

4 Who Shall Keep Humanity's 'Sacred Trust'?

International Liberals, Cosmopolitans, and the Problem of Nuclear Proliferation

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From 1945 to 1954, norms of good global governance of nuclear activities evolved under the influence of transnational networks in the larger context of international relations: the drawing of the Iron Curtain in Europe, the explosion of the Soviet A-bomb, the Korean war, and so on. Even though disagreements between the capitalist and communist blocs extended far beyond the single problem of nuclear proliferation, that topic soon became *the* topic of prime importance for national security (Bernstein 1974). In 1945 and 1946, the ability of the two blocs to agree on a common solution to the international control of nuclear activities even became a test-case of the desirability to maintain the wartime alliance that had vanquished the Axis (Isaacson and Thomas 1986). The proliferation of discourse on science, security, and sovereignty in the nuclear age was thus filled with hopes of establishing a truly cosmopolitan nuclear scientific community—and with doubts about its sustainability.

The United States' negotiator, Bernard Baruch, presented to the United Nations (UN) in June 1946 the so-called Baruch plan, a revolutionary non-proliferation policy based on the Acheson–Lilienthal report. This plan envisioned the complete internationalization of the developing industry in civil nuclear energy, which posed a direct challenge to the regulatory power of nation-states. The United States sought to take away national capacity to build nuclear weapons by placing the entire nuclear sector under the international jurisdiction of a new international organization: the International Atomic Developmental Authority (IADA). The Baruch plan represented the U.S. position at the United Nations Commission on Atomic Energy until 1949, even though its credibility was eroded in December 1946 when the Soviet Union and Poland abstained from voting for its adoption (the other ten countries represented voted for its adoption).

At the same time, post-war American legislative developments concerning the national regulation of the American nuclear industry took the opposite

tack. This new regulation was exemplary of the politics of secrecy, which accompanied the militarization of the American nuclear program. In the same year that the United States was promoting openness and international cooperation at the United Nations through the Baruch plan, the U.S. Congress passed the Atomic Energy Act, section 10 of which dictated that scientific and technical information about the development of large-scale nuclear research and industrial reactors could not be exchanged with other nations. A year before, at the mandate of the top management of the Manhattan Project, Princeton University physicist Smyth released a report containing the information that General Groves, the military commander in charge of the security of the Manhattan Project, authorized to be made public: Only the scientific information could be made available, not the technical nor the industrial information, materials, or know-how (Norris 2003). Knowledge of nuclear processes was to be kept secret on behalf of the security of the American nation. This politics of secrecy only heightened when the decision to build thermonuclear weapons was made in the early 1950s. Through secrecy, the United States thought it could solve the problem of nuclear proliferation and prevent nuclear science from endangering a fragile international order.

This inconsistency in the American policy was resolved only at the end of 1953, under the pressure of the new President, General Eisenhower. Under the aegis of the "Atoms for Peace" program, Eisenhower's administration modified American nuclear law in order to allow the international release of information, material, and "know-how" on civilian nuclear reactors. The 1954 amendment of the Atomic Energy Act changed the secrecy clause, and shortly after this, safeguarded American reactors were presented for sale to the rest of the world at an international conference in Geneva (Krige 2006). Only with "Atoms for Peace" was there an attempt to harmonize American rhetoric on the international scene with American national law, the needs of a burgeoning American industry with a changing international context, and concerns for American security with international demands for economic development. The authority of the International Atomic Energy Agency (IAEA) was much more limited than what cosmopolitan nuclear scientists had proposed in 1946. The IAEA would regulate international trade of nuclear materials and safeguard nuclear reactors exported by the United States, but it would not infringe on the sovereignty of the United States over nuclear activities in its own territory. In his December 1953 speech to the United Nations, Eisenhower (1954) also threatened massive retaliation with nuclear weapons against those nations who would deviate from the course he drew for humanity, which showed that the new proposal would not limit the fast-growing U.S. nuclear weapons program. With President Eisenhower's speech of December 1953, before the UN General Assembly, the decade-long debate about the future of the international organization of nuclear science thus arrived at a moment of "closure" (Collins 2000).

How can we explain the inconsistency between the proposals for control of nuclear science during the Truman administration? This oscillation between two opposed nuclear non-proliferation policies—the transparency of a policy aimed at ensuring the international development of a peaceful new industry versus the secrecy of a policy aimed at strengthening American military power—reflected debates between communities of experts during the period from 1945 to 1953 over nuclear non-proliferation and the threats that nuclear proliferation posed to American national security. This chapter argues that the boundaries between the “national” and “international” sovereign jurisdictions that American nuclear non-proliferation experts drew reflected different ways of conceptualizing the boundaries between nuclear “science” and nuclear “technology”: The extent to which nuclear science was thought to become internationalized depended on the extent to which one considered nuclear activities as “science.”¹

Hence, this chapter argues that when experts addressed core questions about international control of nuclear science, they assumed different understandings of the extent of “science” and “non-science” that the international organizations, which they promoted, were supposed to control. These questions at the heart of the international control of nuclear science included:

1. On whose behalf should science be governed? A nation? Or all of humanity?
2. Should the development of nuclear science bring about a new sovereignty? A world government? An independent IADA?
3. Who shall have authority to declare which nuclear activities deviate from those authorized by the sovereignty? Who should have authority to declare an international emergency:² transnational cosmopolitan nuclear scientists or elected representatives of nation-states?

The ambiguity over what was considered to be nuclear “science” explains how their responses to such questions could vary so much and be successfully defended and promoted during the Truman administration.

Thus, this chapter shows how the experts who developed the Baruch plan redefined the grammar of sovereignty³ by arguing for an extensive definition of what was considered as “science” in nuclear development. For the Baruch plan supporters, a new sovereignty was needed to correspond to the triad “populations, expert knowledge, transnational community”: Transnational communities in possession of expert knowledge would ensure the security of populations. For them, the inseparability of science and technology required the formation of an international organization with broadly defined regulatory powers. But they drew a line between the “scientists”—who they considered to be in a special relationship with humanity by virtue of their possession of expert knowledge and cosmopolitan ethics—and the politicians and national representatives, who only defended national interests.

In contrast, those who promoted an international organization based on intergovernmental collaboration, like the IAEA, which would not infringe on the sovereignty of nation-states but would remain limited to regulating international nuclear trade, considered that most of nuclear development concerned nuclear technology and large-scale manufacturing rather than “science” per se. In their understanding, the nation-state should therefore ensure the protection and security of its people and of the rest of humanity by ensuring the control and confinement of nuclear technological developments in its territory.⁴

In this chapter, I analyze boundary-making practices (Lamont and Molnár 2002) at work during these debates over nuclear non-proliferation policy prior to their resolution at the beginning of the Eisenhower presidency. I focus in particular on the first two years of public debates, 1945 and 1946, when diverse institutional designs and conceptions of nuclear sovereignty were still under consideration. I analyze how the jurisdiction and authority of the post-war international organization of nuclear activities, prior to the creation of any specific international organization, first came to be debated during controversies between experts.

THE DECISION TO GO PUBLIC: A BIDDING DECISION FOR THE FUTURE

How Elite Scientists Drew Boundaries Between National and International Control of Wartime Allied Nuclear Activities

Since its beginning, the issue of post-war control of atomic energy plagued the cooperation between the British and American nuclear scientists. The American scientific elite of the Manhattan Project proposed to reduce as much as possible the American commitment to post-war nuclear development with the United Kingdom and Canada, its two partners in wartime nuclear cooperation. Vannevar Bush (President of the Carnegie Institute) and James Conant (President of Harvard University), respectively the president and vice-president of the research and development department in the Manhattan Project, argued that post-war scientific cooperation should be restricted to America's closest allies (Canada and the U.K.), and should only concern the circulation of “scientific” data—as opposed to “engineering know-how” (Bernstein 1974: 1008). During the war, when Anglo-American nuclear cooperation policy was administered by only a handful of men, James Conant and Vannevar Bush repeatedly sided against giving technical information to the British (Hershberg 1993). Conant argued that activities of research, development, and manufacture were very different things and that the United States should only cooperate for matters of research. The British, of course, found this view unfair, since they already had provided a large bulk of the “scientific” research needed for the construction of nuclear

piles to the Americans, and since the American counter-gift could therefore only concern the developmental aspects. In December 1942, Bush took Conant's ideas to President Roosevelt, and Roosevelt, who feared that the British would collaborate with the Soviets, with whom they had just signed an alliance, endorsed Conant's proposal (Maddock 1997: 4). Secretary of War Stimson and General Groves, the military authorities overseeing the development of the Manhattan Project, backed up Bush and Conant's policies of secrecy regarding the development of nuclear technology (Bernstein 1994). Thus, the line drawn between the national and international was then clearly parallel to the boundary separating technology from science.

