the Soviet foreign ministry, in a memorandum to the minister, made a similar interpretation of U.S. reluctance to negotiate from a position of weakness. He backed up his interpretation with quotations from U.S. analysts and he pointed to the failure of a recent U.S. missile test as contributing to the overall malaise.

**Relative State of Nuclear-Weapons Technology**

Many contemporary observers assumed that Soviet interpretations of the relative state of nuclear-weapons technology between the U.S. and USSR played an important role in Soviet decisions about when to suspend testing, how seriously to negotiate, what kind of agreement to favor, and so forth. That may be so, but it is probably impossible to determine the weight of such considerations. Information about Soviet views of the relative state of nuclear technology in the 1950s and 1960s is scarce and crucial parts of U.S. government analyses of the time remain classified.

One gets a sense of the possible range of views on the question by looking at what is available from the American side. The U.S. government first considered the question of which side would benefit most from a test ban immediately after Indian Prime Minister Nehru proposed a world-wide test ban in April 1954. The Eisenhower administration

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16Memorandum from G. Saksin to A. Gromyko, 25 January 1958, AVP, Fond: Ref. po SShA, Department of American Countries, op. 44, por. 36, pap. 92, folder 194/III-USA, "Problems of disarmament, on a halt to testing of atomic and hydrogen weapons, 29 January - 29 October 1958."
solicited the views of the various relevant agencies. The Atomic Energy Commission -- in charge of production of U.S. nuclear weapons -- put the U.S. far ahead: "It is believed that the United States has, at present, an indeterminate advantage over the USSR with respect to the technical status of thermonuclear weapons development." At the same time, however, the AEC opposed a test ban for fear that the USSR could pursue theoretical studies of nuclear-weapons technology during a ban and then resume testing in a much better position to catch up to the U.S.\textsuperscript{17} The Central Intelligence Agency put forward a carefully qualified argument that a test ban could, on balance, possibly benefit Soviet military interests: "The Kremlin probably believes that, in general, numerous weapons tests are more important for the U.S. nuclear program than they are for the Soviet program...Provided the USSR completes its next series of tests, which may well occur this summer [1954], the Kremlin would probably estimate that a moratorium on weapons tests would not for the time being impair Soviet capabilities more than it would those of the U.S.\textsuperscript{18}

By the time the Soviets initiated the unilateral moratorium in March 1958, Dr. James Killian and his colleagues on the President's Scientific Advisory Committee were convinced that a test ban would be of greater value to the United States than the Soviet Union. The scientists' views, in combination with his concern about international public opinion, led Secretary of State John Foster Dulles to reverse his earlier view and favor a moratorium: "Dr. Killian makes a persuasive case that continued testing will help the Soviet weapons program more than it will ours...I believe that the time is now ripe for a decision that we will agree to a contingent nuclear test suspension after completion of the testing program now under way."\textsuperscript{19}

\textsuperscript{17}Memorandum to the Secretary of Defense from the Chair of the Joint Chiefs of Staff, 30 April 1954, p. 2, Dwight D. Eisenhower Library, Abilene, Kansas (hereafter, DDEL), [MR 85-289 #5].

\textsuperscript{18}Memorandum for the Executive Secretary, National Security Council, from the Director, Central Intelligence Agency, on "Indian Proposal for a World-Wide Moratorium on Nuclear Weapons Tests," 25 May 1954, p. 3, DDEL [MR 84-61 #3].

On the Soviet side I have come across only two documents which address the question of the relative state of nuclear-weapons technology. Both relate to the Soviet decision to break the trilateral moratorium and resume testing in September 1961. The first is Andrei Sakharov’s letter to Khrushchev of July 1961, written after Khrushchev had met with his nuclear scientists to announce his intention to resume testing in the fall. At the meeting, Sakharov had "volunteered the opinion that we had little to gain from a resumption of testing at this juncture in our program" of nuclear-weapons development. He followed up his remarks with a letter to the Soviet leader, which Sakharov quotes in full from memory in his memoirs:20

To Comrade N.S. Khrushchev:

I am convinced that a resumption of testing at this time would only favor the USA. Prompted by the success of our Sputniks, they could use tests to improve their devices. They have underestimated us in the past, whereas our program has been based on a realistic appraisal of the situation [Here Sakharov omitted a sentence for reasons of security.']. Don’t you think that new tests will seriously jeopardize the test ban negotiations, the cause of disarmament, and world peace?

A. Sakharov

The second Soviet source comments on the relative capabilities of the two countries' nuclear-weapons technology only indirectly. It is a highly secret general staff report prepared for Marshal M.V. Zakharov in 1964 (the year after the Limited Test Ban Treaty had been signed). One of the report's contentions -- that "superiority in the yield [moshchnost'] of nuclear charges belongs to the Soviet Union" -- constitutes a kind of retrospective justification for the Soviet decision to break the moratorium in September 1961 with a series of tests that included the world's most powerful nuclear weapons.21


The main impression one gets from these conflicting analyses is that assessing the relevant balance of nuclear-weapons technology was a difficult endeavor in the 1950s and 1960s. Moreover, the conclusion that one draws does not determine one's policy preferences. The side that is behind may want to freeze the competition for fear of falling further behind or it may want to continue the competition in hopes of catching up. The same applies for the leader. Probably it is safe to assume that Khrushchev was not motivated primarily by such narrow consideration, but considered a test ban as part of an overall strategy for improving Soviet security by slowing the arms race.

