

“A Creepy Feeling”: Nixon’s Decision to Disavow Biological Weapons

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Thomas Woodside

In September of 1950, a ship sailed by the Golden Gate Bridge. It carried a stockpile of *Serratia marcescens* bacteria, which it released in a huge plume over the city of San Francisco. Those onboard hoped to expose as many people as possible to the bacteria. Their mission was a success, and most of the city’s residents were exposed.

The ship was not operated by a hostile foreign government or terrorist operatives, but by the United States Navy. Though *Serratia marcescens* is a “simulant” bacterium not known to cause harm, the test showed the potential for attacks with deadly forms of bacteria.¹ Despite the benign nature of the bacterium, Stanford University doctors reported several bizarre cases of urinary tract infections at the time, leading eventually to one death.² The test was far from the only biological weapons test conducted in secrecy by the U.S. government from World War II until as late as 1968.

On November 25th, 1969, President Richard Nixon gave a speech to the American public following a briefing to Congress. He announced the United States would renounce the use of biological weapons,³ destroy its stockpiles, and research only what was necessary to defend against possible attacks from enemies. He also voiced support for a United Kingdom initiative to

¹ Helen Thompson, “In 1950, the U.S. Released a Bioweapon in San Francisco,” *Smithsonian Magazine*, July 6, 2015, <https://www.smithsonianmag.com/smart-news/1950-us-released-bioweapon-san-francisco-180955819/>.

² Richard P. Wheat, Anne Zuckerman, and Lowell A. Rantz, “Infection Due To Chromobacteria: Report of Eleven Cases,” *A.M.A. Archives of Internal Medicine* 88, no. 4 (October 1, 1951): 461–66, <https://doi.org/10.1001/archinte.1951.03810100045004>.

³ *A note on terminology.* A *biological weapon* consists of living organisms, such as bacteria, fungi, or viruses. A *chemical weapon* consists of non-living chemical agents, such as nerve or chlorine gas. A *toxin weapon* is a kind of chemical weapon made from chemicals synthesized by living organisms such as the *botulinum* toxin produced by a bacterium. The distinction between chemical and toxin weapons is not critical for this paper.

ban biological weapons internationally, which would eventually become the Biological Weapons Convention.⁴

How did the United States go from biological weapons testing on its own population to leading the world in opposition to biological weapons? Historians have offered many possible explanations.

One common argument is that public pressure forced Nixon's hand. In a 2002 paper, Jonathan B. Tucker, a CBW expert and then a researcher at the Monterey Institute of International Studies, specifically emphasizes television reports in early 1969 and their contribution to increased awareness of the weapons. Brian Balmer and Alex Spelling of University College London conducted a 2016 analysis of contemporaneous newspaper articles about biological weapons, finding that they routinely portrayed biological weapons as dangerous even if they presented mixed messages about their effectiveness. Robert W. McElroy, a prelate of the Catholic church, included a discussion of CBW in a 1992 book, stressing in particular the idea that the public viewed such weapons as morally repugnant. I will argue that public pressure was a significant factor behind Nixon's decision, but that it was not sufficient to convince Nixon that renouncing biological weapons would be safe.

A second argument is that international pressure created an environment where the American position was untenable. James Revill, a research fellow at the University of Sussex, wrote in a 2018 article that international arms control was a major factor, while also suggesting that the renunciation may have been an attempt to deflect attention from the Vietnam War as well as a response to the advocacy of international organizations.⁵ McElroy also discussed

⁴ Richard Nixon, "Remarks Announcing Decisions on Chemical and Biological Defense Policies and Programs." (Washington, DC, November 25, 1969), <https://www.presidency.ucsb.edu/documents/remarks-announcing-decisions-chemical-and-biological-defense-policies-and-programs>.

⁵ James Revill, "'Muddling through' in the Biological & Toxin Weapons Convention," *International Politics* 55, no. 3–4 (2018): 386–401.

international opposition, again from a moral perspective, and Tucker acknowledged it as well. I will argue that while international developments were important in shaping Nixon's decision, they were not his primary motivation.

A third argument was that internal government scientists were behind much of the change. In a 1974 book, Joel Primack and Frank von Hippel, then at Stanford University, specifically focus on the work of Matthew Meselson, a Harvard professor and biologist who was on the President's Scientific Advisory Committee (PSAC) and had previously organized a petition to President Lyndon Johnson and testified before Congress against biological weapons.⁶ Tucker also emphasizes Meselson and other scientists on the PSAC panel. I will argue that their advocacy was necessary in Nixon's final decision, though it was not sufficient.