Anglo-American nuclear cooperation was formalized with the signature of the Québec agreement in August 1943. On July 22, 1943, Harvey Bundy and Secretary of War Stimson met with Winston Churchill to clarify Anglo-American cooperation. The discussions between Stimson and Churchill resulted in the preparation of a draft resolution by Bush, Conant, and Sir John Anderson (for the British), which proposed the creation of a Combined Policy Committee to coordinate the work and review the progress of the Manhattan project, as well as to adjudicate disputes—they also created a Combined Development Trust to secure Allied monopoly over uranium mining activities. In Québec on August 19, 1943, President Roosevelt and Churchill signed this agreement, which extended wartime cooperation to the post-war world along the lines proposed by Vannevar Bush. The first two points of the Québec agreement concerned the use of atomic weapons built by the United States. They included a pledge not to use the bomb against one another and to seek consent from the other Allies prior to use of the bomb. However, physical possession of all bombs remained with the Americans, and the British were not consulted by the U.S. president before his decision to use the bombs on Hiroshima and Nagasaki. The third article of the agreement barred the communication of information to any third party without mutual consent.⁵ James Conant and Vannevar Bush drafted what was the first plan for international control of nuclear science at the inter-governmental level. They organized the trusteeship over nuclear activities along the lines dividing the East and the West, with the three governments holding a right to veto the extension of their association to the Russians and other governments. Later, during Oppenheimer's trial of 1954, Groves clearly stated that "there was never from about two weeks from the time I took charge of this project any illusion on my part but that Russia was our enemy and that the project was conducted on that basis" (cited in Bird and Sherwin 2006: 275).⁶

The Early Proposals for World Nuclear Sovereignty

The scientific community was relatively unaware of the agreement that its top elite was negotiating with the British. The situation changed when the natural scientists who participated in these debates were no longer only

U.S.-born physicists but also foreign-born scientists (Kevles 1978). The war had forced many Jewish European scientists into exile in the United States, and post-war transnational networks developed out of their collaboration on the Manhattan Project. For instance, Niels Bohr, a winner of the Nobel Prize in physics and probably the most respected physicist at the time, arrived in London in October 1943, and then fled to the United States in February 1944. From there, he influenced the conceptions of the post-war international nuclear order of the scientists in Los Alamos (Maddock 1997). In Washington, Bohr lobbied many important liberal figures, such as Supreme Court Justice Felix Frankfurter, arguing for the need to think ahead about post-war nuclear planning, and for the necessity of “openness” between the Allied nations over scientific matters (Bird and Sherwin 2006: 269). Another important advocate of post-war scientific supranationalism was Leo Szilard, the Hungarian Jewish refugee who had coauthored with Albert Einstein the letter that convinced President Roosevelt to start the Manhattan Project (Rhodes 1986). Unlike scientists born in the United States, these foreign-born scientists did not obtain positions of power in the wartime administration of the Manhattan Project and in the post-war U.S. Atomic Energy Commission (AEC). President Roosevelt, fearing that foreign-born natural scientists in exile in the United States would communicate with the Soviets, ordered that their activities be placed under surveillance.⁷ The President had signed the Québec Agreement, which was at odds with Bohr’s proposal of openness and international cooperation.

However, because of their privileged access to nuclear knowledge and know-how, foreign-born natural scientists were among the first to warn about the dangers of post-war nuclear proliferation. Niels Bohr succeeded in convincing many natural scientists, particularly in Los Alamos and in the Chicago “MET lab,”⁸ where the first nuclear pile became critical, to think about post-war international control along his lines. Bohr did not believe that the Québec agreements could survive the end of the war. In April 2, 1944, Niels Bohr prepared a statement in Los Alamos, which contained his basic insights, which stated that “unless some agreement about the control of the use of the new active materials can be obtained in due time, any temporary advantage, however great, maybe outweighed by a perpetual menace to human security. Human security,” Bohr wrote, would be only attained if “international inspectors had full access to military and industrial complexes and full information about new scientific discoveries” (cited in Bird and Sherwin 2006: 273). Bohr believed that European scientific internationalism should be extended to the whole world after the war, since nuclear activities mixed in inseparable ways the worlds of science and technology. Moreover, those who worked in the Chicago “MET Lab” and who formed the scientific base of the Manhattan Project, were convinced by Leo Szilard that the United States should not exclude the Soviets from their nuclear collaboration with the United Kingdom and Canada, especially as the defeat and capitulation of the Third Reich became eminent in the spring of 1945.

Still, their ideas met powerful skepticism among the scientific elite, including not only James Conant and Vannevar Bush, but also Los Alamos Director Robert Oppenheimer, who argued in early 1945 that scientists had no more rights to claim “the gadget” than any other citizens (Bird and Sherwin 2006: 288).

The Path Toward Public Revelation of the Manhattan Project

Oppenheimer agreed with nuclear scientists in exile on one point: that the result of their research should not remain a military secret after the war. But the path that the United States should follow to reveal its nuclear accomplishments to the public was hotly debated among nuclear scientists. In April 1945, as the United Nations were about to open their deliberations, many scientists came closer to Bohr’s ideas on international openness. As Los Alamos scientist Robert Wilson recalled, many natural scientists in Los Alamos believed that with the institution of the United Nations Organization, “[t]here would be areas in which there would be no sovereignty, the sovereignty would exist in the United Nations. It was the end of war as we knew it, and this was the promise that was made” (cited in Bird and Sherwin 2006: 289). But Oppenheimer remained skeptical about whether knowledge about the new weapon should be publicized to the world during deliberations at the UN. When Truman became President after Roosevelt’s death, “Stimson proposed and Truman approved, the creation of a special group, known as the Interim Committee, to explore the implications of the new weapon” (Isaacson and Thomas 1986: 425) and to recommend how research on nuclear weapons should be revealed after the German capitulation. Secretary of State Byrnes chaired the Interim Committee, who consulted four elite scientists: Robert Oppenheimer; Ernest Lawrence, the founder and director of the Berkeley Radiation Laboratory; Enrico Fermi, the Italian Nobel Prize winner; and Karl Compton, the MIT president. The Interim Committee did not hear the views of the natural scientists united behind Leo Szilard. A longtime opponent of General Groves’ tactics of compartmentalization and secrecy within the Manhattan Project, Leo Szilard was particularly active in convincing the scientists of the necessity of not letting the military have their say on the military uses of “their” gadget. On May 25, 1945, Leo Szilard and Harold Urey of Columbia University appeared at the White House to brief the president, but they only succeeded in seeing the secretary of state, James Byrnes. They realized that the secretary of state had already planned to use the bombing of Japan as an instrument of nuclear diplomacy, in order to get more leverage on Russian occupation of Eastern Europe. Szilard was “flabbergasted by the assumption that rattling the bomb might make Russia more manageable” (cited in Bird and Sherwin 2006: 292). Knowing that the Interim Committee would not endorse their calls for international wartime and post-war control of atomic energy, Leo Szilard organized dissent among the atomic scientists in Chicago, in

June 1945 (Rhodes 1986). After the German capitulation, the natural scientists of the “MET Lab” argued against using atomic bombs on the Japanese population in the famous “Franck Report,” co-authored by James Franck, Donald J. Hughes, J. J. Nickson, Eugene Rabinowitch, Glenn T. Seaborg, J. C. Stearns, and Leo Szilard. These scientists instead proposed that atomic bombs be exploded in a desert in front of a panel of international observers—they assumed that the fear provoked would be sufficient to stop the war in opposition to social scientists who argued against the effectiveness of this sort of “laboratory experiment”—that the war-time compartmentalization of information be immediately suspended, and that all post-war military developments of nuclear science be forbidden (Bernstein 1974; Price 1995). They considered the nuclear weapons they had helped to build to be research objects, whose publicization should thus conform to what they imagined as the classical exposition of a scientific artifact: a test before an international panel of neutral observers. They wrote that “[i]t may be very difficult to persuade the world that a nation which was capable of secretly preparing and suddenly releasing a weapon as indiscriminate as the rocket bomb and million times more destructive, is to be trusted in its proclaimed desire of having such weapons abolished by international agreement” (Franck 1945). Szilard tried to get as many scientists as he could to sign a petition endorsing the conclusions of the Franck Report. On July 12, 1945, an Army poll of 150 scientists of the Manhattan project found that about three-fourths of them favored a technical demonstration before an international panel over a military use of the bomb.