The Unilateral Moratorium

On 31 March 1958 the USSR Supreme Soviet issued a decree announcing a unilateral suspension of Soviet nuclear tests that would continue as long as other countries refrained from testing as well. One analysis describes the timing of the move as "transparently cynical -- they had just completed a major series of tests and the U.S. was just about to start one." In fact, however, Khrushchev seems not to have consulted with his nuclear scientists about the state of the Soviet test program when he made his decision to suspend testing. Andrei Sakharov, who was then working at the nuclear complex Arzamas-16 (the "Installation"), learned about it in January 1958 when Central Committee Secretary Mikhail Suslov showed him the text of the Presidium's decision to announce the moratorium in March at the Supreme Soviet. Sakharov was pleased but surprised: "we should have been informed of such a major decision beforehand so that we could tie up loose ends at the end of this document, which may not be publicly available.

Perhaps the most illustrative of this problem is the transcript of the President's Scientific Advisory Committee, Meeting of the Ad Hoc Panel on Nuclear Test Limitations, Washington, DC, 15 March 1958, DDEL [MR 84-141 #1]. Much of it is still classified, but one can nevertheless get a good feel for the nature of the arguments and how much they hinge on particular assumptions. The same is true of subsequent reports prepared for the Kennedy administration. See, e.g., "Report of the Ad Hoc Panel on Nuclear Testing," 21 July 1961, the so-called Panofsky Report, in Theodore Sorenson Papers, classified subject files, box #53, folder: Nuclear test ban, report of the Ad Hoc Panel, John F. Kennedy Library. I am grateful to Paul Passavant for tracking down this document and others from the Kennedy Library.

Installation." As Sakharov described, the West was mistaken in its claim "that the USSR had prepared itself for the halt in testing while the U.S. and Britain were caught by surprise, before they'd been able to carry out the scheduled programs" of nuclear tests. Soviet nuclear scientists were surprised as well.

It is not certain where the idea of a unilateral Soviet nuclear test moratorium originated. The announcement in March 1958 followed an unsuccessful appeal on 8 January 1958 for all three nuclear powers to stop testing for a period of 2-3 years. The proposal for a unilateral Soviet test suspension was discussed within the Soviet foreign ministry in late 1957 and early 1958 and that could have been the initial impetus. In January 1958 a foreign ministry official sent Andrei Gromyko a memorandum discussing the conditions under which it would be desirable for the USSR to initiate a unilateral test moratorium. Such an initiative, he argued, would serve the "goal of increasing pressure on the USA and England" by mobilizing international public opinion in favor of a test ban. The memorandum proposed that the Soviet Union issue the following statement: "The government of the USSR has decided to halt from 1 February 1958 all tests of atomic and hydrogen weapons. The Soviet government declares that it is ready to adhere to this decision for any period if the USA and England agree not to conduct tests of their weaponry. If the USA and England are the first to undertake during this time the production of new tests, the USSR will be forced to review..."
its decision.\textsuperscript{28} The wording resembles somewhat the March announcement, and the timing of the memorandum is about right to coincide with a Presidium decision in January.\textsuperscript{29}

When the U.S. and Britain failed to respond by halting their own nuclear tests, Khrushchev threatened to resume Soviet testing. At this point we have solid information of efforts by Soviet scientists to moderate Soviet policy, by forestalling the resumption of the tests -- and they failed. Andrei Sakharov has described how he tried in September 1958 to persuade Nikita Khrushchev not to break the unilateral Soviet moratorium. He enlisted the aid of his boss, Igor’ Kurchatov, who flew to Yalta, where Khrushchev was on vacation, to talk to him. The Soviet leader rejected the arguments of Sakharov and Kurchatov, which were partly political (resumption of testing would destroy trust in the USSR and set back chances for a negotiated test ban), but mostly technical (nuclear weapons could be produced using simulations and calculations without full-scale testing).\textsuperscript{30}

Kurchatov played a seemingly contradictory role in the test-ban debate. He publicly argued in favor of the test moratorium when it was official policy, but once it was over he praised the accomplishments of the nuclear test series that ended it.\textsuperscript{31}

In any case, Khrushchev did not continue the 1958 moratorium. He undoubtedly was under pressure from some quarters, especially given that the United States was unwilling to agree to a mutual test ban.\textsuperscript{32} As an alternative, President Eisenhower suggested convening

\textsuperscript{28}Ibid.


\textsuperscript{30}Sakharov, Memoirs, pp. 207-209.

\textsuperscript{31}Kurchatov argued in favor of a test ban in a contribution to a collection of articles by Soviet scientists (including Sakharov) that was published abroad as well as in the USSR. See A.V. Lebedinsky [Lebedinskii], What Russian Scientists Say About Fallout (New York: Collier, 1962). The original Russian edition was published as Sovetskie uchenye ob opasnosti ispytani iadernogo oruzhiia [Soviet scientists on the danger of testing nuclear weaponry] (Moscow: Atomizdat, 1959). He praised the test series at the 21st Party Congress of the CPSU on 3 February 1959. His speech is reprinted in P.T. Astashenkov, Podvig Akademika Kurchatova: Tvortsy nauki i tekhniki (Moscow: Znanie, 1979), p. 142. Sakharov discusses Kurchatov’s contradictions in his Memoirs, p. 207.