I will argue that there were two essential steps that contributed to Nixon's decision. First, a series of public revelations and government mishaps brought more awareness to the problem of biological and chemical weapons, which had previously been highly concealed. A growing number of newspaper articles shed light on the program, while Congress became far more interested in using its oversight authority. Thus, novel public pressure convinced Nixon to reconsider both chemical and biological weapons. Second, a core group of scientists close to the White House persuaded him that the abandonment of biological weapons in particular would not be a military liability. They did so mainly through arguments that such weapons would be useless and even dangerous for a nation already in possession of nuclear weapons.

“Dirty Business”: The American Bioweapons Program

⁶ Joel Primack and Frank von Hippel, “Matthew Meselson and the United States Policy on Chemical and Biological Warfare,” in *Advice and Dissent: Scientists in the Political Arena* (New York: Basic Books, 1974), 143–64.

The 1925 Geneva Protocol was ratified by all major world powers—with the exception of the United States and Japan—in the aftermath of brutal chemical warfare during the First World War.⁷ It banned the use, though not the development or proliferation, of chemical and biological weapons. The United States signed the Protocol, but it was never ratified by the Senate, meaning that it would not be legally binding.⁸ Still, in 1943, at the height of the Second World War, President Franklin D. Roosevelt declared “categorically” that “we shall under no circumstances resort to the use of [chemical weapons] unless they are first used by our enemies,” and his pronouncement was understood to extend to biological weapons.⁹ The Secretary of War at the time wrote to Roosevelt, saying that biological warfare was “dirty business” but that the country “must be prepared.”¹⁰ And the country did prepare.

While public pronouncements by presidents regarding biological warfare were almost nonexistent for the next twenty years, the U.S. biological weapons program flourished in near perfect secrecy. At Fort Detrick in Maryland, volunteers, mainly Seventh Day Adventists who believed they were contributing to the cause of peace, participated in experiments involving dangerous germs overseen by the Army’s Chemical Corps.¹¹ But the Army’s experiments were not limited to volunteers: it secretly conducted simulant tests not just in San Francisco but in a Greyhound bus terminal,¹² an airport,¹³ parks,¹⁴ and even the Pentagon.¹⁵ By 1968, the budget for

7 “Geneva Protocol,” U.S. Department of State, accessed December 11, 2021, <https://2009-2017.state.gov/t/isn/4784.htm>.

8 John Rubin, “The Living Weapon,” *American Experience* (PBS, 1997), <http://www.shoppbs.pbs.org/wgbh/amex/weapon/program/index.html>.

9 Tucker, “A Farewell to Germs,” 110.

10 Rubin, “The Living Weapon.”

11 Rubin.

12 George C. Wilson, “Army Conducted 239 Secret, Open-Air Germ Warfare Tests,” *Washington Post*, March 9, 1977, <https://www.washingtonpost.com/archive/politics/1977/03/09/army-conducted-239-secret-open-air-germ-warfare-tests/b17e5ee7-3006-4152-acf3-0ad163e17a22/>.

13 Wilson.

14 Goldman, “The Generals and the Germs,” 536.

15 Rubin, “The Living Weapon.”

chemical and biological weapons had reached \$413 million¹⁶ (\$3.2 billion in 2021 dollars¹⁷), and the army had stockpiled agents that cause anthrax, tularemia, brucellosis, Q-fever, and Venezuelan equine encephalitis, as well as anti-crop fungi.¹⁸

The Silence Of The Lambs: CBW Bursts Into The Open

In September 1966, Harvard Professor Matthew Meselson, a frequent critic of biological and chemical weapons, organized a petition to President Lyndon Johnson signed by thousands of scientists, arguing simply that “the barriers to the use of these weapons must not be allowed to break down”.¹⁹ A version of the petition contains a handwritten note from Meselson to a journalist: “now is the time for us to urge you to write a piece.”²⁰ Meselson later spoke of intentionally trying to get his message to the press through this kind of personal outreach to journalists.²¹ The petition was, in fact, picked up in the media,²² but Johnson did not issue a public response and there was no change in government policy.²³ Something more than the advocacy of scientists would be needed to push the country away from biological war.