It fell upon Robert Oppenheimer to translate the views of Leo Szilard to the policy makers. The translation (Latour 1987) that Oppenheimer gave actually transformed the message. President Truman never saw the Franck Report, which was immediately confiscated and classified by General Groves. In the Interim Committee, Oppenheimer, who had been warned by Leo Szilard and Harold Urey that Secretary of State Byrnes had decided to use the bombs against Japanese cities, echoed some of Szilard’s concerns when stating that “[i]f we were to offer to exchange information before the bomb was actually used, our moral position would be greatly strengthened” (cited in Bird and Sherwin 2006: 294). But “Stimson controlled the agenda—and it did not include a decision on whether the bomb should be used against Japan,” since it “was more or less a foregone conclusion” (Bird and Sherwin 2006: 293). Secretary of State Byrnes believed that the Soviets should not be given any information on technical know-how before control and inspections plans could be implemented. In the Interim Committee, Vannevar Bush sided with Byrnes as he remarked that “even the British do not have any of our blueprints on plants” (cited in Bird and Sherwin 2006: 295). By drawing a line between science and technology, international and national jurisdiction, wartime and post-war times, Vannevar Bush strengthened his case against scientific demonstration of the nuclear weapons before a panel of international observers. In the end, Oppenheimer’s opinion did

not depart from the consensus of the Interim Committee.⁹ The four scientific consultants (Oppenheimer, Fermi, Lawrence, and Compton) stated that, being “more concerned with the prevention of war than with the elimination of this specific weapon,” they “can propose no technical demonstration likely to bring an end to the war; we have no acceptable alternative to direct military use” (cited in Bird and Sherwin 2006: 299). The elite scientists consulted by the Interim Committee agreed that the use of atomic weapons on the battlefield would not preclude solutions for post-war international control of atomic energy, and the Interim Committee could proceed to choose the targets as recommended by James Conant. But they wanted Washington to inform all the Allies of the existence of the weapon and “welcome suggestions as to how we can cooperate in making this development contribute to improved international relations” (cited in Bird and Sherwin 2006: 299).

Vannevar Bush disagreed, as he still believed that the Québec agreement made consultations with Russia, France, and China unnecessary, and that the technology remained American. Truman was convinced by Vannevar Bush’s argument; on July 24, 1945, at the Potsdam conference, Truman only casually mentioned to the Soviet Premier “a new weapon of unusual destructive force,” and did not mention that the weapon was atomic (Isaacson and Thomas 1986: 304). When the two bombs devastated the Japanese cities of Hiroshima and Nagasaki, Truman repeated his pledge to Anglo-American trusteeship. In his radio message announcing the bombing of Nagasaki, on August 9, Truman said that both the United States and Great Britain would serve as “trustees for humanity” in atomic matters in order “to promote peace and justice in the world” until proper controls would be found. The views of Vannevar Bush had prevailed over those of the scientists of the Manhattan Project.

STAGING THE DEBATE AT THE UNITED NATIONS

The Emblematic “New Dealers”: The Lawyer’s Views of the Bomb After Hiroshima

Debates about post-war international control of nuclear “science” (or nuclear “technology,” depending on the point of view) remained behind the closed doors of the Manhattan Project prior to the public revelation of the Hiroshima and Nagasaki bombings. But public officials with a background in law quickly seized upon the topic of nuclear proliferation after the public revelation of the Anglo-American “sacred trusteeship” on atomic matters. Their understanding of nuclear affairs, informed by international law, changed the range of legitimate opinions about the way the United States should organize post-war international control. These lawyers, who comprised the “New Dealers,” were all connected to Justice Felix Frankfurter and included people such as David Lilienthal, a lawyer, former student of Frankfurter, and Chairman of the Tennessee Valley Authority (TVA), the

emblematic institution of the New Deal;¹⁰ Dean Acheson, also a former law student of Frankfurter at Harvard Law School, who had specialized in constitutional law and trade union protection, was at the end of the war the Assistant Secretary of State, and who later succeeded to George Marshall as Secretary of State;¹¹ and John McCloy, also Frankfurter's former student at Harvard, who was a more conservative business lawyer and had spent the war working as an Assistant Secretary of War, fixing problems ranging from the maintenance of security in the Manhattan Project, the internment of Japanese Americans, the setting of production targets for America's arsenal, and the decision to use nuclear weapons over Japan when he participated in the Interim Committee—of these lawyers associated brought to the Interim Committee, only John McCloy disagreed about the bombing.¹² Even though they were quite afar politically, these three lawyers supported Niels Bohr's ideas about the fraternity of men of science, but they disagreed with the scientists on the best way to achieve this goal.

Nuclear Scientists' Tactical Alignments After the War

Whereas many of the scientists believed that nuclear weapons were scientific artifacts and that as such they should remain under the control of the neutral men of science assembled in a global laboratory setting, these three lawyers saw nuclear weapons as military artifacts, falling under the jurisdiction of nation-states. They believed that any attempt to make these weapons illegitimate in international affairs would be achieved through the traditional pathway of international negotiations of treaties at the inter-governmental level. In August 1945, McCloy convinced Secretary of War Stimson that natural scientists' dreams of instituting a transnational space of nuclear science, which would conform to the rules of openness and fraternity across nations and would extend deep into Russia's society, was a counterproductive dream. For McCloy, international diplomacy led in secrecy by nation-states was the only pragmatic route toward international control of nuclear science, and "working with the Kremlin to control atomic weapons must take precedence over any dreams of forcing that regime to liberalize its rigidly repressed society" (Isaacson and Thomas 1986: 311). In contrast to the authors of the Franck Report, who insisted that the transition to complete international control be negotiated under the auspices of the United Nations and should follow the same kind of transparent debate that men of science were familiar with, Stimson and McCloy proposed to Truman in early September 1945 that through trilateral talks between the Anglo-Americans and the Russians, rather than through the UN, "the US should approach the Soviet Union with a plan 'to control and limit the use of the bomb.' Washington would pledge to 'stop work' on atomic weapons and 'impound what bombs we now have'" (Isaacson and Thomas 1986: 323). They argued that the intergovernmental traditional diplomatic pathway was more likely to please the Soviets.

The State Department shifted views after Dean Acheson stepped into the debate, in September 1945. Whereas Byrnes and Truman had been powerful advocates of Vannevar Bush's (1945) views that American technological nuclear development would be America's "first line of defense," Dean Acheson espoused the views of McCloy and of Oppenheimer, who gradually divorced himself from Bush's viewpoint. In September 1945, Oppenheimer drafted a report that reached the same conclusions already expressed by John McCloy: that "[w]e are not only unable to outline a program that would assure to this nation for the next decades hegemony in the field of atomic weapons; we are equally unable to ensure that such hegemony, if achieved, could protect us from the most terrible destruction," adding that "[w]e believe that the safety of this nation—as opposed to its ability to inflict damage on an enemy power—cannot lie wholly or even primarily in its scientific or technical prowess" (cited in Bird and Sherwin 2006: 318).¹³ During a Cabinet meeting in September 21, 1945, where Dean Acheson served as Acting Secretary of State in the absence of Byrnes, Acheson repeated his point that "[t]here was no alternative to sharing atomic information with Russia." He could not "conceive of a world in which we were hoarders of military secrets from our Allies, particularly this great Ally," whose cooperation "was essential for the future peace of the world" (cited in Isaacson and Thomas 1986: 323). Acheson considered that the nuclear activities leading up to the production of nuclear weapons were in the realm of science rather than in that of technology. Hence, as "[t]he theory behind atomic power was widely known, it was futile to believe that it could be treated as a secret, and any attempt to exclude the Soviets would be seen as evidence of an Anglo-American combination against them" (cited in Isaacson and Thomas 1986: 324). Thus, Acheson rejected Vannevar Bush's boundary between science and technology in the same way as Oppenheimer and the scientists of the Manhattan Project did. But in contrast to these scientists, he espoused McCloy's views on the necessity to internationalize this kind of science through a classical intergovernmental trilateral arrangement between the Anglo-Americans and Russians. For him, "the US should make a direct approach to the Soviets—not through the UN—offering a step-by-step plan to share scientific information [and] adopt verifiable safeguards against the production of atomic weapons by any country" (cited in Isaacson and Thomas 1986: 324).