\textsuperscript{32}For speculation about Khrushchev’s internal opposition, see Christer Jonsson, Soviet Bargaining Behavior: The Nuclear Test Ban Case (New York: Columbia University Press, 1979), esp. Part IV.
a panel of experts to investigate the potential for monitoring a test ban. Khrushchev agreed to this proposal, and, after observing that the United States had conducted over fifty tests since the Soviet moratorium began, he announced the resumption of Soviet testing as well.

Before considering the subsequent government-to-government negotiations, I want to discuss the role that Soviet scientists played in international or transnational organizations during this period, and in particular the relationship between the scientists and the Soviet government and Communist Party. Here the material from the archives is quite revealing.

THE SOVIET PARTY-STATE AND THE SCIENTISTS

The main organization where Soviet scientists participated in discussions of disarmament and security was the international Pugwash movement. The movement was initiated with a Manifesto issued by Bertrand Russell and Albert Einstein in 1955. The first meeting of scientists took place from 7 to 10 July 1957 in Pugwash, Nova Scotia at the estate of Cyrus Eaton -- whence the movement's name. Twenty-two scientists from ten countries participated, including three from the USSR.

The Soviet government supported participation by Soviet scientists in the Pugwash meetings, but every delegation had to be approved in advance by the Central Committee and sometimes the Presidium (Politburo) as well. This procedure violated one of the basic tenets of the Pugwash movement -- that the scientists participated as individuals and did not represent anybody but themselves. Nevertheless, even allowing Soviet scientists to attend the international meetings constituted a major concession for the Soviet authorities.

In general the Soviet government was reluctant to become involved in transnational efforts which it would have difficulty controlling. In April 1955, for example, the American physicist Leo Szilard discussed with the Soviet ambassador to Washington the idea of creating a commission of 5-10 people who would "objectively study" the sources of Soviet-

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33 A letter to the Central Committee from V. Tereshkin, deputy head of the International Department describes the international scientists' movement and the first Pugwash meeting. Storage Center for Contemporary Documentation [Tsentr khraneniia sovremennoi dokumentatsii, hereafter TsKhSD], CPSU Central Committee, 20th convocation, from protocol no. 45, Secretariat session of 2 August 1957, item 24: "On the call for an international conference of scientists for the cessation of nuclear tests." For a summary of Pugwash's history, see the F.A.S. Public Interest Report, vol. 40, no. 8 (October 1987); for more detail, see Joseph Rotblat. Scientists in the Quest for Peace: A History of the Pugwash Conferences (Cambridge, MA: MIT Press, 1972).
American disagreements on nuclear weapons and propose recommendations for avoiding war. Szilard hoped to obtain financial backing from the Soviet government as well as private U.S. foundations. The U.S. department in the Soviet Foreign Ministry recommended against the proposal. It considered "inexpedient" (netselesobraznym) Soviet participation in the financing of the commission's work or the work itself, because the commission would be privately created and "it is doubtful that we would be able to exert any influence" on its conclusions.34

Although Soviet scientists became active participants in the Pugwash movement, Soviet leaders initially preferred to promote their disarmament objectives through international meetings more directly under their control. Just two weeks after the first Pugwash meeting, on 20 July 1957, Soviet Foreign Minister Andrei Gromyko sent a letter to the Central Committee proposing Soviet sponsorship of a larger international scientific conference dedicated specifically to the question of nuclear testing. In his words, "the conference of scientists would be a significant support to the position of the Soviet Union in this question and would help in exposing the position of the western powers blocking a solution to the question of the tests."35 Central Committee Secretary Mikhail Suslov instructed his deputies to prepare a proposal for the Secretariat. The proposal adopted the format and wording of Gromyko's letter almost entirely. On 5 August 1957 the Central Committee issued a resolution instructing the USSR Academy of Sciences, in cooperation with the Foreign Ministry, to prepare within five days a statement from a group of Soviet scientists "widely known abroad" inviting their colleagues to an international conference and urging them to support a halt in testing of nuclear weapons. At the same time, the Central Committee directed the communist party organizations in the union republics and major cities, such as Moscow, Leningrad, and Sverdlovsk, to organize meetings of scientists "to

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34Memorandum, V. Bazykin to A.A. Gromyko, 25 May 1955, AVP. Fond: Ref. po SShA. op. 39, por. 31, pap. 289, no. 194/112.