The most significant revelation did not come until 1968. At a testing ground in Utah, the Army accidentally released a huge plume of a chemical nerve agent into the desert sky. Over the

¹⁶ Goldman, “The Generals and the Germs,” 536.

¹⁷ “US Inflation Calculator,” November 10, 2021, <https://www.usinflationcalculator.com/>.

¹⁸ Tucker and Mahan, “President Nixon’s Decision to Renounce the U.S. Offensive Biological Weapons Program,” 1.

¹⁹ John Edsall and Matthew Meselson to Richard Nixon, “Petition to President Lyndon Johnson Expressing Concern over Existing Restraints on Employment of Chemical and Biological Weapons,” September 19, 1966, <https://profiles.nlm.nih.gov/spotlight/bb/catalog.nlm.nlmuid-101584906X15953-doc>.

²⁰ Edsall and Meselson to Nixon.

²¹ Matthew Meselson, Future of Life Institute Podcast (Part 1): From DNA to Banning Biological Weapons With Matthew Meselson and Max Tegmark, interview by Ariel Conn and Max Tegmark, February 28, 2019, <https://futureoflife.org/2019/02/28/fli-podcast-part-1-from-dna-to-banning-biological-weapons-with-matthew-meselson-and-max-tegmark/>.

²² “22 Scientists Bid Johnson Bar Chemical Weapons in Vietnam,” *The New York Times*, September 20, 1966; “Chemical Arms Criticized,” *Dallas Morning News*, September 20, 1966.

²³ Primack and von Hippel, “Matthew Meselson and the United States Policy on Chemical and Biological Warfare,” 149.

next two weeks, 3,000 sheep in the nearby area died.²⁴ At first, the Army was extremely loath to admit that there had been any testing at all, but after a Utah senator stepped in, it revised its argument to state that the sheep had died for an unrelated reason.²⁵ Eventually, the Army agreed to pay hundreds of thousands of dollars to the sheep farmer, though they would not admit their responsibility.²⁶

The sheep controversy finally brought dedicated attention from the press. CBS and National Educational Television covered chemical weapons in early 1969.²⁷ The biggest broadcast came when NBC's magazine *First Tuesday* aired a documentary about the chemical and biological weapons program on February 4th, 1969. It not only described the Utah debacle, but also the process of disposing of waste agents by sinking them in the ocean.²⁸ The documentary generated significant public attention. Perhaps the most important viewer was Congressman Richard McCarthy. According to McCarthy's later writings, he and his wife watched the documentary together, and his wife asked him, "What do you know about this?" Despite being a member of Congress, he replied, "Nothing".²⁹ He would not be ignorant for long.

Not Something You Buy In A Can: Congress Steps In

On April 30th, 1969, the Senate Foreign Relations Committee, with Congressman McCarthy present, called Matthew Meselson to testify about chemical and biological weapons.³⁰

²⁴ Tucker, "A Farewell to Germs," 113.

²⁵ Goldman, "The Generals and the Germs," 540.

²⁶ Tucker, "A Farewell to Germs," 114.

²⁷ Jack Gould, "TV: 'First Tuesday' Explores Chemical Warfare," *The New York Times*, February 5, 1969, sec. Archives, <https://www.nytimes.com/1969/02/05/archives/tv-first-tuesday-explores-chemical-warfare.html>.

²⁸ Tucker, "A Farewell to Germs," 113.

²⁹ Richard D. (Richard Dean) McCarthy, *The Ultimate Folly: War by Pestilence, Asphyxiation, and Defoliation* (New York: Knopf, 1969), 146.

³⁰ Matthew Meselson et al., "Chemical And Biological Warfare," § United States Senate Committee on Foreign Relations (1969).

Meselson had previously served in the U.S. government investigating such weapons,³¹ and he methodically detailed the ways in which the military used them to his still very uninformed audience. When Meselson was describing the use of aerosol clouds as a dispersal mechanism, Senator Clifford Case of New Jersey asked, “Is that a word or is that a description of something that you buy in a can?”³² Chairman J.W. Fullbright asked Meselson whether the United States was a party to the Geneva Convention, and what the budget of the CBW program was.³³ It was critical that the Senate was finally hearing about the weapons program, particularly in light of their ignorance, especially because they were hearing from Matthew Meselson, a noted anti-CBW activist. The session was wide-ranging, and included Meselson’s thoughts on biological weapons: that they were a “totally unpredictable weapon” that would not be useful for a country that had more predictable weapons of mass destruction, namely nuclear weapons.³⁴ Senator Gale McGee said that the topics discussed in the hearing gave him a “creepy feeling.”³⁵ At the end, Fullbright thanked Meselson for his “surprising” statements.³⁶

Meselson’s testimony did not stay in the confines of the Senate. After removal of classified information, it was released to the public and reported on by several newspapers. The Associated Press article, reprinted in multiple newspapers, described Meselson as having described “a chamber of horrors”.³⁷ Another headline read “Speaking of the Unspeakable.”³⁸ The press, Congress, and Meselson were amplifying their messages.