Although he remained skeptical, in a speech to Congress in October 1945, prepared with the help of Dean Acheson, Truman emphasized the necessity to search "international arrangements looking, if possible, to the renunciation of the use and development of atomic bombs" (cited in Bird and Sherwin 2006: 326). But at the same time, Truman asked that all of the documents related to international control of atomic energy that were prepared by the administration be kept classified. The President was still vacillating between different courses of action. So was Congress. Indeed, a bill had been introduced in Congress in the fall of 1945 that planned

that atomic science would remain under the jurisdiction of a military leadership.

Dismayed by the Hiroshima and Nagasaki bombings of August 1945 and by the idea of maintaining the “sacred” Anglo-American trusteeship on nuclear development, the wider community of Manhattan Project scientists from Chicago, Oak Ridge, Los Alamos, and New York united behind Leo Szilard and Niels Bohr and launched, in November 1945, the Federation of Atomic Scientists (FAS). The FAS advocated creating a civil agency responsible for post-war nuclear science, and promoted the international freedom of circulation of scientists and knowledge, seemingly without concern for the strategic consequences of such freedom for the security of the United States. Many of the FAS founders argued that only the creation of a World Government could ensure both scientific freedom and human security. The creation of FAS was, to a large extent, a reaction against the continued opposition of the scientific top management against sharing with the Allies what the FAS founders viewed as “scientific” information. The majority of scientists affiliated with the Manhattan Project could not believe that Oppenheimer, Vannevar Bush, or James Conant could truly want international control of atomic energy when these same people did not even let civilians take over the job of General Groves in the post-war U.S. Atomic Energy Commission (AEC). Indeed, Vannevar Bush, James Conant, Ernest Lawrence (Nobel Laureate and Director of the Radiation Laboratory in Berkeley), and even Robert Oppenheimer testified in Congress in August 1945 on behalf of the May–Johnson Bill (Res. S179), which planned the post-war military control of nuclear science through the AEC. But to the surprise of many, the scientists who had organized in FAS won the day in the Congressional debates over the national organization of nuclear science. The May–Johnson bill was superseded, and on October 10, 1945, Senator Brian McMahon of Connecticut, influenced by Leo Szilard and other members of FAS, introduced a bill in Congress that planned the exclusive civilian control of nuclear science. McMahon’s resolution called for a special Senate committee to study the nuclear energy issue. Hence, in the fall of 1945, the wind seemed to have changed in favor of the international scientific cooperation favored by both New Deal lawyers and scientists who believed in the merits of sharing nuclear science and technology in the name of global development and peace.

But the elite of the Manhattan Project orchestrated a shift in its position that was highly tactical. On November 15, 1945, Vannevar Bush and General Groves orchestrated a summit organized with the three heads of state who had signed the Quebec agreement. Contrary to what Stimson, McCloy, and Acheson had urged, Vannevar Bush translated the scientists’ recommendation to start discussions with the Soviets under the auspices of the United Nations. Bush advised the creation of a UN committee to discuss the progressive steps leading to American disarmament and Russian acceptance of verifications. The American, British, and Canadian political leaders accepted

his plan. However, the proposal was grounded on a strategy of deception. Indeed, General Groves and Vannevar Bush proposed to continue wartime cooperation around different steps: strictly scientific cooperation with other nations as a first step, and the progressive exchange of technologies during other steps, which they believed would not be achieved because of the conditions they set on sharing nuclear secrets. Organized as it was between the three signatory states of the Quebec Agreement, the November conference kept the formal structure of the Combined Policy Committee and Development Trust alive, but it limited their function to the joint allocation of raw materials and cooperation in scientific fields only; there was to be no exchange of commercial or military information concerning later stages of development and industrial production. On November 15, the declaration read by Truman made no mention of cooperation in the field of atomic energy, or any declaration about the United States halting the research and development of atomic weapons. This initiative clearly followed the line proposed by hardliners, like the new Defense Secretary James Forrestal. The Anglo-Americans would push the Soviets to accept that discussions take place in a United Nations Committee, which would give additional symbolic legitimacy to the Anglo-American trusteeship while avoiding a private intergovernmental bargain with the Soviets prior to that settlement. The Russians would have no other choice than to endorse the Anglo-American proposal for fear of losing face before the rest of the world.

The United Nations Committee on Atomic Energy

When the new UN commission was formed, different schools organized to shape the official American proposal. Truman decided to establish a Board of Consultants, chaired by David Lilienthal (Chairman of the TVA) and comprised of five men, including Robert Oppenheimer and high business executives involved in nuclear energy development (like Monsanto, who administered the enrichment plant at Oak Ridge and General Electric). They wrote a first draft of a report presented to Dean Acheson, Vannevar Bush, James Conant, and John McCloy. The New Deal lawyers, who had advocated an intergovernmental approach and understood the problems of diplomatic transparency, were thus well represented in the Board of Consultants. The scientists were still divided over the issue of whether internationalization should concern nuclear science or nuclear technology.¹⁴ The Acheson–Lilienthal Report, issued by the Board of Consultants in the Spring 1946, succeeded in aligning the position of elite scientists on the viewpoint long endorsed by the FAS over the desirability of a full internationalization of the nuclear business, which they claimed should be considered as falling under the extended rubric of science, which they bridged with technology. This shift was largely tactical on the part of Vannevar Bush and James Conant, who had not supported these views before the FAS won the battle over domestic civilian control of nuclear energy development. To

the surprise of many, the Acheson–Lilienthal Report, although authored by the elite of natural scientists and big business, adopted the view of the majority of natural scientists, in favor of the complete civil self-regulation of nuclear science and a complete internationalization of nuclear research and development. Even “World Government” advocates in the FAS endorsed it (Shils 1946; Urey 1946).¹⁵ The press widely praised and publicized the work of Lilienthal and Oppenheimer (Cousin and Finletter 1946). Promoters of World Government in the FAS saw the creation of this de-nationalized territorial zone, outside the sovereign power of nation-states, as a first breach in the idea of national sovereignty, which was otherwise reaffirmed everywhere in international negotiations, especially in the Charter of the United Nations of 1945. Hence, during these debates over the dangers of nuclear proliferation, scientists challenged the traditional association between sovereignty and nation-states and gave an original fiction of sovereignty by bridging the realms of science and technology.

The Acheson–Lilienthal Report illustrated very well how natural scientists related the dangers of nuclear proliferation and what the adequate responses might be to how they drew the boundaries between science and technology. The authors of the report saw the nuclear danger in terms of annihilation of the world population or humanity. For them, the greatest danger to humanity was for nation-states to enroll scientists to build nuclear weapons, in order to ensure their autonomous survival as nations, in spite of the risks that the weapons represented for humanity as a whole. Therefore, the report put at the center of its analysis a reformulation of the sovereign power of nation-states. It envisioned delegating to scientists, parked in territories placed under supranational jurisdiction, the power to ensure the security of the world population.¹⁶ Specifically, it proposed that an International Atomic Developmental Authority (IADA) be created to take care of all the “dangerous” atomic research and development, with full ownership and control of all fissionable materials (uranium, thorium, and transuranic elements) at every stage of its production (from mines to separation plants and research and development). The separation plants and research reactors producing radio-isotopes in large quantities would therefore be placed under the international authority of the IADA. It meant that uranium enrichment and plutonium processing sites like Oak Ridge and Hanford would fall under international jurisdiction and territoriality. Then, after this transfer of sovereignty was complete, the IADA would distribute small quantities of radio-isotopes for medical or agricultural purposes or for university research conducted at the national level with small-scale accelerators.

