Pugwash Literature Review

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During the 1990s, historians began to study the reasons for the Cold War's abrupt end. While scholarship at first emphasized the role of traditional, powerful political actors such as Ronald Reagan and Mikhail Gorbachev, more and more historians began to study the influence of non-state actors, including social activists and nongovernment organizations (NGOs), on Cold War foreign relations and their contributions to the conflict's end. When the Pugwash Conferences on Science and World Affairs, along with co-founder Joseph Rotblat, were awarded the 1995 Nobel Peace Prize, scholars began to pay closer attention to the historical role of these particular scientific activists.

Founded in 1957, the Pugwash conferences brought together notable scientists from both sides of the Iron Curtain to discuss nuclear disarmament in an informal but serious setting. The hope was that these elite scientists would be able to sway their respective governments into pursuing arms control measures. As one of its original participants explained, the ideal Pugwash conference consisted of politically influential scientists "free from governmental ties" as well as "opinion-makers…who are concerned with policy making on a governmental or semi-governmental level. Any major thoughts that were developed at such a meeting could then filter through the observers to the general public and to the governments involved."[1] Over time Pugwash expanded to include a wider array of scientists and social scientists and broadened its scope to include chemical and biological weapons, third world development, and other issues. On an international level, Pugwash was led by a General Secretary and Continuing Committee based in London. However, it was far from monolithic, and countries around the world established national Pugwash groups which coordinated with the international leadership while also retaining much autonomy.

More than twenty years after it received its Nobel Peace Prize, scholarly works on the Cold War still frequently mention Pugwash, although academic works on the group itself, though not especially numerous, have been growing steadily.[2] Researching Pugwash offers several challenges, namely the

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[1] Helen S. Hawkins et al, eds., *Toward a Livable World: Leo Szilard and the Crusade for Nuclear Arms Control* (Cambridge, MA: MIT Press, 1987), 165.

[2] Works with passing references to Pugwash include Sarah Bridger, *Scientists at War: The Ethics of Cold War Weapons Research* (Cambridge: Harvard University Press, 2015); Robert Gilpin, *American Scientists and Nuclear Weapons Policy* (Princeton, NJ: Princeton University Press, 1962); Benjamin P. Greene, *Eisenhower, Science Advice, and the Nuclear Test Ban Debate, 1945–63* (Palo Alto, CA: Stanford University Press, 2007); Gregg Herken, *Cardinal Choices: Presidential Science Advising from the Atomic Bomb to SDI* (Palo Alto: Stanford University Press, 2000); Akira Iriye, *Global Community: The Role of International Organizations in the Making of the Contemporary World* (Berkeley: University of California Press, 2002); Harold Karan Jacobson and Eric Stein, *Diplomats, Scientists, and Politicians: The United States and the Nuclear Test Ban Negotiations* (Ann Arbor: University of Michigan Press, 1966); Kelly Moore, *Disrupting Science: Social Movements, American*

private, almost secretive nature of the conferences; the confusing structure of the organization; the lack of an institutional archive; and the reluctance of policymakers to credit activists and outsiders like Pugwash with shaping foreign policy all stand in the way of a comprehensive understanding of the group and its influence. Nevertheless, scholarly attention to Pugwash has reached a point where several themes can be discerned. Pugwash appears most prominently in histories that examine the antinuclear movement's effects on the nuclear arms race as well as scientists' efforts at antinuclear activism. More recent works have shifted the emphasis toward the transnational aspects of Pugwash—as well as the ways in which the various Pugwash national groups worked with (and against) their respective governments—while others study the effects of communism and anticommunism on the conferences. Funding, meanwhile, has been an overlooked theme in Pugwash scholarship, particularly surprising for an issue that has caused the group so much anxiety throughout its history. In Rotblat's first institutional history of Pugwash, published on the tenth anniversary of the first meeting (a second was published on the fifteenth anniversary), he discusses funding in some detail, including a large section titled "Financial Problems."[3] Yet few historians have studied the organization's funding in any comprehensive way. Instead one must turn to the archives, where substantial information can be found.

Participants' Histories and Pugwash's Achievements

The initial histories of the Pugwash conferences were crafted by Rotblat, one of the group's founders and, to many, its heart and soul. According to Rotblat, the push for a meeting of scientists began in the mid-1950s following the development of thermonuclear weapons and the concurrent fallout scare. The British philosopher and antinuclear activist Bertrand Russell began to circulate a manifesto calling upon governments to renounce nuclear weapons; the manifesto gained substantial traction when Albert Einstein added his name to it just days before his death. Rotblat, a naturalized British physicist who had fled Poland during World War II, knew Russell and also signed the so-called Russell-Einstein Manifesto. A section of the statement, added by the French scientist Frederic Joliot-Curie, declared that "Scientists should assemble" in order to use their expertise and international perspective to help stem the nuclear arms race. Russell then asked Rotblat to organize a scientists' conference in this vein, which in turn required him to find a suitable location. The organizers received an invitation from the government of India, but the conference, scheduled for December 1956, had to be cancelled because of the Suez crisis and the Soviet invasion of Hungary. By the time planning and fundraising for the conference resumed, India had bowed out of consideration. Rotblat, meanwhile, had sent letters to "a number of wealthy people in various countries asking for financial support" but received only a depressing mix of "small contributions" and outright refusals. Fortunately for the scientists, both Aristotle Onassis and Cyrus Eaton eventually made offers to fund and host a conference in 1957, though each man wanted to dictate its location. Eaton's offer (which the scientists soon accepted) required that the meeting be held in the resort town of Pugwash, Nova Scotia, where Eaton maintained a country lodge. (Onassis insisted on Monaco, though I have seen no explanation of why Eaton's offer was preferred to Onassis'.) Eaton,

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Scientists, and the Politics of the Military, 1945–1975 (Princeton, NJ: Princeton University Press, 2008); and Ronald Powaski, *March to Armageddon: The United States and the Nuclear Arms Race, 1939 to the Present* (New York: Oxford University Press, 1987).

[3] Joseph Rotblat, *Pugwash: The First Ten Years* (London: Heinemann, 1967), 143.

invariably described in Pugwash literature as a "wealthy industrialist," had interests in coal, iron, steel, and the Chesapeake-Ohio railway, but unlike other millionaire capitalists, Eaton advocated accommodation with the Soviet Union in the interests of avoiding nuclear war, a stance that would eventually elicit suspicion toward the Western scientists of Pugwash. His money nevertheless paid for the first conference's travel expenses, hospitality, and housing, though the participants coordinated everything on their own. According to Rotblat, Eaton's "generous hospitality" helped the atmosphere, and the meeting proved so successful that participants eagerly suggested convening a second gathering. When the decision was made to continue the meetings on an annual basis, Rotblat became the group's Secretary General.[4]

Rotblat's histories, which tend toward dry summaries of conferences, shy away from declaring Pugwash's influence on geopolitics. "In the highly complex problems discussed in Pugwash, where so many diverse factors interact," he writes, "it is impossible to measure the influence exerted by any single factor." He adds, however, that outsiders have credited Pugwash with bringing the superpowers closer together as well as enabling the 1963 Limited Test Ban Treaty (LTBT).[5] Other accounts by Pugwash participants and even scientists not involved in the conferences echo this claim, and also add the 1968 Nuclear Nonproliferation Treaty (NPT) and the 1972 Antiballistic Missile (ABM) Treaty to the list of Pugwash's achievements. Both primary and secondary sources offer substantial evidence to support the claim that Pugwash played a significant role in enabling the LTBT and ABM, but rather little evidence exists on to support the NPT claim.