31 Meselson, Future of Life Institute Podcast (Part 1): From DNA to Banning Biological Weapons With Matthew Meselson and Max Tegmark.

32 Meselson et al., Chemical And Biological Warfare, 8.

33 Meselson et al., 14.

34 Meselson et al., 39.

35 Meselson et al., 16.

36 Meselson et al., 50.

37 “U.S. Stocking Chamber of Horrors, Adviser Says of Chemical Warfare,” *The Augusta, Ga. Chronicle*, June 23, 1969.

38 James J. Kilpatrick, “Speaking of the Unspeakable,” *The Plain Dealer*, August 1, 1969.

Congress, eventually with the assistance of the Secretary of Defense, resolved to broaden their oversight role over the CBW program. In May, investigation uncovered more details about the disposal of CBW, specifically Project CHASE, which stood for “cut holes and sink ‘em” in reference to the boats used to dispose of weapons.³⁹ Congress was now alert enough to be listening when the *Wall Street Journal* broke a story on July 18 under the appealing headline “A Coup For Red Propaganda?”⁴⁰ It revealed the July 8th accidental explosion of a 500-pound American chemical bomb in Okinawa, which the Japanese government did not even know had any chemical weapons.⁴¹ On August 8th, Senator Thomas J. McIntyre proposed an amendment to the annual defense appropriations bill requiring semiannual reports on the program to Congress and restricting means of storing and disposing of weapons.⁴² The amendment was supported by Secretary of Defense Melvin Laird and was eventually passed.⁴³ Congress had determined that its answer to the American people would no longer be that it did not know anything. The press continued to investigate: On October 31st, *The New York Times* published a report alleging the Army had thousands of poison bullets containing the botulinum toxin that it claimed could only serve the purpose of “assassination.”⁴⁴ The jig was up for the executive branch: Congress and the press had woken up.

39 Goldman, “The Generals and the Germs,” 541.

40 Robert Keatley, “Nerve Gas Accident: Okinawa Mishap Bares Overseas Deployment Of Chemical Weapons Leak at U.S. Base Fells 25,” *Wall Street Journal*, July 18, 1969, sec. 1.

41 Goldman, “The Generals and the Germs,” 546.

42 Thomas J. McIntyre, “Senate Congressional Record,” § United States Senate (1969).

43 Melvin R. Laird, “Memorandum for Correspondents,” August 9, 1969, https://primarysources-brillonline-com.yale.idm.oclc.org/reader/open?rotate=1&starEnabled=1&shareLink=http://primarysources.brillonline-com//browse/weapons-of-mass-destruction/dod-press-release-memorandum-for-correspondents-august-9-1969-unclassified-dod-foia;wmdowmdo07292&workUri=weapons-of-mass-destruction/dod-press-release-memorandum-for-correspondents-august-9-1969-unclassified-dod-foia;wmdowmdo07292&download=1&startPage=1&maxCopy=-1×tamp=2021-11-13T17:34:43&cite=1&watermark=BrillOnline_Primary_Sources_WEAPONS_OF_MASS_DES_DOD_PRESS_RELE_1850_13_11_2021&token=EVbZbC8+aDIA9a2/WLYJbYGsdAs=&callbacks=0&pbox=1&userId=1850&maxPrint=-1&accId=1850.

44 Robert M. Smith, “20,000 Poison Bullets Made and Stockpiled by Army,” *The New York Times*, October 31, 1969, sec. Archives, <https://www.nytimes.com/1969/10/31/archives/20000-poison-bullets-made-and-stockpiled-by-army.html>.