The Acheson–Lilienthal Report thus represented a complete reversal of Vannevar Bush and James Conant’s early proposal for limited scientific international cooperation. Bush and Conant had proposed to internationalize only those aspects of nuclear “science” that they deemed as strictly “scientific” (i.e., small-scale laboratory research) and to leave the activities of technology-development, which might be “dual-use” (military or peaceful),

under the nation's purview. The Acheson–Lilienthal Report proposed the opposite solution, as it proposed to leave small-scale science under national supervision and to internationalize the latter activities, which it also deemed as “scientific” but “dangerous.” As a result, the Acheson–Lilienthal plan proposed that since peaceful large-scale research and development comprise “80% of the work of producing nuclear weapons,” and since the boundary between “peaceful” and “dangerous” scientific applications is dynamic, only scientists “who know how” can reign over these activities. Lilienthal characteristically resisted the distinction between technology and science that Bush had tried to put forward when he wrote in his journal on July 14, 1946:

I have the growing sense that perhaps the issues we think of in connection with radicalism, Russia, the struggle of the dispossessed to wrest more of a share from the owners, etc., is just going through the motions of an earlier and now quite unimportant struggle. The issue now is the use of science, which can produce enough to shift the whole center of the struggle from its historic locale. And perhaps even the question of who shall “control” science and technology is no longer greatly relevant as the center of a struggle, for the “control” of land or scarce commodities, coal, copper was a matter of possession. But technology can only be controlled by those who know, rather than those who merely own. (Lilienthal 1963b: 67)

His report therefore argued that nuclear science and technology could only be controlled by “those who know” (the scientists) and not by “those who own” (that is, the nation-state, if science is government-owned), and that those who know are not ideology-driven.¹⁷ This report thus challenged the boundary that Bush had drawn between science, which could not and should not be appropriated by one nation, and technology, which could and should be appropriated and owned by one nation: the United States.

Why did the authors of the Acheson–Lilienthal Report bridge this boundary between science and technology? The authors of the report foresaw that scientists would have the responsibility to say what a peaceful application of nuclear science was and what it was not (U.S. State Department 1946). Scientists, and not political officials, would therefore take care of ensuring the security of populations, and decide on the exceptions. Their plan promoted self-regulation of the field by scientists, which meant the dissolution of any kind of external control imposed on scientists, in favor of “international cooperative development” (U.S. State Department 1946). They specifically warned against creating a corps of international inspectors named by national governments and argued that such external surveillance would be counter-effective.¹⁸ As inspectors would not participate in research activities, such a police job would attract men of temper equivalent to policemen “during the prohibition,” men of limited scientific knowledge applying blindly some old-fashioned rules (U.S. State Department 1946). Hence, nuclear

researchers would benefit from asymmetries of information, knowing how international inspectors would operate. Knowing their routines, they would be able to hide activities of military potential (Oppenheimer 1947). At its best, such a system would be inefficient, illustrating the “Maginot-line mentality of keeping a secret” (Shils 1946: 237–240). But at its worst, it would increase scientists’ incentives to deviate from the rules and to betray, since betraying when all others are supposedly following the rules brings greater payoffs. For instance, commenting favorably on the Acheson–Lilienthal report, physicist Teller (1946) argued that a “rigid inspection is unworkable, for it is a police measure, which will engender a desire for evasion” among men of science usually trusted to be disinterested and honest. Besides, permanent inspections by policemen could strengthen xenophobic passions if these inspectors were granted the power to investigate any national large-scale industrial plant.

Echoing the criticisms of the Franck Report, scientists hence proposed curtailing the sovereign power that nation-states traditionally possessed over activities relevant to national security. After the Hiroshima and Nagasaki bombings, scientists wished to make it impossible for politicians to decide for a second time what to do with the product of their research. At the same time, they sought to make their plan cohere with the logic of national security. The report argued that, instead of developing national nuclear infrastructures subject to the surveillance of an international corps of inspectors, pooling together scientists in an international set of territories was the most efficient way to ensure that no diversion for military purpose occur. Indeed, it served an “alarm function,” preventing a nuclear surprise attack. For example, if scientists of a country diverted some nuclear materials, peers from the scientific community could easily notice the diversion and report it, thus allowing enough time for nations to prepare for adequate sanctions.¹⁹ The concentration of scientists in one site thus lowered the level of surveillance necessary to control scientific activities. It prevented mutual suspicion and inspection *ad infinitum*.

For the scientists who supported the Acheson–Lilienthal report, scientific freedom was therefore the best means to ensure not only the security of populations, but also the security of nation-states and their people. Scientists thus challenged the triad “people, territory, nation-state,” which characterized the fiction underlying the claimed sovereignty of the nation-state (Arendt 1951), and substituted another triad for it: “human population, expert knowledge, supranational community.” They thought that the autonomy of scientists pooled together in a separate sovereign territory which contained diverse tribal transnational communities of experts was a rational and effective way to protect the security of populations and states. Lilienthal (1963) later wrote that by isolating a scientific and technical area of cooperative development, and completing a “manageable task,” communities of experts can prove to nation-states that trust and rational behaviors can unite people beyond their boundaries.

The scientists thus managed a spectacular reformulation of the problem of proliferation by erasing former boundaries drawn between science and technology: Whereas scientific freedom was perceived as a risk to the security of populations and states, they grounded their security precisely on scientific freedom (Lilienthal 1949, 1963a).²⁰ In this conception of sovereignty, objects of dispute were to be translated from a political terrain to a technical one. As Lilienthal (1963b) liked to repeat, scientists sought to “de-politicize” the conflicts threatening international security, by delegating the management of threats and crises to trustworthy transnational communities of experts, who could reduce the complex political questions to “manageable” technical problems. Insofar as they thought that these communities could maintain a continuing dialogue between nation-states and ensure that the interests of populations would not be sacrificed on the altar of state security, they advocated a version of liberalism which is close to the one summarized by Carl Schmitt (1932/1996: 54, 72) in the following terms: “The ideal of a global organization means nothing else than the utopian idea of total depoliticalization. [. . .] Thus the political concept of battle in liberal thought becomes competition in the domain of economics and discussion in the intellectual realm. Instead of a clear distinction between the two different states, that of war and that of peace, there appears the dynamic of perpetual competition and perpetual discussion. The state turns into society: on the ethical-intellectual side into an ideological humanitarian conception of humanity, and on the other side, into an economic-technical system of production and traffic.” But the scientists added a second objective to the first one of de-politicization: the goal of creating a supranational organization. Indeed, they wanted to take a critical field of activity away from the traditional competition between nation-states for the sake of humanity’s survival, and they thought the only way to do this was to introduce supranationalism into the design of the new organization. They introduced a fundamental difference between their proposed supranational organization and the international societies of nations that Carl Schmitt knew (and criticized), or the kind of intergovernmental alliance that Vannevar Bush had proposed with the Quebec Agreement. Indeed, they granted the actors in the nuclear field a sovereign power of their own, which placed them outside the reign of the nation-states.

Thanks to this reformulation, Lilienthal and the scientists around him succeeded in rallying all the scientists of the FAS who previously showed signs of allegiance to pacifist supporters of the World Government such as Albert Einstein or Bertrand Russell. World Government advocates indeed shared this liberal understanding of sane international relations, where rational dialogue is substituted for political bargaining and ideological battle. The paradoxical solution that consisted in depriving nation-states of their nuclear sovereignty thus really constituted a sort of “*coup d’Etat*,” or more precisely a “*coup de souveraineté*,”²¹ on behalf of a new vision of the articulation between science and technology, which bridged the boundary

between the two, thereby allowing scientists to claim internationalism in technological fields traditionally kept under the nation-state's purview.