35Letter, A.A. Gromyko to Central Committee, 20 July 1957, TsKhSD, CPSU Central Committee, 20th convocation, from protocol no. 45, Secretariat session of 2 August 1957, item 24: "On the call for an international conference of scientists for the cessation of nuclear tests."
discuss the question of banning the use of atomic energy for military purposes." The three
Soviet participants at the Pugwash meeting -- A.V. Topchiev, D.V. Skobel'styn, and A.M.
Kuzin -- were instructed to cooperate with the committee organizing the international
conference, and the newspapers Pravda and Izvestia were ordered to publish articles about
it. It was hoped that the conference could be organized by September or October so that its
results could be used to support the Soviet position at the forthcoming meeting of the United
Nations General Assembly.36

Gromyko’s letter proposing a Soviet-sponsored conference apparently came not at his
own initiative but in response to Khrushchev’s suggestion. A top-secret (strogo sekretno)
directive from the Presidium instructing the Secretariat to consider Gromyko’s proposal was
issued nearly three weeks before the foreign minister actually sent his letter to the Central
Committee.37

The highest levels of the Soviet leadership were kept informed of the activities of the
international peace movement, not least because Western activists frequently appealed
directly to Soviet leaders on the question of nuclear testing. In April 1958, for example, the
Central Committee Secretariat took up the issue of a letter from Dr. Linus Pauling proposing
to bring to trial the individuals responsible for the continuation of nuclear testing in the
United States, Britain, and the Soviet Union on the grounds that they were endangering the
lives and health of the world’s people.38 The Central Committee officials were not very
enthusiastic about the idea. In 1962, a few months after the USSR broke the moratorium on
testing and then conducted the world’s largest atmospheric nuclear explosion, Pauling
gathered signatures on a petition to the Soviet Supreme Court, filing a complaint against the

36TsKhSD, CPSU Central Committee, 20th convocation, from protocol no. 45, Secretariat session of 2 August
1957, item 24: “On the call for an international conference of scientists for the cessation of nuclear tests.”

37TsKhSD, CPSU, TsK, No. p103/X1X, order from protocol no. 103, session of the Central Committee
Presidium of 4 July 1957, to comrades Aristov, Beliaev, Brezhnev, Kuusinen, Pospelov, Suslov, Furtseva, and the
CPSU Secretariat, “On the conduct of a broad international conference of scientists for the cessation of tests of
atomic and hydrogen weaponry.”

38TsKhSD, CPSU Central Committee, 20th convocation, Commission on questions of ideology, culture, and
international party contacts, from protocol no. 7, commission session of 7 April 1958, item 18: “On the letter from
the American scientist L. Pauling,” to comrades Tereshkin, Romanov, Rumiantsev, Furtseva, Suslov.
Soviet defense ministry and other ministries involved in nuclear testing; when an American peace activist requested to visit Moscow to deliver Pauling’s petition, Anatolii Dobrynin, the Soviet ambassador to Washington, refused to issue him a visa.39

As a rule, the Soviet government and Communist Party sought to control all communication between Soviet citizens and foreigners on issues of national security, including a nuclear test ban. On one occasion, the foreign ministry went so far as to prevent the delivery of letters from James Wadsworth, the head of the U.S. delegation to the UN negotiations on a test ban, to some Soviet citizens who had written to him about the U.S. position.40

When it came to direct contacts between foreign citizens and the Soviet government, by contrast, the Soviet leaders were often more forthcoming -- especially if the contacts provided an opportunity to portray Soviet policy in a positive light or criticize the West. On 30 January 1959, for example, several prominent U.S. citizens, including Norman Cousins, Norman Thomas, and Eleanor Roosevelt, addressed a letter to Khrushchev, Eisenhower, and Macmillan urging them to conduct serious negotiations towards a test ban, despite the U.S. revelation of new scientific results purporting to make verification more difficult.41

Khrushchev sent a response on 20 March in which he blamed the United States for coming up with "new seismic data" that proved problematic for the agreed inspection system: "It is not difficult to see that this step of the U.S. government is intended to destroy the basis which was built as a result of patient work by competent specialists from a range of countries and on which a system of verification of tests should be built."42

39AVP, op. 48, por. 40, pap. 143, Department of the USA, 194/III. "Questions of disarmament. 4 January - 23 August 1962."

40Letter, Soldatov to Kuznetsov, 12 March 1959, AVP, Fond: Ref. po SShA, op. 47, por. 34, pap. 133, Department of American Countries, folder 194/IIIUSA. "Problem of disarmament, on the ban of atomic and hydrogen weaponry, 8 February - 18 December 1959."

41Katz, Ban the Bomb, p. 66.

The Soviet government and Communist Party clearly saw Soviet scientists as an instrument of Soviet foreign policy and negotiating strategy. In early 1960, for example, Semyon Tsarapkin, the head of the Soviet delegation to the Geneva talks on a nuclear test ban, communicated to the foreign ministry his sense from the course of the negotiations that there had been a decrease in public pressure on the western governments to agree to a test ban. Officials from the foreign ministry and the Central Committee's International Department drafted a proposal "to carry out measures through international organizations to strengthen the campaign for a test ban agreement." The Central Committee sent out instructions to Soviet representatives in "international democratic organizations," including Pugwash and various Soviet-backed groups such as the World Peace Council, the World Federation of Scientists, the World Federation of Trade Unions, the International Democratic Federation of Women, and the World Federation of Democratic Youth. The wording followed the joint proposal from the foreign ministry and International Department:

"Recently there has been a significant weakening of pressure of international society on the governments of western countries with the goal of quickly concluding an agreement on stopping the testing of nuclear weapons. At the same time, the western powers, and above all the government of the USA, hinder in every way the conclusion of such an agreement." The Soviet representatives were directed to help mobilize the international movement for a test ban. Once the international campaign was successfully reinvigorated, the Soviet representatives should send letters and petitions to the negotiators in Geneva urging them to conclude an agreement.