An “example of the right leadership”: The NSC Review and Nixon’s Decision

On April 30th, 1969, the very same day that Meselson was testifying before Congress, Laird had written to Henry Kissinger, Nixon’s national security advisor. “I am increasingly concerned about the structure of our chemical and biological warfare programs,” Laird wrote, adding that “it would seem reasonable to have the subject brought before the National Security Council at an early date.”⁴⁵ On May 9th, Laird received a response, where Kissinger promised to consider the issue before the NSC, which he chaired.⁴⁶ Kissinger’s decision began a flurry of reports from many different agencies of the federal government. In a press release supporting the McIntyre amendment on August 9th, 1969, while the report was being prepared, Laird made a point to separately mention “chemical warfare” and “biological research,” even if he did not specify what exactly the relevant policy difference was between the two.⁴⁷ The distinction was not new to the political realm; for instance, Meselson had emphasized the unpredictability of biological weapons in particular in his testimony.⁴⁸ But it was motivated especially by events on the other side of the world: on July 10th, the UK had proposed a draft convention to the Eighteen

⁴⁵ Melvin R. Laird to Henry A. Kissinger, “Memorandum for: Assistant to the President for National Security Affairs,” April 30, 1969, https://primarysources-brillonline-com.yale.idm.oclc.org/reader/open?rotate=1&starEnabled=1&shareLink=http://primarysources.brillonline.com/browse/weapons-of-mass-destruction/dod-memorandum-laird-to-kissinger-april-30-1969-confidential-rnl;wmdowmdo07261&workUri=weapons-of-mass-destruction/dod-memorandum-laird-to-kissinger-april-30-1969-confidential-rnl;wmdowmdo07261&download=1&startPage=1&maxCopy=-1×tamp=2021-11-13T17:19:46&cite=1&watermark=BrillOnline_Primary_Sources_WEAPONS_OF_MASS_DES_DOD_MEMORANDUM_1850_13_11_2021&token=hVLW+1gHzomVi4y0AjtMhgKb8M=&callbacks=0&pbox=1&userId=1850&maxPrint=-1&accId=1850.

⁴⁶ Henry A. Kissinger to Melvin R. Laird, “Memorandum for the Secretary of Defense,” May 9, 1969, https://primarysources-brillonline-com.yale.idm.oclc.org/reader/open?rotate=1&starEnabled=1&shareLink=http://primarysources.brillonline.com/browse/weapons-of-mass-destruction/nsc-memorandum-cbw-study-may-9-1969-confidential-rnl;wmdowmdo07263&workUri=weapons-of-mass-destruction/nsc-memorandum-cbw-study-may-9-1969-confidential-rnl;wmdowmdo07263&download=1&startPage=1&maxCopy=-1×tamp=2021-11-13T17:34:43&cite=1&watermark=BrillOnline_Primary_Sources_WEAPONS_OF_MASS_DES_NSC_MEMORANDUM_1850_13_11_2021&token=wd/CHCJfTBdmvW0ohHWiMmkmNzU=&callbacks=0&pbox=1&userId=1850&maxPrint=-1&accId=1850.

⁴⁷ Laird, “Memorandum for Correspondents.”

⁴⁸ Meselson et al., Chemical And Biological Warfare.

Nation Disarmament Committee at the United Nations.⁴⁹ Their proposal was different from previous proposals in specifically focusing on biological weapons and making no provisions for chemical weapons, believing that it would be more politically feasible. Laird, likely with similar motivations, had adopted the habit of separating the two, and the internal reports reflected that separation.

The Joint Chiefs of Staff (JCS) of the Department of Defense argued for the expansion of the chemical weapons program and the maintenance of the biological weapons program. They suggested that the Soviet Union was working on both weapons, and the United States should be able to retaliate in kind, without risking having to take nuclear action.⁵⁰ PSAC produced a report quite different from the JCS: It emphasized that biological weapons were unpredictable, difficult to store, and had long incubation periods, properties which made the technology less than useful for a country with nuclear weapons. Meselson, a member of the committee and personal friend of Kissinger's, clearly had made a mark on the report.⁵¹ Multiple studies of the report have suggested that it was highly influential on Defense Secretary Laird's surprise decision to withdraw the JCS report as he threw his weight behind the McIntyre amendment in Congress.⁵² The Office of Systems Analysis produced a report that largely followed the PSAC report, calling

49 "British Proposal to the Eighteen Nation Disarmament Committee" (United States Arms Control and Disarmament Agency, July 10, 1969).