Enter the Political Scientists: The Doubtful Promises of Nuclear Science

In many ways, it was directly in opposition to the conception of sovereignty which envisioned scientists as reigning over activities essential to the security of populations, that political scientists built their own justifications of their expertise. Experts in political science, who clearly represented the majority of social scientists involved in the new field (Licklider 1971), emerged from Chicago, where the wartime activities of nuclear scientists at the "Met Lab" attracted the attention of political scientists once they were revealed to the public in 1945. Political scientists and economists (Viner 1946a, 1946b) were invited to participate in the debates of a committee created under the auspices of the Carnegie Endowment of International Peace. The Chairman of the Committee on Atomic Energy of the Carnegie Endowment for International Peace agreed with political scientists that scientists' theses about World Government and, more generally, their conception of sovereign power should be criticized. As he wrote, "[t]he movement for World government is strongest in nations where the political culture is based upon the English tradition of representative self-government. [. . .] Paradoxically, this demand that national sovereignty be surrendered to world government is based on a theory wholly contrary to that of self-representation" (Shotwell 1946a). For example, Reinhold Niebhur (1949: 289), the Columbia professor of theology, wrote that World Government is the most "absurd form of the 'social contract' conception of government which has confused modern political thought since Hobbes." Between 1946 and 1949, the controversy between scientists and political concerning the reformulation of the sovereign power was alive and well.

The intensity of the controversy diminished in the spring of 1946 because of multiple events. First, in 1946 Edward Shils, the Chicago sociologist and co-founder of the *Bulletin of the Atomic Scientists*, organized a conference on the topic of international control, where he tried to present alternative views on sovereignty to natural scientists (Shotwell 1946b: 6–8, 1946c). Second, the Acheson–Lilienthal plan offered a sort of unofficial compromise between the most ardent promoters of the World Government, like Harold Urey, and the more moderate ones. However, the conception of sovereignty that natural scientists developed (organized around the triad "population, expert knowledge, transnational communities") was still very different from the one political scientists promoted. Third, when the creation of a UN Atomic Energy Commission was decided on in late 1946, political scientists, historians of diplomacy like Shotwell, and economists channeled their energy into the writing of a report of the Committee of Atomic Affairs of the Carnegie Endowment of International Peace.²²

Unlike the Acheson–Lilienthal Report, the Carnegie Report provided ample room for the expertise of political scientists and economists.²³ In contrast to Lilienthal’s projections and scientists’ vision of the future, the economists foresaw slim prospects for civil uses of nuclear energy. Cost-benefit economists, like Jacob Viner and Marschack (1946), both from the University of Chicago, conceived of science as an economic activity, and as such they believed that it should be governed by the principle of efficiency, which is defined by the optimization of resources used to produce a certain output of economic value—in this case, “energy.” They gave very pessimistic estimates of the benefits of atomic energy. Based on their projections of the costs and benefits of nuclear energy, which they presented during the deliberations of the Carnegie Committee, the final report advocated curtailing the development of nuclear science. They believed that no laboratories other than small-scale medical and purely scientific labs should be funded by the United States or any other government, since no economic reason could justify growth of the field of nuclear energy. Jacob Viner (1946a) strongly emphasized that “[w]e need to make some public statement to counteract the exaggerated rosy dreams about the possible benefits from atomic energy [as the military reasons for development] would not lead to smaller power costs but might even lead to a lower living standard” (Shotwell 1946a: 3). Here, this fight between what James Jasper (1995) has called the “cost-benefiters” and the “technological enthusiasts”²⁴ had a central political dimension. Indeed, if nuclear science provided no benefits to industry, nor increased the growth of the national product, the problem raised by nuclear proliferation was far less recalcitrant to traditional international policing by an international watchdog agency than if it did have the potential to provide such benefits or economic growth. Once scaled down, the problem of the international control of atomic research lost its uniqueness in world history, and as such there was no need to call for the institution of a new World Government to deal with the problems raised by the nuclear field for national security (Viner 1946b). Nuclear science posed a greatly diminished threat to national security if it stayed small instead of gaining global industrial proportions.

The report proposed national control of uranium extraction, industrial purification and nuclear research operations (even those which the Acheson–Lilienthal Report considered “dangerous”) alongside the creation of an international agency of inspectors. Inspectors in this international agency would be producers of norms (regarding standards of health, security and publication) and enforcers of norms (acting as policemen). The proposed International Atomic Energy Committee would also be a clearing house for information, and it would regulate the policing of national-level nuclear industries—exactly the arrangement that the Acheson–Lilienthal Report deemed useless and counterproductive. The Carnegie Endowment also promoted a general international convention prohibiting the possession and use

of atomic weapons, except if authorized by the Security Council (Carnegie Endowment 1946). The director of the committee, a historian of the First World War, Professor Shotwell (1946b), proposed outlawing atomic weapons because “even if covenants do not deter, they afford standards for judging state conduct.” The report also formulated a rule by which any state’s failure to comply with international restrictions on national research and development of atomic energy would be followed by massive retaliation (Carnegie Endowment 1946) under of Article 51 of the UN Charter (the right to individual or collective self-defense). This meant that the United States would still produce nuclear weapons under a “sacred trusteeship” (Briggs 1947: 52). During the last deliberations of the Committee, after the Acheson–Lilienthal Report was published, the difference between the two regimes of nuclear control offered in each report was summarized by General Sarnoff in the following conciliatory terms: “The proposal for complete internationalization provides the ideal technical solution, but not the ideal political solution. The proposal which centers on inspection is not ideal technically, but might prove to be the ideal political solution” (Shotwell 1946b: 4). But the two reports could not be further reconciled. Indeed, the Carnegie Report was very similar to the Soviet proposal made by Gromyko at the UN. Thus, Lilienthal (1963b: 65) even wrote in his journal: “Gromyko’s proposal and the Carnegie Foundation’s report, queer bedfellows.”

Tactics of Deception at the United Nations

Truman hesitated to completely endorse the views of the Board of Consultants, and some of the views expressed by the Carnegie Endowment made their way into the official U.S. proposal. The responsibility to translate the Board of Consultants’ recommendations into a U.S. proposal was given to the former Secretary of War during the First World War, Bernard Baruch, who after the end of the First World War had moved from the organization of wartime production to free market positions in favor of deregulation. Bernard Baruch (1946) added significant changes in his presentation of the official U.S. position before the United Nations Atomic Energy Commission on June 14, 1946. In contrast to the Acheson–Lilienthal report, Bernard Baruch added some threatening comments about the fact that the Soviet Union should relinquish its veto power in the Security Council on questions related to inspections and assessment of nuclear proliferation. He also added that non-compliance would be met by dire threats, anticipating some of the threads in President Eisenhower’s subsequent speech of December 1953 before the United Nations. His comments also echoed the recommendations expressed by the Carnegie Endowment for International Peace. Additionally, Baruch did not pledge that the United States would stop nuclear weapons production during the time of transition toward complete internationalization of nuclear science. He also added that the steps toward

complete internationalization of the U.S. nuclear program should start with the Soviets internationalizing the inspection and management of their uranium mines. Hence, he implicitly endorsed some of the claims about the continuance of the Anglo-American trusteeship during the transition period, while asking the Soviets to make the first gesture. The Anglo-American trusteeship was to be blindly trusted.