Examining the treatment of the LTBT in the memoirs of US presidential science advisors and other important scientists shows just how close Pugwash participants could get to US policymakers. Jerome Wiesner, a member of the President's Science Advisory Committee under President Eisenhower, had not heard of Pugwash conferences until he attended one, but found himself "in total agreement with their view." In his memoirs, he claimed that the group brought sanity to bilateral talks when the Cold War was at its worst. Though no one could overcome the deep suspicions held by each side, Pugwash did better than most diplomatic efforts, and convinced scientists of the role they could play in achieving arms control. After returning from a Pugwash conference, Wiesner reported to Eisenhower his confidence that a nuclear test ban would not put the country in danger. Wiesner then served as President Kennedy's Presidential Science Advisor, and credited Pugwash discussions (particularly those at the late November/early December 1960 Moscow meeting) with enabling the LTBT. At the Moscow conference—the first held in the Soviet Union—the Soviet representatives were impressed that the incoming president's personal science advisor was in attendance. After Wiesner met with Deputy

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[4] Rotblat, *Pugwash: The First Ten Years*, 13–16; Rotblat, *Scientists in the Quest for Peace: A History of the Pugwash Conferences* (Cambridge, MA: MIT Press, 1972); Rotblat, "The Early Days of Pugwash," *Physics Today*, Vol. 54 no. 6 (June 1, 2001), 50–55. See also Andrew Brown, *Keeper of the Nuclear Conscience: The Life and Work of Joseph Rotblat* (Oxford: Oxford University Press, 2012), 124–26; and Martin Underwood, *Joseph Rotblat: A Man of Conscience in the Nuclear Age* (Brighton: Sussex Academic Press, 2009), 42–61. For a relatively early history of Pugwash, see Leonard Schwartz, "Perspective on Pugwash," *International Affairs*, Vol. 43 no. 3 (July 1967), 498–515.

[5] Rotblat, *Scientists in the Quest for Peace*, xviii.

Foreign Minister Kuznetsov, the Soviets agreed to release US pilots who had been imprisoned in the Soviet Union, a gesture that US participants took as a demonstration of how seriously the Soviets took the meetings.[6]

Wiesner and other Pugwash scientists could discuss the technical issues of test ban monitoring with their Soviet counterparts. Given the large geographical sizes of the United States and Soviet Union, low-yield underground nuclear tests would be nearly indistinguishable from earthquakes. Each side therefore recognized the need for a way of determining whether a seismic event was a natural geologic disturbance or a clandestine nuclear test. The United States proposed that each side be allowed a number of on-site inspections each year; if instruments in the United States registered a suspicious disturbance, US monitoring teams could inspect the Soviet site in person (and vice versa). Although the Soviets insisted, almost to the point of paranoia, that the number of inspections be as close to zero as possible, Wiesner's discussions with Soviet scientists enabled him to relay the number of inspections that President Kennedy was comfortable with (first five, then just three, which was still unappealing to the Soviets). In his letter supporting Pugwash's nomination for the Nobel Peace Prize, Wiesner refers to these discussions as "very important to me in my efforts to achieve a nuclear test ban and reduce sources of international friction."[7] When the Soviets continued to balk at on-site inspections, Pugwash scientists offered a technological solution to the problem. Glenn Seaborg, the head of the Atomic Energy Commission during the 1960s and not himself a Pugwash scientist, credits the group's idea of using so-called black box seismic detectors in lieu of manned inspections as a breakthrough that showed the Soviet side "loosening" its demands. In a relatively rare moment of publicity, the *New York Times* even mentioned the black box proposal, since the issue of inspections and Soviet reluctance to admit foreign officials into its nuclear testing facilities were widely seen as the last obstacles to a treaty. In fact, the black boxes were not ultimately used; rather, their feasibility made it impossible for the Soviets to continue to use disagreements over inspections to hold up the treaty. With the Soviets' concerns about sovereignty addressed through private Pugwash discussions about test detection as well as public awareness of the black box option, negotiations quickly resumed, and the superpowers signed the LTBT in August 1963.[8]

Contemporary accounts of Pugwash given by its participants can also be found in *The Bulletin of the Atomic Scientists*, edited by the biophysicist Eugene Rabinowitch, who served on the Continuing Committee for fifteen years and as Pugwash president from 1969 to 1970. Though supportive of arms control measures, Rabinowitch also advocated expanding Pugwash's reach to include the technological development of Third World nations in cooperation with the Soviet Union. This viewpoint occasionally brought him into conflict with other members of Pugwash who preferred the group's traditional focus on nuclear disarmament. MIT physicist Bernard Feld, who edited the *BAS* after Rabinowitch, also served as head of US Pugwash. The *BAS* covered Pugwash in a conventional way, recounting the group's history, goals, and achievements, but also included papers based on Pugwash discussions from a wide

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[6] Walter Rosenblith, ed., *Jerry Wiesner: Scientist, Statesman, Humanist* (Cambridge, MA: MIT Press), 260–63, 277.

[7] Rosenblith, ed., *Jerry Wiesner*, 509.

[8] Glenn T. Seaborg, *Kennedy, Khrushchev, and the Test Ban* (Berkeley: UC Press, 1981), 177.

array of participants.[9] Other archival materials include the *Pugwash Newsletter* and the conference proceedings, which can be found at a number of university libraries across the country.

Most Pugwash histories focus on the late 1950s and early 1960s, when the Cold War was at its most tense and transnational cooperation was relatively rare. However, the group appears to have retained influence in later years. US government scientist Herbert York took part in Pugwash conferences during the late 1960s and 1970s and writes that U.S. Pugwash scientists were assigned as official delegates in antisatellite weapons negotiations with the Soviets. Furthermore, at a 1969 Pugwash meeting, York served on the working group on the "reduction and elimination of nuclear weapons and delivery systems," particularly ABMs and multiple independent re-entry vehicles, and found the Soviets open to the idea of limiting such weapons. Soon after this conference, the United States and the Soviet Union announced the beginning of SALT talks, which York credits as a direct result of the 1969 Pugwash discussions.[10] Although no other source has made a direct connection between Pugwash and antisatellite negotiations, York's point about Pugwash's influence on Soviet views of ABMs is supported by several secondary sources (discussed below).

At other times, Pugwash's influence appears less definite. The physicist Leo Szilard, an enthusiastic participant at the first Pugwash conference, located the value of Pugwash in the "informal discussions, in which a man would listen and then respond with a frown or a smile without having to say anything." Such conversations allowed each side to explore the minds of their foreign counterparts. After the first conference, Szilard wrote that Pugwash may have been helpful in reducing tension between the US and Soviet Union, but that the meetings could do more if they were smaller, more focused, and had more influential people in attendance. He also frequently complained about time spent—wasted, in Szilard's view—drafting an official public statement for each conference.[11]

Not every scientist found Pugwash so useful. After attending a 1988 Pugwash conference in Russia, Soviet physicist Andrei Sakharov described the proceedings as "mediocre" and lacking "an objective, scholarly approach." He deemed the scientists "self-absorbed, without a direct link to government or to the media." He concluded, "let Pugwash do its work. But without me!"[12] Such a verdict is somewhat surprising given that during the late 1980s, Soviet Pugwash scientists were, according to several scholars discussed below, heavily influential with Soviet leader Mikhail Gorbachev. Perhaps Pugwash scientists hid their influence too well.