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43Letter to the Central Committee from V. Kuznetsov and V. Tereshkin, 10 February 1960, TsKhSD, CPSU Central Committee, Commission on questions of ideology, culture, and international party contacts, fond 11, op. 1, ed. khr. 482, 20th convocation, materials to protocol no. 43, session of 18 February 1960. "On the strengthening of the public campaign for conclusion of an agreement on halting tests of nuclear weaponry."

44Instructions and supplement k p.22go, pr. 44, TsKhSD, CPSU Central Committee, Commission on questions of ideology, culture, and international party contacts, fond 11, op. 1, ed. khr. 482, 20th convocation, materials to protocol no. 43, session of 18 February 1960. "On the strengthening of the public campaign for conclusion of an agreement on halting tests of nuclear weaponry."
Tsarapkin subsequently reported to an American journalist that he was receiving a great deal of mail from Soviet citizens concerned about the test-ban conference. In June 1961, however, after the trilateral moratorium on testing had been in effect for more than two and a half years, Tsarapkin complained of a decrease in public interest in the negotiations:

"The letters are not so much now," Tsarapkin said. "I do not know why." He looked puzzled a moment. "Perhaps people have become used to no more explosions. Perhaps they have begun to think that such things cannot happen again."

The cynical attitude of the Soviet authorities towards western peace activists does not necessarily mean that the USSR was uninterested in the goal of a test ban. On the contrary, the Soviet leaders seemed to try to generate public pressure for a test ban at times when they were hoping to be able to negotiate an agreement with the West. When they appeared to be having second thoughts about a test ban, or had given it lower priority in their disarmament and security objectives, they tended to mute their support for the international test-ban movement.

Not surprisingly, Soviet support for an international effort was strongest in the wake of the announcement of a unilateral moratorium in March 1958. The Central Committee stepped up its activities during the summer of 1958 to promote a broadscale international campaign against nuclear testing. Much of its attention focused on an international meeting of scientists in Tokyo on 15 August, at which it was expected, information on the health hazards of radioactive fall-out would be discussed. The Central Committee wanted Soviet scientists to see to it that the conference would help launch a major public campaign against nuclear testing, one that emphasized a test ban as a first step toward banning nuclear weapons, a step that could be taken independently of a more comprehensive disarmament.


46Ibid., pp. 58-59.
agreement. The directive instructed the Academy of Sciences and several departments of the Central Committee — including the science department and the department for defense industry — "to prepare and carry out in a two-month period measures for the dissemination abroad of scientific materials about the danger for life and health of people of the continuing tests of atomic and hydrogen weaponry." The campaign was clearly oriented toward raising the issue of fall-out with the foreign public, but not at home. As Boris Ponomarev of the Central Committee International Department put it, "we have in mind that these measures should be directed above all at the capitalist countries in order not to allow the populations in the socialist states to become frightened."

Andrei Sakharov recalls participating in a Soviet campaign to disseminate information about the dangers of nuclear tests in 1957 and 1958, when he was asked by Igor' Kurchatov (or volunteered -- he didn't remember which) to write an article for the Soviet journal Atomnaia energiia. The article appeared in 1958 in the wake of Khrushchev's announcement of the unilateral moratorium. It was later translated into English, and, in a more popularized and politicized version, was translated into several languages and widely distributed in Soviet publications abroad. Sakharov reported that Kurchatov discussed the articles with Khrushchev on two occasions and that Khrushchev personally authorized their publication. The main point of Sakharov's article was to estimate the number of deaths that would be caused in the future by genetic mutations produced by fall-out of radioactive Carbon 14.

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47TsKhSD, CPSU Central Committee, from protocol no. 75, Secretariat session of 14 August 1958, item 141g.: "On the conduct of an international campaign for a halt to the testing of nuclear weaponry."

48TsKhSD, CPSU Central Committee, from protocol no. 75, Secretariat session of 14 August 1958, item 141g.: "On the conduct of an international campaign for a halt to the testing of nuclear weaponry."

49TsKhSD, letter from Ponomarev to Central Committee, 7 August 1958, p. 2, on microfilm role 3340.


These estimates prompted his later intense concern to prevent further Soviet atmospheric nuclear explosions.

NEGOTIATIONS TOWARD A TEST BAN

The Geneva Conferences

When President Eisenhower proposed a conference of experts in 1958 to discuss the possibilities for a scheme to verify a nuclear test ban, he opened the door to extensive participation of scientists in the arms control process. In some respects the formal negotiations in Geneva paralleled the informal discussions within the Pugwash movement, with some overlap of participants, especially on the Soviet side. The conference of experts was a short-lived success. The scientists were able to agree on the parameters of a verification system for monitoring a test ban, but their conclusions were soon undermined on technical and political grounds by the revelation of new data from U.S. nuclear explosions that challenged some of the working assumptions of the conference.

In the autumn of 1958 the scientists were replaced in Geneva by the diplomats as the U.S., Britain, and the Soviet Union opened formal negotiations on a test ban and concurrently suspended their nuclear test programs. The negotiations continued for several years but got bogged down mainly over disputes about the relevance of the verification system agreed by the scientists during the summer of 1958 and what improvements to it were necessary. Probably the major point of dispute concerned Soviet reluctance to allow on-site inspections.