50 "Minutes of NSC Meeting on Chemical Warfare and Biological Warfare," November 18, 1969, https://primarysources-brillonline-com.yale.idm.oclc.org/reader/open?rotate=1&starEnabled=1&shareLink=http://primarysources.brillonline.com//browse/weapons-of-mass-destruction/nsc-report-minutes-of-nsc-meeting-on-chemical-warfare-and-biological-warfare-november-18-1969-top-secret-dos-foia;wmdowmdo07319&workUri=weapons-of-mass-destruction/nsc-report-minutes-of-nsc-meeting-on-chemical-warfare-and-biological-warfare-november-18-1969-top-secret-dos-foia;wmdowmdo07319&download=1&startPage=1&maxCopy=-1×tamp=2021-11-13T17:35:01&cite=1&watermark=BrillOnline_Primary_Sources_WEAPONS_OF_MASS_DES_NSC_REPORT_MIN_1850_13_11_2021&token=ensr0z/33CfiRrr/v0kdK4tZ6wY=&callbacks=0&pbox=1&userId=1850&maxPrint=-1&accId=1850.

51 Meselson, Future of Life Institute Podcast (Part 1): From DNA to Banning Biological Weapons With Matthew Meselson and Max Tegmark.

52 Goldman, "The Generals and the Germs," 553.

for only the minimum research necessary to develop defenses against biological weapons like antidotes and protective equipment.⁵³

The final National Security Council meeting was held on November 18th, 1969. General Earle Wheeler argued for maintenance of the biological weapons program.⁵⁴ Science Advisor Lee DuBridge perfectly summarized Nixon's predicament, stating "There is great public interest in this subject...the value of a BW retaliatory capability is not clear."⁵⁵ The discussion of public pressure, combined with Meselson's argument that the weapons were not useful, were being articulated directly to the president. Laird was adamant about separating biological weapons and chemical weapons, worrying that "people who are against biological warfare also go against chemical warfare" even though he thought this was unjustified, and favored ending biological but not chemical weapons.⁵⁶ Nearly all Nixon's advisors were united in opposition to biological weapons and in favor of chemical weapons, with Wheeler being the only exception. Wheeler did not attempt to argue his point any further, essentially conceding to the unanimity of the others.

Nixon ultimately agreed with the consensus, saying that it was important to distinguish biological and chemical weapons, and notably adding that "the public relations aspect is very important."⁵⁷ He wanted a public statement drafted that specifically pointed to this as an "example of the right leadership," while also noting that the decision had "the national security in mind."⁵⁸

Nixon wanted a public relations victory, and he saw the possibility of one in the growing unpopularity of chemical and biological weapons. In the belief held by most of his advisors that biological weapons were not particularly useful for the military, Nixon saw an encouraging lack

⁵³ Goldman, 552–53.

⁵⁴ "Minutes of NSC Meeting on Chemical Warfare and Biological Warfare," 1–3.

⁵⁵ "Minutes of NSC Meeting on Chemical Warfare and Biological Warfare," 4.

⁵⁶ "Minutes of NSC Meeting on Chemical Warfare and Biological Warfare," 5.

⁵⁷ "Minutes of NSC Meeting on Chemical Warfare and Biological Warfare," 7.

⁵⁸ "Minutes of NSC Meeting on Chemical Warfare and Biological Warfare," 7.

of roadblocks to achieving the biological part of that victory. Had his advisors stuck their necks out for biological weapons as they had for chemical weapons, it is unlikely that Nixon would have made the decision he did; in the end, he simply followed their recommendations. After years of petitions, hearings, mishaps, and investigations, the decision was simple. A week later, Nixon announced it before the nation.

Conclusion

Nixon's renunciation of biological weapons was the first renunciation of any entire class of weapons by the United States. Without public and Congressional pressure, Nixon may never have felt the need to scrutinize CBW at all. And without the work of a dedicated group of scientists persuading Congress, the people, and the government that biological weapons would not be useful, Nixon might not have been convinced to ignore the military's opinion. Both factors were essential to the outcome, and both heavily leveraged the other in making their arguments. It was only fitting that later that day, Meselson was cheered by the *New York Times* with the subheadings "influence on president" and "calls weapons useless".⁵⁹

Nixon's decision was followed not long later with a renunciation of toxin weapons, and it paved the way for the 1972 Biological Weapons Convention, which banned all development and stockpiling of biological weapons for its hundreds of signatory nations.⁶⁰ At the same time, weaknesses remained. The Soviet Union continued its biological weapons program even after it signed the Convention.⁶¹ Today, there are few strong enforcement mechanisms, and in 2019 the

⁵⁹ David E. Rosenbaum, "Activist Germ War Foe Matthew Stanley Meselson," *The New York Times*, November 26, 1969.