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[9] See, for example, Eugene Rabinowitch, "Pugwash: History and Outlook," *Bulletin of the Atomic Scientists*, Vol. XIII no. 7 (September 1957), 243.

[10] Herbert York, *Making Weapons, Talking Peace: A Physicist's Odyssey from Hiroshima to Geneva* (New York: Basic Books, 1987), 223, 249, 277.

[11] Hawkins et al., eds., *Toward a Livable World*, 159, 175, 187, 196–97.

[12] Andrei Sakharov, *Moscow and Beyond: 1986 to 1989* (New York: Knopf, 1991), 64. Eisenhower's science advisor, George Kistiakowsky, was similarly skeptical of Pugwash at first but later attended the conferences. See Kistiakowsky, *A Scientist at the White House: The Private Diary of President Eisenhower's Special Assistant for Science and Technology* (Cambridge: Harvard University Press, 1976).

<u>Secondary Sources</u>

Sakharov's skepticism of, and policymakers' silence on, Pugwash is not reflected in secondary works by historians and political scientists, which largely confirm the primary accounts' claims of Pugwash's achievements. Matthew Evangelista's *Unarmed Forces*, which appeared a few years after Pugwash's Nobel Prize award, remains the most groundbreaking work on Pugwash. In it, Evangelista found that a transnational movement like Pugwash could be more effective in influencing Soviet policy because of the structure of the authoritative Soviet government. In the United States, groups like Pugwash struggled to be heard above the din of well-funded lobbies and organizations that drowned out the peace movement. But in the Soviet Union, where dissent was punished and fewer voices could reach policymakers, Pugwash scientists managed to make themselves heard by Nikita Khrushchev, Leonid Brezhnev, and Mikhail Gorbachev, who were especially open to the views of transnational scientists. Soviet representatives at Pugwash therefore had access to Soviet policymakers, making them quite influential during the 1960s and 1980s.[13]

Evangelista, working with Soviet sources, devotes much attention to Pugwash and the ABM Treaty and concludes that Soviet scientists were "crucial" to the agreement. As early as January 1964, when US scientist Jack Ruina presented a paper on ABM limitation at a Pugwash conference, US Pugwashites noticed a change in their Soviet counterparts regarding ABMs, who had initially thought that defensive missiles were ideal for achieving peace (the Soviet government, it should be noted, claimed to have ABM deployments ready.) According to the Soviets, the presence of ABMs would force an aggressor to reconsider a nuclear attack since their missiles might not reach their targets and they would face massive retaliation. One notable dissenter from this view was the Soviet scientist M.D. Millionshikov, who felt that ABMs were ineffective. By the time of a 1967 Pugwash meeting, many Soviet scientists had come around to Millionshikov's point of view and opposed ABMs, noting that US scientists had convinced them that a nation which possessed defensive missiles might feel emboldened to launch a first strike without fear of retaliation. These statements were made publicly, in the newspapers *Pravda Ukrainy* and *Izvestia*, as well as in academic journals published by Soviet institutes. Vasilii Emel'ianov stated that the 1969 Pugwash conference in Sochi was most crucial in cementing scientific opposition to ABM; there the Soviet and US scientists issued a communiqué opposing ABMs on the grounds that they would destabilize deterrence, the original argument made by US scientists.[14]

Evangelista has painstakingly teased out how these sentiments made their way from Pugwash to Brezhnev. Millionshikov was close to Prime Minister Alexei Kosygin through his duties as a vice president of the Soviet Academy of Sciences (SAS). Apparently Millionshikov discussed his objections to ABMs at a New Year's party he attended with Kosygin. Academician Vladimir Kirillin, also a vice president at the SAS and head of the 1963 Soviet Pugwash delegation, passed on Millionshikov's objections to Kosygin. Furthermore, Kosygin's daughter, Dr. Liudmila Gvishiani, had attended the Sochi Pugwash conference as well as two subsequent meetings; her husband, a deputy at the State

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[13] Matthew Evangelista, *Unarmed Forces: The Transnational Movement to End the Cold War* (Ithaca: Cornell University Press, 1999), 8, 20, 33, 203, 209.

[14] Evangelista, *Unarmed Forces*, 222–24.

Committee on Science and Technology, also told Kosygin about the merits of a ban on ABMs. V.P. Pavlichenko, the SAS liaison with the Pugwash conferences, was also a KGB agent who gave reports on Pugwash to his superiors—Evangelista suggests he may have been a conduit to Kosygin and Brezhnev as well.[15]

Such lobbying culminated in the 1972 ABM Treaty. (Much opposition to ABMs in the United States came from scientists concerned about such missiles' dubious technical reliability , an issue which does not seem to have arisen at Pugwash conferences.) The ABM Treaty limited the US and Soviets to one deployment each, and the United States eventually abandoned its system. In a report to the SAS, Millionshikov later wrote: "Already in 1965, at a meeting in the framework of the Pugwash movement of scientists of the USA and Soviet Union, there was a detailed examination of the problem of antimissile weaponry. Possible paths to agreement on the limitations of further development of strategic weaponry and antimissile technology were discussed. The clarification of points of view on these problems allowed for better understanding of the conceptions of both sides, which turned out to be useful for working out subsequent bilateral government agreements and treaties between the USSR and USA on the limitation of systems of antimissile defense and the interim agreement on several measures in the area of limitations of strategic offensive weapons [SALT I]."[16]

In his massive history of the global antinuclear movement, Lawrence Wittner conducts perhaps the broadest survey of Pugwash history, including groups in the United States, Soviet Union, Great Britain, Australia, Norway, West Germany, the Netherlands, Yugoslavia, China, and Japan. Relying on a wide array of archival sources and interviews, Wittner gives Pugwash substantial credit for major Cold War achievements, specifically the LTBT and the ABM Treaty. Pugwash, according to Wittner, played an important role in keeping both sides moving toward a test ban in 1961 when the resumption of nuclear tests (ending a mutual moratorium begun in 1958) by the United States and Soviet Union threatened to scuttle official test ban negotiations altogether. With Cold War tensions escalating, Pugwash conferences remained one place where Americans and Soviets could conduct nuclear diplomacy, however informal. Wittner also covers the views of the leaders of the nonaligned movement, including Tito and Nehru, who endorsed Pugwash. Meanwhile, Western governments, including Canada and Britain, were suspicious of the Pugwash meetings, taking an adversarial approach and pressuring their scientists to push for Western Cold War interests. According to Wittner, Soviet scientists used the conferences to signal support for real arms control measures, with Khrushchev sending strong Soviet delegations to Pugwash in order to establish backchannels with the United States. Ultimately, Wittner writes, the West followed the Soviet lead: "With the Soviet, British, and U.S. governments taking the Pugwash conferences seriously, they blossomed into an important forum for discussion and agreement on measures toward decelerating and halting the nuclear arms race."[17]

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[15] Evangelista, *Unarmed Forces*, 227–29.
[16] Evangelista, *Unarmed Forces*, 231–32.
[17] Lawrence Wittner, *Resisting the Bomb: A History of the World Nuclear Disarmament Movement, 1954–1970* (Palo Alto, CA: Stanford University Press, 1997), 375–76.