At various points in the course of the negotiations, the Pugwash movement sought to address some of the contentious issues that remained unresolved in Geneva. On 5 January 1960, for example, Joseph Rotblat, the Secretary-General of Pugwash, wrote to Academician

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53 This impression comes through even in official reports of the delegation back to Moscow. See, e.g., "Otchet delegatsii SSSR v komitete 18 gosudarstv po razoruzheniui za period s 16 iuliiia po 7 sentiabria 1962 goda: obshchina obstanovka," 24 September 1962, No. 2874/gs, Ministry of Defense archives. Interested readers may contact me for a copy of this document, which may not be publicly available.
Topchiev to propose a Pugwash meeting to help resolve the technical disagreements on verification in the three-power negotiations on a test ban. Two top officials of the Soviet Academy of Sciences, A.N. Nesmeianov and E.K. Fedorov (the latter a participant in the original conference of experts), then wrote to the Central Committee asking permission to send a delegation including, among others Topchiev, Fedorov, and Kurchatov. The proposal was endorsed by V. Kirillin, head of the Central Committee's Science Department and V. Tereshkin, deputy head of the International Department, but ultimately had to be approved at the highest level -- by Khrushchev and his colleagues on the Presidium. In the meantime Kurchatov died of a heart attack on 7 February 1960, at the age of 57. On 9 March 1960, after soliciting the views of Efim Slavskii, the minister of Medium Machine Building (nuclear weapons) and V. Kuznetsov of the foreign ministry, the Central Committee instructed Topchiev to accept Rotblat's invitation "agreeing to the call for a meeting in the second half of March in Geneva." It was impossible to call the meeting on such short notice, however. Pugwash next met in Moscow in late November 1960, following the failed Paris summit in May and the U.S. presidential election.

The Paris Summit

We still do not know to what extent Khrushchev thought it possible to work out an agreement on nuclear testing at the Paris summit. His U.S. experts in the foreign ministry...
carefully scrutinized the translations of Eisenhower's correspondence for evidence of any change in the American negotiating position. Eisenhower's letter of 13 March 1960 expressed the hope that progress could be made on narrowing differences on a test ban before the May summit -- specifically by agreeing to ban tests that could be reliably verified while working to improve the verification system to include all tests.\footnote{Letter, Eisenhower to Khrushchev, 13 March 1960, AVP, Fond: Ref po SShA, op. 46, por. 27, pap. 120. Department of American Countries, 102-USA, "Exchange of messages between N.S. Khrushchev and D. Eisenhower. 14 January - 1 September 1960."}

In a letter of 1 April Eisenhower argued that the two countries' positions had moved closer together. The president claimed that U.S. scientists needed to conduct more research before they were confident that underground nuclear tests could be detected. He expressed satisfaction to find in the most recent Soviet proposal an acceptance of the U.S. argument that all tests would have to be verifiable under an agreement. Previously the Soviets had advocated a comprehensive ban, even if the sides could not agree on a monitoring system for the underground explosions. One copy (perhaps Anatolii Dobrynin's) of the Russian translation of Eisenhower's letter has several of Eisenhower's more hopeful remarks underlined: "now we have an agreed basis for approaching the problem of concluding an agreement...I instructed my representatives in Geneva to carry out negotiations in the most active way in order to clarify the possibility for working out a mutually agreed decision." The Soviet official also took note of Eisenhower's assurance that by excluding underground tests from the proposed agreement the United States did not intend that testing should be renewed in that sphere. Finally, Eisenhower outlined the remaining points of disagreement between the two sides, all of which were underlined in the Russian translation. They included the Soviet proposal for an (unmonitored) underground test moratorium for 4-5 years, questions about the number of annual inspections the Soviet side would actually accept, the composition of the staff of the control commission, voting procedures, peaceful
nuclear explosions, the geographic distribution of monitoring system, and the production of fissionable material.61

Whether or not the Soviet delegation to Paris had prepared compromise positions on these issues must await release of the relevant documents, although one Khrushchev advisor argues that important proposals were worked out before the U-2 crisis doomed the meeting.62

The Kennedy Administration and the End of the Moratorium

John F. Kennedy was keen on achieving a nuclear test ban agreement early in his administration.63 Unfortunately, the disastrous Bay of Pigs invasion, coupled with Khrushchev's own domestic problems, made it difficult for the two leaders to summon the necessary political will to make the negotiations bear fruit. In his letter of 18 April 1961 criticizing U.S. aggression against Cuba, Khrushchev called for steps to improve the international atmosphere.64 In his response, Kennedy specifically advocated "a speedy conclusion of an acceptable treaty for the banning of nuclear tests."65 But the talks dragged on with little apparent progress.

Meanwhile Khrushchev was under increasing pressure from military officials and weapons designers to resume testing.66 The U.S. had last tested nuclear weapons in 1958, the day before the Geneva negotiations opened on 31 October. The USSR broke its

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61 Letter, Eisenhower to Khrushchev, 1 April 1960, Russian translations, pp. 2-3. AVP, Fond: Ref. po SShA, op. 46. por. 27, pap. 120. Department of American Countries, 102-USA, "Exchange of messages between N.S. Khrushchev and D. Eisenhower, 14 January - 1 September 1960."