Based on this experience, the scientists' confidence in their own expertise included an absolute distrust of politicians and diplomats, who had nationalist interests. The scientists feared that the logic of "international cooperative development" would be corrupted by a national logic, according to which nation-states would seek to ensure their own security. On May 7, 1946, after Lilienthal learned of the nomination of Bernard Baruch to chair the U.S. delegation to the United Nations Atomic Energy Commission, he wrote:

Oppenheimer had spent a long time with Baruch, Hancock, Searls [Baruch's assistants]. Baruch urged [Oppenheimer] to become his technical adviser. He declined, and was worried badly by the way these men are going at it. They have a fancy set of ideas and think, or say at least, that they are in pursuance of our Report. Examples: (1) A call for total disarmament; this would hopelessly confuse and mix issues, and obscure the hope of working out something on the atom bomb. (2) UN should maintain a large stockpile of bombs, on the theory that retaliation is a great deterrent, but this would be fatal and we rejected the notion. (3) Much to-do about the veto power." (Lilienthal 1963b: 46–50)

Lilienthal (1963b: 56) then writes on June 15, 1946, the day after Baruch's presentation to the UN:

Talked at great length with Oppenheimer and Thomas [from Monsanto] last night; they called me from NY, where they attended the affair [Baruch's declaration]. Oppenheimer was deeply troubled by the sanctions talk, and by the implications of it; he has no faith that Baruch can negotiate an agreement since he doesn't understand our position, and this he confirms by the sanctions stuff, which is a far cry from "international cooperative development." In the present state of suspicion vis-a-vis the Russians, if the proposal doesn't emphasize the constructive side, it may well be less than worthless. The American disposition will be to take plenty of time and not force the issue in a hurry; that then the report must go to the Security Council and Russia will exercise her veto and decline to go along. This will be construed by us as a demonstration of Russia's warlike intentions. And this will fit perfectly into the plans of that growing number who want to put the country on a war footing, first psychologically, then actually. The Army directing

the country's research; red-baiting; treating all labor organization (CIO first), as Communist and therefore traitorous, etc.

As Baruch complemented the Lilienthal plan with talk of sanctions and of the impossibility of any of the five powers exerting its veto power on the issue of nuclear proliferation if diversion were found and sanctions decided, on July 24, 1946, Lilienthal (1963b: 56, 70) wrote, "Baruch's pre-occupation with 'punishment' and 'veto' has done great harm so that there is little or no discussion of the essentials of the plan." Scientists and lawyers understood that Baruch's implicit insistence on the Anglo-American trusteeship undermined their own romantic calls²⁵ for the de-nationalization of the territories of nuclear science. For them, the management of the transition period should be left to transnational communities of nuclear experts, speaking the same technical language and sharing the same values espoused by cosmopolitan men of science, accustomed to working with and trusting each other across national boundaries and allegiances.

The scientists in the U.S. delegation to the UN in 1946, like Oppenheimer, approached the problem of Soviet nuclear proliferation from this basic understanding. Oppenheimer and his aides held that by explaining the "facts" and by providing other technical experts with their knowledge of dual-use processes, they would avoid inter-national suspicion and competition. Lilienthal (1946), in this vein, wrote that alternatives to his plan would be proposed simply because other experts did not have the knowledge that the Americans accumulated during the three years of the Manhattan Project. Scientists hoped that the UN technical roundtables could be used by Oppenheimer and other nuclear scientists to explain to other nations how their conception of nuclear control was simply based on the "facts" of technological development. Hence, they were deeply troubled to see that technical issues were not followed with the same excitement by representatives of other nations. Until the end of 1946, an absolute confidence existed among the community of nuclear scientists that they could take the lead and conduct world affairs concerning the security of nations in a transparent and technicized way. They were proven wrong when Bernard Baruch insisted on forcing a vote at the UN Atomic Energy Commission before the end of the year 1946. This led to a deadlock. On December 31, 1946, the Soviet Union and Poland abstained from voting on the plan while the other ten countries represented at the United Nations Commission voted for its adoption. What the scientists and New Deal lawyers feared had occurred: Their proposals had been undermined through a two-pronged series of translations. First, when Vannevar Bush forced the Soviets to go to the United Nations to stage the debate, and second, when Bernard Baruch forced the Soviets to accept conditions that the scientists and lawyers deemed unattainable before reaching the stage of complete internationalization of U.S. nuclear science and technology.

**DISCUSSION: THE RECONFIGURATION
OF THE FIELD OF DISCOURSE ON SOVEREIGNTY,
SECURITY, AND SCIENCE AFTER 1946**

**Elite Scientists and Lawyers and the Post-1946
Internationalization of Nuclear “Science”**

As the debates over the internationalization of nuclear science and technology reached a dead end at the United Nations, the alliance between New Deal lawyers and elite nuclear scientists who had authored first the Quebec Agreement and then the Acheson–Lilienthal Report was reconfigured. Both groups secured access to the highest decision-making jobs within the Atomic Energy Commission. David Lilienthal became its chairman, and scientists like Robert Oppenheimer and James Conant entered in the General Advisory Committee (GAC) of the AEC. After the failure to push forward the Acheson–Lilienthal plan that proposed to internationalize both nuclear science and technology, they fell back to their earlier proposals of internationalizing “science,” leaving technology under national control. Different proposals illustrated how they drew this boundary between science, which could be put to the international service of humanity, and technology, which would remain under national control.

First, Vannevar Bush (1945) used the Acheson–Lilienthal Report’s rhetoric about the necessity to protect scientists’ freedom to ask for the creation of a National Science Foundation, free from managerial and financial oversight by the Senate. This, of course, raised many eyebrows in Congress. For Bush, scientific freedom ensured the long-term security of the Free World, as it furthered scientific discoveries and technical innovations.

Bush’s rhetoric and proposals were vastly applauded in the ranks of the FAS. The *Bulletin of Atomic Scientists* published many defenses of the National Science Foundation. Authors argued for a decentralized structure, able to further scientific creativity. Michael Polanyi (1949, 1950), the scientist turned epistemologist and economist (close to Friedrich Hayek), who created the Society for Freedom in Science in 1941 to fight against Marxist conceptions of science, wrote many articles in defense of the “coordinative power of freedom in science, which by virtue of several adjustments scientists, maximizes the achievements of science as a whole.” Michael Polanyi defended scientific freedom against socialist economists like Abba Lerner (1949: 15) and Marxist scholars like J. D. Bernal (1949), who defended scientific planning, to prevent science “to be turned into profit-making and war-making activities,” and who wrote that “the freedom of science, like the freedom of commercial enterprise should not be absolute.”²⁶

However, Bush’s plan did not get through Congress, as Senators wanted to make sure that scientific funds would be used for purposes of direct interest to national security. Additionally, many did not see why Congress should create a free-floating national foundation, providing more money for research on behalf of the security of the American population, since the AEC

already funded not only technology development but also research.²⁷ As a result of their opposition, the NSF that was finally created in 1949 was very different from the original plan proposed by Bush, and it included various forms of Congressional oversight on how funds would be allocated.²⁸

Second, from the Chairmanship of the AEC, David Lilienthal pushed different plans to internationalize access to fissile materials produced by the AEC for small-scale laboratory research, which were identified as “science” as opposed to “technology.” Here, his proposal for internationalization was based on the boundary he drew between “science,” which was small-scale, and “technology,” which involved the making of large-scale developmental projects and manufacturing plants. Angela Creager (2006) has provided a detailed study of how the internationalization of fissile materials for medical and research purposes was achieved. Some scientists and lawyers who were disillusioned by the failure of the Baruch plan also reinforced the legitimacy of this boundary between “science” and “technology” as they took up the idea that economists had promoted in the report of the Carnegie Endowment for Peace in 1946. In 1947, seeing that the Acheson-Lilienthal plan was nowhere near producing consensus toward a solution, Harvard President James Conant and another legal scholar from Harvard argued in favor of a moratorium on the construction of large-scale civil nuclear facilities. As they later wrote, “[t]his is justified because it is obviously much easier to *detect* a big atomic industry that is illegal than to *police* a big atomic industry operating legitimately in all countries” (Daniel and Squires 1947: 17). The proposal that the United States should limit itself to purely “scientific” research defined as small-scale science until a non-proliferation agreement was found with the Soviets actually split some of the scientists, like James Conant, who opposed the transformation of science into technology-development, and some of the New Deal administrators, like Lilienthal, who believed that the failure of the Acheson-Lilienthal plan should not mean that nations should refrain from developing peaceful technological applications of nuclear energy. On October 7, 1947, Lilienthal (1963b: 216, 244) wrote about Conant’s proposal in his journal:

Bacher told me about Conant’s proposal, whereby power development is foresworn, and hence does not need to be part of international development and operation, and everyone agrees to raw material international control and limiting themselves to non-dangerous research. [. . .] This morning there is an account of Cavers’s [1947] proposal, along the same line: a prohibition of development of atomic power reactors, and confin[ing] all development to small-scale research. This is trying to put the genie back into the bottle. It is against the whole spirit of science, and as Bob Bacher says, “This is the way of the Middle Ages.”