Wittner heavily emphasizes the 1960 Moscow Pugwash conference, which Wiesner attended alongside future Assistant National Security Adviser Walt Rostow. With important Soviet scientists the two men discussed anti-US propaganda, the status of West Berlin, and nuclear inspections and disarmament; upon returning to Washington, they shared their findings with State Department, CIA, and White House officials. Rostow exclaimed that he had "never heard such frank treatment of extremely sensitive issues," and that the Soviets had proved that they were "serious about disarmament." The Kennedy administration regarded Pugwash highly enough to send a presidential greeting to the next meeting, while staffers at the White House and the State Department received papers from the conference. At a follow-up Pugwash meeting in Cambridge, a select group of scientists further discussed the test-ban issue, and soon after that meeting, Khrushchev agreed to accept two to three site inspections per year. Soviet, British, and US Pugwash scientists pushed their governments to pursue a test ban, a concerted effort that British science advisor Solly Zuckerman acknowledged as successful: "I was serving as an official in the days when the Partial Test Ban Treaty was concluded, [and] I can say here and now, that the pressure brought to bear by Pugwash at that time on us officials…played a real part in pushing us along [toward its conclusion]".[18]

Wittner also echoes York and Evangelista's claims that at Pugwash, US scientists convinced Soviet scientists to oppose ABMs on the grounds that defensive weapons would only encourage the other side to develop more offensive weapons. "Soviet scientists carried this message home and began changing the minds of Soviet policymakers," he writes, a claim based primarily on Western sources including work by Evangelista, memoirs of Pugwash participants, and interviews with Joseph Rotblat, as well as an interview with Soviet scientist Sergei Kapitza. On July 1, 1968, Brezhnev agreed to strategic arms control negotiations with the United States, which fell through after the brutal Soviet repression of the Prague Spring.[19] Rotblat biographers differ slightly, with Andrew Brown arguing that Pugwash had greater influence on the ABM Treaty than the LTBT, and Martin Underwood claiming that Pugwash (or Rotblat, rather) was "instrumental in achieving" the LTBT, helpful in establishing links between the United States and North Vietnam in the late 1960s, crucial in negotiations for the 1972 Biological Weapons Convention, and responsible for the ABM Treaty.[20]

Giving Pugwash at least partial credit for the ABM Treaty appears to be justified, but Underwood's other claims may be somewhat overstated. Encouraged by Pugwash attendee Henry Kissinger to exploit their personal acquaintance with Ho Chi Minh, Raymond Aubrac and Herbert Marcovich embarked on a secret mission for the US State Department. Because Marcovich was organizing a Pugwash symposium in Cambodia, the scientists could journey there on "Pugwash business." They reached Hanoi via Cambodia in July 1967. According to various accounts, the Frenchmen brought back assurances that the United States could assume that North Vietnam would not use a bombing pause to supply its combatants in the south. This so-called "San Antonio formula" apparently softened US

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[18] Wittner, *Resisting the Bomb*, 375–76, 467.
[19] Wittner, *Resisting the Bomb*, 436–73; Wittner, *Toward Nuclear Abolition: A History of the World Nuclear Disarmament Movement, 1971 to the Present* (Palo Alto, CA: Stanford University Press, 2003), 18.
[20] Wittner, *Resisting the Bomb*, 80, 100, 105, 111–13, 279–80, 345, 355, 376, 419, 436, 467; Brown, *Keeper of the Nuclear Conscience*, 203–04; Underwood, *Joseph Rotblat*, 57–58.

reluctance to begin negotiations. Although the San Antonio plan had little immediate impact, negotiations finally began outside of Paris less than a year later.[21] The 1972 Biological Weapons Convention appears sporadically at best in discussions of Pugwash; even the book *Biological Weapons*, written by Pugwash delegate Jeanne Guillemin, mentions the conferences only briefly, though Evangelista notes that in September 1972, the then-chair of Soviet Pugwash included that convention in his list of Pugwash's accomplishments.[22] Still, although it is overstatement to say that Pugwash shaped Vietnam War negotiations and bioweapons agreements, Pugwash did broaden its efforts after the LTBT to address these issues.

Scholars have paid less attention to Pugwash's later decades, perhaps because the conferences have been accused of languishing during the 1970s.[23] However, a recent assessment challenges this view, arguing that government hostilities waned in the late 1960s and 1970s and that Pugwash came to be recognized as "a rare channel of East-West communication" and "a valuable site of second-track diplomacy in nuclear matters." Participants succeeded in "creating the possibility for and conditions conducive to dialogue across political and ideological divides, thus underpinning the organization's role as a place in which back channels could be forged and sustained."[24]

Wittner and Evangelista have directed some attention toward Pugwash in the 1980s, when both the nuclear arms race and the global nuclear disarmament movement were revived. During the 1980s, Wittner writes, Pugwash "remained the pre-eminent international nuclear disarmament organization, drawing together several thousand concerned physicists, chemists, and other researchers from more than 50 nations. Although the Pugwash movement had less of a 'cutting edge' role in the antinuclear campaign of the 1980s than it had during the late 1950s and early 1960s, it did reassert its antinuclear emphasis, sponsor working groups on avoiding nuclear war and implementing disarmament, and issue warnings about the dangers of the ongoing nuclear arms race." In the Soviet Union, Pugwash scientists showed few signs of slowing during the 1980s. The physicist Evgenii Velikhov, who, in Wittner's words, had "had a great respect for Pugwash participants," created the Committee of Soviet Scientists for Peace and Against the Nuclear Threat (CSS) in 1983. Unlike many Soviet peace groups, Velikhov's offered genuine opposition to the arms race rather than just anti-American propaganda. Another Soviet scientist, Roald Sagdeev, was part of both Pugwash and the CSS.[25]

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[21] "'Secret' Mission Described," "French Engineer Silent," *New York Times*, April 5 1968; "Frenchman Took U.S. Plan To Hanoi," *New York Times*, April 9 1968; Robin Clarke, "Science and Technology Comment," from *Science Journal,* undated (probably 1968), Series IV, Addenda II, Box 7, Folder 1: General Correspondence, Eugene Rabinowitch Papers; "Minutes for the Pugwash Continuing Committee Meeting," December 10–11, 1967, Series IV, Addenda II, Box 7, Folder 5: General Correspondence, Eugene Rabinowitch Papers; George Herring, *America's Longest War: The United States and Vietnam, 1950–1975* (New York: McGraw-Hill, 1996, third edition), 196.

[22] Jeanne Guillemin, *Biological Weapons: From the Invention of State-Sponsored Programs to Contemporary Bioterrorism* (New York: Columbia University Press, 2005). Evangelista, *Unarmed Forces*, 146.

[23] Wittner, *Toward Nuclear Abolition*, 14.

[24] Alison Kraft, Holger Nehring, and Carola Sachse, "Introduction," *Journal of Cold War Studies*, Vol. 20 no. 1 (Winter 2018), 19.

[25] Wittner, *Toward Nuclear Abolition*, 222–23, 229.