64 Letter, Khrushchev to Kennedy, 18 April 1961, AVP, Fond: Ref. po SShA, op. 47, por. 23, pap. 132. Department of American Countries, 102-USA, "Exchange of messages, 18 April - 6 October 1961."


66 Transcript of Khrushchev's tape-recorded reminiscences, Harriman Institute, Columbia University, pp. 940-941.
unilateral moratorium on 20 September 1958 and continued testing until 3 November. Thereafter a multilateral moratorium remained in effect until the fall of 1961, but indications of its fragility were evident many months before. In December 1960, Eisenhower announced that the U.S. was formally ending its moratorium but would not test without prior warning. He urged President-elect Kennedy to resume testing.57 In February 1961, France became a nuclear power by testing its first atomic weapon; at the United Nations, the U.S. delegate supported the French right to nuclear testing, even though the Soviets had warned that they considered a test by France, a NATO member, as equivalent to one by the U.S. or Britain. On 1 September 1961, the Soviets resumed testing, and two weeks later the U.S. followed suit.58

The resumption of tests marked a decisive failure of the efforts of Soviet test-ban proponents -- including, most prominently, Andrei Sakharov -- to influence their government.69

In reaction to the resumption of Soviet nuclear testing, the Soviet embassy in Washington and the Kremlin were bombarded with letters and telegrams from Western peace activists denouncing the Soviet action and urging a return to the moratorium.70 Soviet participants in the Pugwash movement were put in an especially awkward position because several of them were attending a conference in Stowe, Vermont from 11-16 September as the

57Seaborg, Kennedy, Khrushchev, and the Test Ban, p. 25.
69Sakharov's efforts are described in detail in his Memoirs, esp. chaps. 14-16.
70For example, telegram from Linus Pauling to Khrushchev, 2 September 61 calling on USSR to cease atmospheric testing; telegram from Eleanor Roosevelt and others, 27 October 1961, criticizing Soviet resumption of tests. AVP, Fond: Ref. po SSHA, op. 47, por. 33, pap. 133, Department of American Countries. 194/III, "Problem of disarmament. On the ban on atomic and hydrogen weaponry, 19 February - 21 December 1961." See also the materials in op. 48, por. 40, pap. 1-43, Department of the USA, 194/III, "Questions of disarmament, 4 January - 23 August 1962," including another telegram from Norman Cousins, a copy of petition signed by Linus Pauling and others to the Soviet Supreme court filing a complaint against Soviet defense ministry and other ministries involved in nuclear testing; a letter from Ambassador Anatoliy Dobrynin conveying his decision not to issue a visa to an American peace activist who requested to visit Moscow to deliver Pauling's petition. See also Katz, Ban the Bomb, pp. 68-69.
Soviet test explosions were poisoning the atmosphere with radioactive fall-out. Khrushchev had sent a two-page letter, dated 5 September 1961, to the Pugwash participants, seeking to justify the resumption of Soviet testing. He argued that German revanchists and militarists and U.S. cold warriors were trying to exacerbate tensions over Berlin and that "under this circumstance the Soviet Union has recently undertaken a range of measures to strengthen the security of our country...among these measures the decision of the Soviet government to renew tests of nuclear weaponry occupies an important place." Khrushchev maintained that "the Soviet government took this step with a heavy heart and profound regret. But it is certain that this serious measure will serve the task of preventing a new world war."72

The Soviet Pugwash scientists, undoubtedly discomfited by the resumption of Soviet testing, had a chance to redeem themselves the following year, when the Tenth Pugwash Conference convened in London. At the meeting three Soviet scientists and three American scientists worked out a proposal for monitoring seismic activity to help verify a test ban through the use of sealed, automatic, seismic recording stations. The Pugwash scientists argued that these "black boxes" -- as they were dubbed by the physicist Lev Artsimovich who first came up with the idea -- would limit the need for on-site inspections.73 A smaller, follow-up meeting of Pugwash experts on seismology explored the remaining technical issues and concluded that "the clarity now attained in the scientific and technical aspects of the problem provide a sufficient basis for the governments to arrive at an agreement for the conclusion of a test-ban treaty in the near future."74 The black box proposal was subsequently pursued in correspondence between Kennedy and Khrushchev and

71Rotblat, Scientists in the Quest for Peace, pp. 185-187.
74Quoted in Joseph Rotblat, "Movements of Scientists against the Arms Race," in Rotblat, ed., Scientists, the Arms Race, and Disarmament (London: Taylor & Francis, 1982), p. 139.
the technical discussions of test-ban monitoring within Pugwash are considered by some to have contributed to the signing of the Moscow agreement banning nuclear tests in the atmosphere, in outer space, and under water.\textsuperscript{75}