⁶⁰ "Biological Weapons Convention – UNODA," accessed December 2, 2021, <https://www.un.org/disarmament/biological-weapons/>.

⁶¹ Russel e Dybvik, "Russia Commits to End Biological Weapons Program," September 14, 1992, <https://nuke.fas.org/control/bwc/news/920914-242819.htm>.

Convention had a budget of only \$1.4 million,⁶² less than the budget of the average McDonald's franchise.⁶³ Encouragingly, however, National Security Advisor Jake Sullivan recently released a statement urging the world to "strengthen and revitalize" the Biological Weapons Convention.⁶⁴

In 1993, George H.W. Bush signed the Chemical Weapons Convention, finally relegating the other pillar of CBW to the history books.⁶⁵ Yet there has still not been a similar convention for the class of nuclear weapons, perhaps because it is far harder to make the argument that such weapons have no retaliatory purpose.

Note March 2024: I no longer endorse the paragraph below. While some connections are relevant, it is overly simplistic.

In recent years, a new weapon of mass destruction has surfaced: lethal autonomous weapons. The first documented case of a fully autonomous drone hunting down a target came in Libya in January 2021,⁶⁶ while an autonomous drone swarm was used by Israel in Gaza in July 2021.⁶⁷ Like chemical and biological weapons, autonomous weapons are cheap, can fall into the wrong hands, and might be capable of destroying entire cities. Prominent scientists, including UC Berkeley Professor Stuart Russell,⁶⁸ are sounding the alarm, arguing for a ban on such

⁶² "Report on the Overall Financial Situation of the Biological Weapons Convention" (Geneva: Biological Weapons Convention, December 3, 2019), <https://undocs.org/pdf?symbol=en/BWC/MSP/2019/5#:~:text=With%20regard%20to%20the%202019,is%20therefore%2092.3%20per%20cent>.

⁶³ "The QSR 50," QSR magazine, accessed December 2, 2021, <https://www.qsrmagazine.com/content/qsr-50-0>.

⁶⁴ "Statement by National Security Advisor Jake Sullivan on the U.S. Approach to Strengthening the Biological Weapons Convention," The White House, November 19, 2021, <https://www.whitehouse.gov/briefing-room/statements-releases/2021/11/19/statement-by-national-security-advisor-jake-sullivan-on-the-u-s-approach-to-strengthening-the-biological-weapons-convention/>.

⁶⁵ "George H.W. Bush and Mikhail Gorbachev Agree to End Production of Chemical Weapons," HISTORY, accessed December 2, 2021, <https://www.history.com/this-day-in-history/superpowers-to-destroy-chemical-weapons>.

⁶⁶ "Final Report of the Panel of Experts on Libya Establish Pursuant to Security Council Resolution 1973 (2011)" (Panel of Experts on Libya, March 8, 2021), 17, <https://documents-dds-ny.un.org/doc/UNDOC/GEN/N21/037/72/PDF/N2103772.pdf?OpenElement>.

⁶⁷ David Hambling, "Israel Used World's First AI-Guided Combat Drone Swarm in Gaza Attacks," New Scientist, accessed December 2, 2021, <https://www.newscientist.com/article/2282656-israel-used-worlds-first-ai-guided-combat-drone-swarm-in-gaza-attacks/>.

⁶⁸ Stuart Russell et al., "Lethal Autonomous Weapons Exist; They Must Be Banned," IEEE Spectrum, June 16, 2021, <https://spectrum.ieee.org/lethal-autonomous-weapons-exist-they-must-be-banned>; Note, the author works in Stuart Russell's lab.

weapons in the mold of the biological and chemical weapons conventions. In addition to petitions, they have created hypothetical future “documentaries” with the intent of rousing public and political support for such a ban.⁶⁹ Still, it remains to be seen whether these efforts will convince Congress and the public that autonomous weapons should go the way of biological weapons, and that their prohibition should be rigorously enforced. We can only hope that they will.

⁶⁹ Future of Life Institute, *Slaughterbots - if human: kill()*; Future of Life Institute, *Slaughterbots*.

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<https://doi.org/10.1080/17526272.2015.1101877>.
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