The 1980s may have been the highpoint of Pugwash influence on Soviet policy, with Gorbachev telling Rotblat that Pugwash scientists (and especially his foreign policy advisors Georgi Arbatov and Velikhov, who had attended Pugwash conferences) were crucial in shaping his views against nuclear weapons. In general, according to Wittner, the antinuclear movement (including but not limited to Pugwash) heavily influenced Gorbachev's approach to the Cold War, and it seems likely that without the movement's influence, he would not have been the transformative leader that he was. He often spoke of "new thinking," a phrase that echoed the Russell-Einstein Manifesto's call for "a new way of thinking" and which to Wittner was "clearly derived from this landmark of the antinuclear campaign." Gorbachev's Foreign Secretary Eduard Shevardnadze tellingly stated that "the Russell-Einstein Manifesto offered politicians the key to the most troublesome and complex riddles of the age." Arbatov confirms that Gorbachev's new thinking largely derived from outside the Soviet Union, while Gorbachev himself credited "the joint efforts of Soviet and American scientists," a clear reference to Pugwash.[26] Evangelista also explains how ideas filtered from Pugwash to Gorbachev. In 1987, Gorbachev and Shevardnadze sought the views of "international experts," in Evangelista's words, and because they already had esteem for Pugwash, scientists seemed a logical choice to consult. Velikhov thus invited members of the Pugwash Study Group on Conventional Forces in Europe to a forum where Gorbachev was discussing changes in Soviet defense policy. There the Pugwash members urged substantial reductions of Soviet offensive capabilities. On a return visit the members of the study group were encouraged to write to Gorbachev with a specific plan. In October, Gorbachev received their letter, which counseled him to enact cuts deeper than he initially wanted. He responded that their analysis was "very close to our understanding of the problem," and that he would "pay great attention to the concrete ideas laid out in the memorandum attached to your letter."[27] Evangelista and Underwood also find that during his years in power, Soviet Pugwash scientists successfully encouraged Gorbachev to pursue troop and force reductions, including the removal of 10,000 Soviet tanks from Eastern Europe. Works by political scientists have also supported the idea that Pugwash swayed Soviet leadership toward peace in the late 1980s, though such scholarship relies mostly on the work of Evangelista and Rotblat.[28]

My own work, *Redefining Science*, situates the efforts of Pugwash within a Cold War dynamic that severely restricted the types of antinuclear arguments that scientists could make. Although Pugwash very much influenced the LTBT, I find that the group's adherence to a Cold War definition of objectivity limited its scientists to narrow technical arguments against nuclear weapons. Although antinuclear social activists created huge movements by opposing nuclear weapons on moral grounds, scientists who hoped to influence official policy tended to object to the weapons on strictly technical terms. These types of claims avoided "emotional" arguments in favor of technical, "objective" conclusions—that escalating the arms race would make deterrence less stable, for example—and often came down to specific, measurable data showing, for example, that underground nuclear tests by the Soviet Union

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[26] Wittner, *Toward Nuclear Abolition*, 371–72.
[27] Evangelista, *Unarmed Forces*, 312–13.
[28] Wittner, *Toward Nuclear Abolition*, 82, 229, 372; Evangelista, *Unarmed Forces*, 312; Underwood, *Joseph Rotblat*, 59; Thomas Risse-Kappen, "Ideas Do Not Float Freely: Transnational Coalitions, Domestic Structures, and the End of the Cold War," *International Organization*, Vol. 48 no. 2 (Spring 1994), 185–214.

could be detected. Technical arguments against nuclear weapons were effective at achieving a test ban, but the ban was far less effective than it could otherwise have been. Many in the US Senate found it difficult to believe scientists that *fewer* nuclear weapons would make the nation *more* secure, and in exchange for passing the LTBT, they required an accelerated rate of nuclear weapons development including the use of underground testing (permitted under the terms of the treaty). Although the test ban did eliminate the threat of fallout, it paradoxically led to a substantial increase in nuclear testing. After the signing of the test ban, Pugwash found itself without a goal and unsuccessfully tried to reformulate itself, taking on issues from third world development to ending the Vietnam War.[29] Alison Kraft has identified other changes in Pugwash after the LTBT, particularly a shift away from US-Soviet issues and toward European concerns such as the future of East and West Germany. In addition, new types of experts, such as lawyers and economists, began to attend Pugwash meetings to inform discussions on the German question.[30]

In contrast to most works that discuss Pugwash, a harsh assessment of the group's goals appeared recently in the *Journal of Cold War Studies*. The journal editors saw the nuclear-free world that was Pugwash's goal as far more dangerous than peaceful. With nations disarmed, hostile states could quickly re-build nuclear weapons. The permanent abolition of nukes is, therefore, "only an illusion." The goals of Pugwash (and other antinuclear groups) "have been deeply misguided," journal editor Mark Kramer writes.[31] Although this statement does not deny Pugwash's ability to influence policy, it does express relief that the group has not been more successful in doing so.

Recent scholarship remains relatively sympathetic toward Pugwash—and the role national Pugwash groups played within the broader international effort—from the perspective of transnational activism. Christoph Laucht's study of transnational activists, for example, places Pugwash within a steady evolution of British antinuclear activists broadening the reach of their efforts.[32] In early 2018, meanwhile, an entire issue of the prestigious *Journal of Cold War Studies* was dedicated to Pugwash and further elaborated on the transnational aspects of the conferences. Titled "Pugwash Conferences and the Global Cold War: Scientists, Transnational Networks, and the Complexity of Nuclear Histories," the analyses grew out of a conference called "Writing Pugwash Histories," which also spawned a website of the same name dedicated to historical research on Pugwash. Reconceiving Pugwash as a network rather than a movement, this volume marks a new phase in Pugwash studies by orienting scholars' attention away from the US-Soviet rivalry and toward the national groups, especially those in Europe and Asia. Essays in this volume show that Pugwash scientists aimed to bridge geopolitical divides, but that their

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[29] Paul Rubinson, *Redefining Science: Scientists, the National Security State, and Nuclear Weapons in Cold War America* (Amherst: University of Massachusetts Press, 2016), 93–142.

[30] Alison Kraft, "Confronting the German problem: Pugwash in West and East Germany, 1957–1964," in Alison Kraft and Carola Sachse, eds., *Science, Peace and Communism: The Pugwash Conferences on Science and World Affairs in the Early Cold War Decades* (forthcoming from Brill).

[31] "Editor's Note," *Journal of Cold War Studies*, Vol. 20 no. 1, (Winter 2018), 3.