**The Moscow Agreement**

Soviet archives have yet to reveal why the Soviet Union agreed to sign the Limited Nuclear Test Ban Treaty in 1963. It had long resisted signing an agreement that would appear to endorse the continued testing of nuclear weapons underground and would have little effect in slowing the development of new weapons. Among the many plausible reasons -- military, economic, and political -- one should consider the role of Soviet scientists, and, in particular, Sakharov. In the summer of 1962, his colleague Viktor Adamskii suggested that Sakharov contact the Soviet authorities and promote the idea of a partial test ban -- one that would ban all but underground nuclear tests. Sakharov raised the issue with Efim Slavskii, the minister in charge of nuclear weapons production, who "seemed sympathetic" and promised to talk to Iakov Malik, the deputy minister of foreign affairs. A couple of months later Slavskii telephoned Sakharov to report that "there's a great deal of interest at the top in your proposal, and in all probability some steps will shortly be taken by our side."\textsuperscript{76} In July 1963, Khrushchev announced his willingness to negotiate a treaty banning only nuclear tests in the atmosphere, under water, and in outer space. The treaty was signed in Moscow on 5 August 1963.\textsuperscript{77}

\textsuperscript{75}Rotblat, *Scientists in the Quest for Peace*, p. 33.

\textsuperscript{76}Sakharov, *Memoirs*, pp. 230-231. Apparently Adamskii himself also made efforts to persuade officials of the merits of a partial test ban. Personal communication from David Holloway.

\textsuperscript{77}Seaborg, *Kennedy, Khrushchev, and the Test Ban*, pp. 227ff. As in the United States, the fact that the Moscow treaty allowed continued underground testing reduced the military's resistance to the agreement -- although the Soviet military were by no means happy about the treaty. See Jonsson, *Soviet Bargaining Behavior*, p. 199. For a discussion of the extensive concessions Kennedy made to get the approval of the Joint Chiefs of Staff -- and his fear that they would still not support him -- see "Winning Senate Support for the Nuclear Test Ban Treaty, 1963," Presidential Recordings Transcripts, Papers of John F. Kennedy, Presidential Papers, President's Office Files, John F. Kennedy Library; and Seaborg, *Kennedy, Khrushchev, and the Test Ban*, p. 269.
THE SCIENTISTS' INFLUENCE IN RETROSPECT

Scientists played key roles in many aspects of the nuclear test-ban debates of the 1950s and 1960s: as creators of the nuclear weapons themselves; as experts warning about the dangers of radioactive fall-out; as activists mobilizing public support for a test moratorium; as government advisers, assessing the relative impact of a test ban on the nuclear technology of the two sides; as negotiators, working out the details of a verification scheme; and finally, as a transnational alliance of test-ban proponents, gathered under the umbrella of the Pugwash movement, seeking to influence the U.S. and Soviet governments through the force of their technical arguments.

As a cause of specific initiatives of Soviet moderation on the nuclear testing issue the scientists as transnational actors were probably less important than scientists (sometimes the same people) acting in their capacity as national advisers to their own governments. The Pugwash movement seems to have played a relatively insignificant role, for example, in inducing the Soviet government to suspend nuclear tests in 1958 and to join the moratorium from 1958 to 1961. Pugwash support for a continued moratorium and the anticipated negative reaction from the world scientific community were not enough to prevent the resumption of Soviet nuclear testing in September 1961. Nor, apparently, did Pugwash figure prominently in the Soviet decision to embrace the limited test ban treaty in 1963.

These conclusions are in sharp contrast to what one finds in examining the sources of Soviet moderation in other issues, such as the debates over antiballistic missile defenses in the 1960s, where the Pugwash movement and other transnational coalitions of scientists seem to have played a much more important role in persuading the Soviet leadership of the merits of a treaty banning ABM. The scientists' influence reached a high point in the Gorbachev period, as they successfully promoted such initiatives as the "asymmetrical" (non-) response to the Reagan "Star Wars" program: the restructuring of conventional forces for "nonoffensive defense;" and several breakthrough agreements concerning on-site verification of arms control.78

78I examine these cases in my forthcoming book, Taming the Bear: Transnational Relations and the Demise of the Soviet Threat.
Yet one should not underestimate the importance of the transnational scientists' movement for a test ban. Indirectly, through their influence on international public opinion, the scientists undoubtedly had an effect on government policy in the United States and the Soviet Union. The activities of Pugwash concerning nuclear testing provided an important precedent for the organization's future efforts. The smaller meetings and the groups that evolved out of Pugwash to provide direct Soviet-American contact proved especially valuable in promoting mutual understanding and restraint between the nuclear superpowers. The Soviet government came to value such contacts and repeatedly gave its endorsement to them. Independent-minded Soviet scientists took advantage of their relationship with Western counterparts to gain new information that was useful in internal Soviet debates about disarmament and security policy. Soviet scientists did not bloom into full-fledged participants in the making of security policy until the second half of the 1980s, but the seeds were first planted during the test-ban debates of three decades earlier.

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79 On 22 August 1961, the Central Committee granted the Soviet Pugwash committee permission to meet separately with American scientists to discuss arms control. Central Committee decision no. P-342/36 is mentioned in memorandum to the Central Committee from D. Sheliagin, deputy head of the international department and V. Snustin, deputy head of the ideology department, in TsKhSD, CPSU Central Committee, 22nd convocation, from protocol no. 96, Secretariat session of 4 April 1964, item 186g "On the participation of Soviet scientists in work of the joint Soviet-American group for the study of problems of disarmament and international security."