[32] One early analysis of Pugwash on the national level is Emanuel Adler, "The Emergence of Cooperation: National Epistemic Communities and the International Evolution of the Idea of Nuclear Arms Control," *International Organization*, Vol. 46 no. 1 (Winter 1992), 101–45; Christoph Laucht, "Transnational Professional Activism and the Prevention of Nuclear War in Britain," forthcoming from the *Journal of Social History*.

views of science were deeply embedded in national interpretations of what science was for. Many governments saw Pugwash as a means to an end, serving their own national interests. But scientists also served as transnational actors who were not necessarily obliged to support their own countries' stances on the Cold War. Putting scientific and social responsibility into practice in Pugwash was contingent upon the political culture of the nation-state as well as the opportunities and constraints that the nation-state put on scientists.[33]

The Austrian government, for example, set out to establish itself as an international science hub in the late 1950s by bringing the International Atomic Energy Agency (IAEA) headquarters to Vienna in 1957 and hosting a Pugwash Conference the following year. But the institutional nature of the IAEA conflicted with the transnational efforts of Pugwash. The officials of the IAEA wanted to set nuclear norms and agendas themselves, fearing the informal network of Pugwash scientists doing so. The IAEA therefore distanced itself from Pugwash's disarmament proposals while establishing boundaries between transnational actors and official institutions.[34] Similarly, West German scientists were ambivalent toward Pugwash because their nation prioritized national goals for West German science rather than international cooperation.[35]

In Britain, meanwhile, Pugwash emerged in direct opposition to government interests. As Britain pursued thermonuclear development, the issue of global fallout allowed scientists to "reach across Cold War divides to confront and discuss the scientific, political, and ethical issues posed by the hydrogen bomb." Rotblat and Russell publicly discussed the dangers of nuclear weapons, making concern about fallout a part of everyday life in Britain, and establishing a "fraught relationship" between the British government and dissenting scientists. From this conflict the Pugwash conferences were born.[36]

In Asia, national Pugwash groups worked both for and against the goals of international Pugwash. In the 1970s, Pugwash's relationship with Chinese scientists mirrored the efforts at rapprochement between the United States and the People's Republic of China. In order to get China more involved, Pugwash offered financial assistance to Chinese scientists in the 1980s and put Chinese scientists on the Pugwash Council (formerly the Continuing Committee). Japan's Pugwash group, meanwhile, was distinctive because of its disagreement with the international group. Unlike many elite scientists, Japanese scientists opposed nuclear deterrence entirely, and helped bring about a new phase in the Japanese antinuclear movement. As Pugwash arms control proposals usually sought to stabilize nuclear

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[33] Alison Kraft et al., "Introduction," 4, 24, 27.

[34] Elisabeth Röhrlich, "An Attitude of Caution: The IAEA, the UN, and the 1958 Pugwash Conference in Austria," *Journal of Cold War Studies*, Vol. 20 no. 1, (Winter 2018), 32, 34, 56, 57.

[35] Carola Sachse, "The Max Planck Society and Pugwash during the Cold War: An Uneasy Relationship," *Journal of Cold War Studies*, Vol. 20 no. 1, (Winter 2018), 170–71.

[36] Alison Kraft, "Dissenting Scientists in Early Cold War Britain: The 'Fallout' Controversy and the Origins of Pugwash, 1954–1957," *Journal of Cold War Studies,* Vol. 20 no. 1, (Winter 2018), 61, 98.

deterrence, Japanese Pugwash scientists found themselves in strong disagreement with the international organization.[37]

Communism, Anticommunism, and Funding

During its first decade, Pugwash faced accusations of allowing its conferences to be hijacked by Soviet agents masquerading as scientists and spreading propaganda. Even within Pugwash, scientists differed in their assessments of Soviet scientists' ability to speak freely.[38] With the benefit of hindsight, historians are beginning to address these questions, which bear directly on the credibility of Pugwash and its claim to having helped the cause of nuclear arms control during the Cold War. The forthcoming volume *Science, Peace, and Communism: The Pugwash Conferences on Science and World Affairs in the Early Cold War Decades*, as well as other essays, look at national Pugwash groups around the world and how they dealt with both communism and anticommunism.

Resolving the legitimacy of the Pugwash conferences is a question of primarily historical interest rather than a challenge to the group's achievements—it is not as though the LTBT will be abrogated just because a historian finds that Soviet scientists manipulated the Pugwash conferences. But the group faced criticism about the role of Soviet scientists at the meetings and questions about whose interests they represented. Such questions were often couched in Red Scare rhetoric, but the Soviet government did cynically pursue peace initiatives in the late 1950s and early 1960s to justify their own weapons development and resumption of nuclear testing. The massive Soviet-backed World Peace Council (WPC) was created for that purpose, blaming the United States for the arms race and claiming that because of imperialist nuclear weapons, the Soviet Union had no option but to build (and test) nuclear weapons of its own. During the 1960s, however, the WPC was struggling, which led to a search for a possible replacement; Pugwash was seen by some Soviet officials as potentially serving this purpose. Some US politicians certainly saw Soviet scientists at Pugwash as mere stooges and US participants as their gullible dupes. According to Senator Thomas J. Dodd (D-CT), Communist scientists arrived at Pugwash conferences as "captive[s] of an inflexible political dogma," and hoped "to shape and exploit the conference in a manner which [would] best serve the ends of Soviet imperialism."[39] But such hyperbole has been disproved by primary and secondary accounts. Although Western scientists recognized that Soviet scientists worked under severe restraints (their translators were often KGB agents, for example), they managed in general to communicate freely and effectively, establishing mutual trust and legitimate arms control proposals such as the LTBT and ABM Treaty. In fact, if there had not been such paranoia, Pugwash might have been even more influential, as President Lyndon Johnson distanced his administration from Pugwash—and thus diminished scientists' influence—for fear of congressional backlash.

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[37] Akira Kurosaki, "Japanese Scientists' Critique of Nuclear Deterrence Theory and its Influence on Pugwash, 1954–1964," *Journal of Cold War Studies,* Vol. 20 no. 1, (Winter 2018), 102–03; Gordon Barrett, "Minding the Gap: Zhou Peiyuan, Dorothy Hodgkin, and the Durability of Sino-Pugwash Networks," in Alison Kraft and Carola Sachse, eds., *Science, Peace and Communism*.

[38] Wittner, *Resisting the Bomb*, 294.

[39] *The Pugwash Conferences: A Staff Analysis*, Internal Security Subcommittee, 87th Congress, 1st session (Washington: Government Printing Office, 1961), 1.

Some of the case studies in *Science, Peace, and Communism* challenge Western Cold War views that Soviet scientists were mere vessels of Soviet propaganda. Fabian Luescher finds that Soviet scientists were indeed direct conduits to Soviet policymakers but managed to remain loyal both to their party as well as to the values of Pugwash and the scientific community. An analysis of Czech and Polish Pugwash by Doubravka Olšáková, meanwhile, argues that although Soviet authorities did attempt to assert control over Pugwash participants, scientists were nonetheless able to use the conferences to link to international science and shift public perceptions of scientists in non-liberal societies. She details how Soviet-bloc scientists increased their involvement with the World Federation of Scientific Workers (WFSW), a Marxist scientists' organization based in Britain in the 1960s. At this time, the WFSW saw Eastern European scientists as reluctant to be socially engaged and worked to get greater numbers of them involved in Pugwash. The WFSW offered these scientists a different model of dialogue between scientists and policymakers, one in which scientists were not mere government mouthpieces. This led to growing independence among scientists, as when Czech and Polish Pugwash participants pressured the Czech Communist Party to convene a conference on European security. For many East European researchers, Pugwash "represented a new stimulus for international cooperation [whose] initiatives were welcomed and even expanded [upon]." But these activities reached their limits in 1968, when the Brezhnev regime cracked down upon the nascent independence of Eastern Europe, epitomized by the crushing of the Prague Spring. After 1968, the Soviets saw Pugwash as "purely an instrument for providing relatively easy access to influential scientists," as well as a way for the Soviets to influence discussions of Central Europe.[40] Such interference, however, mirrored similar efforts in the United States and Britain to score Cold War points at the conferences.

The Soviets, at least, hoped merely to sway the conferences rather than subvert them. The same cannot be said of the People's Republic of China, whose leaders looked to cynically exploit Pugwash just as Western leaders feared. During the early 1960s, Chinese government officials saw Pugwash as a way to burnish China's international image and peace credentials, trying to connect the official PRC government with organizations abroad and overcome their international isolation. The PRC accordingly deployed intellectuals to operate in the Pugwash sphere and worked hard to portray Chinese Pugwash scientists as independent. They were nothing of the sort. China used foreign individuals and networks to its own advantage, sending official scientists to a nongovernment meeting and ultimately quitting Pugwash after creating a nuclear weapon. For China in the 1960s, Pugwash was simply useful to "obscure China's nuclear ambitions, increase its influence among the global Left, and generally improve its image overseas."[41]

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[40] Fabian Luescher, "Party, Peers, Publicity: Overlapping loyalties in early Soviet Pugwash," and Doubravka Olšáková, "Czechoslovak Ambitions and Soviet Politics in Eastern Europe: Pugwash and World Federation of Scientific Workers in 1950s and 1960s," both in Alison Kraft and Carola Sachse, eds., *Science, Peace and Communism*; Doubravka Olšáková, "Pugwash in Eastern Europe: The Limits of International Cooperation Under Soviet Control in the 1950s and 1960s," *Journal of Cold War Studies,* Vol. 20 no. 1, (Winter 2018), 211, 238–39.
[41] Gordon Barrett, "China's 'People's Diplomacy' and the Pugwash Conferences, 1957–1964," *Journal of Cold War Studies,* Vol. 20 no. 1, (Winter 2018), 140–44, 168.

My own contribution to the volume examines the effects of Pugwash critics from the American Left and Right. US anticommunists encouraged US leaders to distance themselves from Pugwash and made it difficult for the scientists to hold conferences in the United States, while accusations from the Far Left cast the group as a propaganda tool of the CIA. Evidence from the personal papers of Bernard Feld, MIT physicist and longtime head of the US Pugwash group, reveals that such suspicions were unwarranted, and shows US Pugwash scuffling throughout the 1960s for funding amid anticommunist attacks and competing with other causes (especially civil rights) for scant donations.[42]

Anticommunism most directly affected Pugwash's ability to raise money by dividing the group from its original benefactor, Cyrus Eaton. Eaton's seemingly limitless supply of money had provided a location, amenities, lodging, and office management staff for several Pugwash conferences—and even the use of Eaton's private jet to fly Rotblat from London to North America—but his friendly relations with Khrushchev, as well as his receipt of the Lenin Peace Prize in 1960, led anticommunists to attack the group. Pugwash scientists themselves grew irritated with Eaton's penchant for publicity (especially his desire to speak at the conferences) and they bemoaned being tainted by their association with him, though they were loath to lose access to his funds. Pugwash nevertheless distanced itself from Eaton's "moronic mentality" and his "particularly embarrassing" support of Pugwash, in the words of the head of US Pugwash Eugene Rabinowitch. In fact, after the first conference, US Pugwash attempted to rename itself the Conferences on Scientific and World Affairs because of the "odious" connotations of the term "Pugwash." In his histories of Pugwash, Rotblat treats Eaton much more gently, explaining that the group simply did not want to rely so heavily on one person for so much funding.[43]

When Pugwash did eventually reject Eaton as a sponsor, it struggled to find other sources of funding. Rotblat's histories reveal a substantial fixation on funding for Pugwash as a whole, primarily because it was so scarce. He writes that among all the difficulties of conference planning, "one of the greatest was the financial aspect." While planning the second conference in 1958, a lack of funds "compelled" the Continuing Committee to approach Eaton once again. Eaton gladly paid, but insisted that the meeting take place again in Canada. For Pugwash's first meeting in Europe, also in 1958, Rotblat writes that it was "not at all clear how to finance such a large gathering." The total cost of a Pugwash conference remains unclear, though the group did seek $100,000 for the 1961 conference in the United States, an amount which would not have included travel for the participants. (The Ford Foundation provided most of the money for that conference.) In 1962, Pugwash planned a meeting in London; the Royal Society sponsored the conference and raised donations through a public appeal and individual letters to various firms and foundations. This action netted the conference £11,000, an amount deemed "not sufficient," with the result that Pugwash could offer housing only to those who really needed it. The Organizing Committee for each conference "usually" managed to get grants for housing and organizing expenses, which included the "very large" costs of interpreters (Soviet scientists

[42] Paul Rubinson, "American Scientists in 'Communist Conclaves': Pugwash and Anticommunism in the United States, 1957–1968," in Alison Kraft and Carola Sachse, eds., *Science, Peace and Communism*.

[43] Carola Sachse, "Patronage Impossible: Cyrus Eaton and 'His' Pugwash Scientists," in Alison Kraft and Carola Sachse, eds., *Science, Peace and Communism*; Brown, *Keeper of the Nuclear Conscience*, 156; Rubinson, *Redefining Science*, 120, 124; Underwood, *Joseph Rotblat*, 42; Rotblat, *Pugwash: The First Ten Years*, 34.

brought their own, which saved some money) and the translation of conference papers (which were translated only into English, the official language of the conferences, as another way to reduce expenses). Getting to the conferences also posed a substantial financial barrier; most scientists could not afford to travel abroad—"even in the economy class," Rotblat wrote, in one of his more tone-deaf statements. National groups paid for their own scientists' travel. If a participant had no other sources of funding, the Continuing Committee attempted to supplement their travel fare, but a shortage of travel money meant that fewer scientists could take part in Pugwash, especially those from remote countries. In the late 1950s and early 1960s, other sources of funding included the Theodor-Körner Foundation, the Soviet Academy of Sciences, the Ford Foundation, the New Hope Foundation, the William Swartz Foundation, and various individuals donating anywhere from $10 to $100.[44]

Funding varied among national groups. Soviet Pugwash, connected as it was to the Soviet government, always found money to attend and host conferences. Austria, for its part, raised money from industrialists eager to boost their nation's credibility as a tech-savvy, neutral, democratic nation, while Danish Pugwash once failed to secure funding for a conference, forcing the French group to take over hosting duties.[45] Usually, the most prominent scientific society in the host nation provided sponsorship, as with conferences in Dubrovnik, Yugoslavia, in 1963; Karlovy Vary, Czechoslovakia, in 1964; Venice, Italy, in 1965; and Sopot, Poland, in 1966. Universities chipped in as well, as with the 1966 Addis Ababa, Ethiopia, conference, sponsored by Haile Selassie I University and Foundation, which provided "full hospitality" for participants. Rotblat was not always forthcoming about funding sources: while Homi Bhaba helped raise funds for housing and organization of the 1964 Udaipur, India, conference, the Organizing Committee also received a £6,000 grant for travel from an unnamed source. UNESCO and the Carnegie Endowment provided an unknown amount of travel funds over the years, as did the ever-vague "other sources."[46]

Aside from conferences and national groups, the central Pugwash office in London also faced financial distress. Rotblat, who ran Pugwash out of his academic office at St. Bart's Hospital in London, struggled to keep international Pugwash based in London but was kept afloat with money from the United States and the Soviet Union (although Western Pugwash officials complained about the Soviet use of rubles instead of a more reliable currency).[47] Rotblat did almost all the organizational work, relying heavily on the efforts of a St. Bart's secretary. Although a central office was necessary, one was not acquired for years after Pugwash's founding, "owing to the uncertain financial prospects," as Rotblat put it. He described the Central Office budget as "very low," consisting of what could be raised from individual donations and other "shoestring arrangements." Although a public relations expert had been appointed in 1960 and successfully solicited donations, he resigned in 1962 and was not replaced, for reasons unexplained. The Central Office budget went mostly toward printing the Conference

[44] Rotblat, *Pugwash: The First Ten Years*, 13, 19–20, 23, 25, 27, 31, 143–44.
[45] Silke Fengler, "Pugwash and the Austrian Ambivalence towards the Communism Question, 1950s–1960s," in Alison Kraft and Carola Sachse, eds., *Science, Peace and Communism*; Röhrlich, "An Attitude of Caution," 56; Rotblat, *Scientists in the Quest for Peace*, 73.
[46] Rotblat, *Pugwash: The First Ten Years*, 41, 44, 46, 49, 51, 53, 55–56, 59.
[47] Rotblat, *Pugwash: The First Ten Years*, 13; Brown, *Keeper of the Nuclear Conscience*, 209–14.

Proceedings, the *Pugwash Newsletter*, and travel expenses. As the 1960s went on, the Central Office's budget of £4,000 pounds per year came from the American Academy of Arts and Sciences (AAAS), the Soviet Academy of Sciences, and public appeals in Britain, with other contributions trickling in from individuals and national groups. In the early 1970s, Rotblat wrote that the Central Office received $18,000 per year from the same sources.[48]

My own research into the finances of US Pugwash provides more details about the sources of funding, at least for the US group. In September 1962, US Pugwash had, according to Feld's records, $35,805 in the coffers. The money came from a variety of foundations, including $2,000 from the Christopher Reynolds Foundation; $5,000 from the Danforth Foundation; $2,500 from the Carnegie Endowment for International Peace; $3,000 from the Edgar Stern Fund; $2,000 from the Atomic Scientists Foundation; and $1,200 from Cyrus Eaton. Pugwash had less success with other potential funding sources; in 1962 and 1963 the Rockefeller Foundation turned down a Pugwash request by explaining that the foundation did not support conferences.[49]

Funding requests provide a sense of what US Pugwash required financially in the 1960s. In 1963, its leaders estimated that they would need a budget of $50,000. Most years, however, the group would be forced to make do with roughly half that amount. By the end of 1964, for example, US Pugwash ended up with $21,000 in income and spent all but $500 of it. While financially stable in 1964, Feld had already begun to worry about the next year, writing to Paul Doty that "the need remains acute." 1965 was indeed precarious. By October the group had taken in $27,793.56, with $15,375.50 in expenses, leaving $12,418.06. Feld could count on $5,000 from the Christopher Reynolds Foundation, bringing its remaining total up to $17,418.06, but with $26,450 in upcoming expenses, the group faced a $9,000 shortfall. The situation improved in 1966, as US Pugwash had $45,000 on hand by the end of March.[50]

In an appeal for funds in 1964, Pugwash participant Harrison Brown explained Pugwash's financial precariousness: "The American Pugwash group has been attempting to diversify its sources of funds ever since it ceased accepting Mr. Eaton's sponsorship. [But] success has been modest." U.S. Pugwash made do with small grants from a variety of sources. Over the next four years, the Christopher Reynolds Foundation and the Edgar Stern Family Fund each pledged $5,000 a year. The AAAS was also a consistent source of funding and supplied money through various committees, including $10,000 from the AAAS Committees on Research Funds Grant in May 1964 and an additional $5,000 for the upcoming conference in 1965. In March 1966, U.S. Pugwash received almost $10,000 from the AAAS

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[48] Rotblat, *Pugwash: The First Ten Years*, 33, 65, 68.

[49] Budget, Conference on Sciences and World Affairs, September 24, 1962, Box 41, Folder 429: Fundraising, 1963–1972, 3/3; Kenneth Thompson to Edsall, July 10, 1962, and John Weir to Feld, July 26, 1963, Box 43, Folder 463: Fundraising: Rockefeller Foundation, 1963–1973, Bernard T. Feld Papers, MIT Institute Archives (hereafter BTF Papers).

[50] Feld, undated (1963) draft letter; Feld Memo, December 31, 1964; Feld to Doty, May 11, 1964; Memo from Feld, "Financial Status," October 1, 1965; Financial Report on Pugwash-COSWA for the period of 1 April 1965–31 March 1966, Box 41, Folder 429: Fundraising, 1963–1972, 2/3, BTF Papers.

Permanent Science Fund.[51] The financial situation improved in 1965 and 1966, when the Ford Foundation began to supply substantial assistance, including, at one point, about $20,000 per year. Other Ford money made its way to Pugwash via the AAAS ($2,000), the NAS ($2,500), and the Ford Foundation's International Studies of Arms Control ($2,000). Also in 1965 and 1966, $5,000 grants came from the American Committee for the Weizmann Institute for Science, and $4,000 from the Institute of International Education. In July 1968, the William and Mary Swartz Foundation provided $15,000. In 1970, US Pugwash had $20,000 from the Ford Foundation as well as a grant from the Adlai Stevenson Foundation to cover conference expenses.[52]

Pugwash seems to have been almost constantly in danger of insolvency; money for staff, office space, conferences, and travel rarely came easy. Most scholarly works, however, largely ignore Pugwash finances and emphasize the change achieved at Pugwash conferences by the informal communication between scientists and subsequent pressure placed on Cold War governments. If primary accounts and secondary scholarship are to be believed, then, a relatively small amount of money enabled notable arms control agreements. Although it helps to keep in mind that Pugwash's influence often depended on the interpersonal networking of elite scientists as well as world leaders' willingness to listen to scientists, an analysis of the extant literature on Pugwash suggests that the costs of the conferences were a relatively small price to pay for helping rid the world of nuclear weapons.

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[51] Harrison Brown to Agnes Meyer, August 25, 1964; Feld memo to AAAS Pugwash Committee, May 11, 1964; Ralph W. Burhoe, Executive Officer, to David Hunter, Edgar Stern Family Fund, April 21, 1964; Harlow Shapley, Chairman of Committees on Research Funds (AAAS), to Feld, March 19, 1965, Box 41, Folder 429: Fundraising, 1963–1972, 1/3, BTF Papers. Income (1 October 1964–15 September 1965); Financial Report on Pugwash-COSWA for the period of 1 April 1965–31 March 1966, Box 41, Folder 429: Fundraising, 1963–1972, 2/3, BTF Papers.

[52] Feld to Doty, May 11, 1964, Box 41, Folder 429: Fundraising, 1963–1972, 1/3, BTF Papers, MIT; Stanley Gordon, Ford Foundation, to Feld, November 18, 1965; Stanley Gordon, Ford Foundation, to Feld, November 18, 1965, Box 42, Folder 447: Fundraising, Ford Foundation, 1968–1971, ½, BTF Papers. Pugwash-COSWA Financial Report 1 April 1965–30 September 1966; Financial Report for the Period of 1 April 1968–31 July 1968, Box 41, Folder 429: Fundraising, 1963–1972, 2/3, BTF Papers.

Acknowledgments

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