However, what seemed against the spirit of modern science from Lilienthal’s point of view was a very efficient way to solve the problem of

inspections. By this means, the potential transfer of sovereignty over scientific and technological territories from nation-states to scientists, as planned by the defunct Acheson–Lilienthal Report, was avoided, which was a goal dear to the hearts of economists like Jacob Viner, who had viewed the possibility of such a transfer with sheer horror.

Third, David Lilienthal, as chairman of the AEC, also embraced the distinction between science and technology as he fought to secure the autonomy of science from Congressional oversight during his chairmanship. As the Committee on Un-American Activities began investigating international liberals' loyalty to the nation, many scientists opposed this Congressional interference. Lilienthal fought (successfully) against the loyalty investigations that every recipient of an AEC fellowship was to become subjected to, regardless of how abstract and fundamental his topic was. During this period, scientists also denounced "America's paper curtain" (Shils 1952: 211), a strict visa policy that extended the length of FBI investigations of visiting scientists, and limited the international circulation of scientists and scholars in general. For instance, Michael Polanyi (1952), the Hungarian émigré to Great Britain, and scientist turned epistemologist, who defended the principle of scientific freedom as fundamental for national security, was unable to take up a job he had been offered at the University of Chicago because he was denied an entry visa for the United States; this occurred despite the fact that he was an ardent anti-communist. In these national debates, from 1946 to 1953, two conceptions of sovereignty clashed, with "the protection of the people" and "control of the territory," whose responsibility remained that of the "nation-state," opposing the "protection of population" and "possession of expert knowledge," whose responsibility remained that of those "transnational communities" in charge of "science." The era of such loyalty investigations culminated with the Oppenheimer case in 1954, in which he became the emblematic victim of red-baiting and implicitly anti-Semitic attacks (Bird and Sherwin 2006). In this clash between two contending fictions of sovereignty, the different sides opposed different conceptions of the social qualities which make men of science worthy of the trust reposed in them by the nation. Although McCarthy and Roy Cohn were careful not to attack directly Jewish international liberals and cosmopolitans based on their Jewish identity (Beim and Fine 2007), they played on the implicit identification of many of the scientists as cosmopolitan free-floating individuals, a stigma that anti-Semitic stereotypes previously associated with the Jewish identity (Kaiser 2005).²⁹ Although Oppenheimer was deemed "loyal," he was dismissed from the national security establishment and had to resign his consulting positions in the GAC as a result of being found "a security risk." James Conant and Vannevar Bush testified in defense of Robert Oppenheimer, claiming that if Oppenheimer was trialed, they could all be equally criticized for their defense of the international character of science. Put on the defensive, the scientists tried to make claims to better protect the populations of the Free World against the threats of nuclear proliferation

by re-drawing the boundary between science and technology, which they had subverted in their earlier calls for complete internationalization of the nuclear sector.

Fourth, as the Truman administration pushed forward the creation of a new generation of nuclear weapons (the thermonuclear weapons or H-bombs) after the Soviets exploded their first A-bomb in 1949, Robert Oppenheimer tried to revive the idea of performing a specific kind of diplomacy based on the values of cosmopolitanism and transparency that he and the other authors of the Acheson–Lilienthal report had defended in 1946, and that would be defended by some arms-controllers later (Adler 1992). Even though the notion that American and Soviet scientists could conduct diplomacy differently from the way their politicians and nuclear establishments would seemed to be less credible than ever, scientists did not abandon their faith in these principles. After Truman officially changed the U.S. position in 1949 by declaring that “I am of the opinion that we’ll never obtain international control so we must be stronger in atomic weapons” (cited in Rosenberg 1983: 22), in 1952 Oppenheimer, as the chairman of a panel on the topic of “vertical proliferation,”³⁰ attacked the problem in a way that was consistent with his previous beliefs about the merit of transparency between scientific experts sharing the same “scientific” language. The panel insisted on the importance of “public candor” in order “to facilitate needed restraint.” The panel “recommend[ed] that the number of atomic weapons and bombers, a rough estimate of the rate of U.S. fissile materials production, and [U.S.] estimates of Soviet nuclear threat be released. This is essential, the panel argue[d], to ensure that neither side would be tempted to launch a preventive war” (Sokolsky 2001: 26, 27). The panel also renewed the claim made in the Acheson–Lilienthal Report that the United States and the Soviets should cooperate and manage a common stockpile of fissile material. Lewis Strauss, the incoming Chairman of the AEC in 1953 and the one responsible for setting up Oppenheimer’s trial, did all he could to bury the report. In a final effort to press the solution preferred by scientists, Oppenheimer (1953) made these conclusions public when Eisenhower took office. With Oppenheimer’s trial at the AEC, the scientists who defended the view that the distinction between science and politics, and between international and national undertakings, should be hermetically sealed lost their battle against those who wished to encompass all of nuclear science and technology under the political realm of the nation-state.

The Post-1946 Alliance Between Scientists, Political Scientists, and the Nation-State

After the failure of the Acheson–Lilienthal plan, scientists and administrators, like Oppenheimer and Lilienthal, drew a boundary between science and technology as they tried to maintain some elements of international cooperation, which they considered legitimate in the realm of science. But

other scientists disputed the significance of drawing this boundary, which the Acheson–Lilienthal report had largely undermined. Some of the most fervent defenders of World Government among scientists argued that during the transition period from nation-states to World Government, the United States should leave no zone of exception to their sovereign power and should enroll nuclear science to win the war over the Soviet Union. These scientists saw the development of large-scale accelerators for research on H-bombs as an opportunity to get better instruments for physics (Wigner 1951: 66). For instance, Columbia physicist Harold Urey, a central figure of the FAS, advocated for the subsumption of nuclear science and technology under the sovereign wing of the nation-state and for the further development of the H-bomb program, for which his colleagues Ernest Lawrence and Isidor Rabi had also advocated. In Urey’s argument, such strategies were evils necessary to bring about the constitution of the World Government. Taking the example of the TVA that Lilienthal often liked to use, Urey (1949: 265) wrote that “A great human problem can be solved only by great and glorious ideas. [. . .] TVA succeeded because it reported to a stable government whereas the ADA would have reported to a weak league of states.” As he added, “[t]he World-Government will bring peace and stability by bringing a distinct unbalance of power ensuring that the weaker cannot attack the stronger.” Urey proposed that all nation-states unite themselves behind the United States to form this World Government against the Soviet Union.³¹ Thus, in place of one world, the world would be divided into two, but the giant constituted by the United States and its allies would be so frightening that smaller nations and even the USSR would be deterred from launching any war using the products of nuclear science. Whereas Acheson and Lilienthal had subverted the boundary between science and technology to advocate the complete internationalization of the field of atomic energy, the advocates of the H-bomb crash program subverted the boundary between the two to advocate the complete nationalization of the atomic field.

This reversal further isolated the position of Oppenheimer and Lilienthal (Galison and Bernstein 1989). The scientists most faithful to the Acheson–Lilienthal plan argued that the transition toward World Government could only be pacific (Szilard 1949). They most criticized the idea of preventive war. Sociologist and editor of the FAS’ *Bulletin of the Atomic Scientists* Edward Shils (1949: 35) multiplied attacks against “the preventive war party of a few un-influential fanatics.” Leo Szilard (1949: 171) called nuclear strategists’ calculations “passions, masquerade as rational” and “quixotic rules for a quixotic situation.” But their critiques were overheard among scientists in charge of U.S. nuclear policy. After 1949, “a very great change has taken place in Los Alamos” wrote GAC Chairman Oppenheimer, as Edward Teller and Ernest Lawrence pushed for the development of a fusion bomb from 1950 to 1952 (Heilbron, Seidel, and Wheaton 1981: 62–63).

Meanwhile, political scientists and economists who had remained skeptics of the Acheson–Lilienthal Report continued to bridge the boundary between

science and technology as two essential parts of the national might. Political scientists had migrated to the East Coast Ivy League Universities, first at Yale and then Princeton, in large part because they found the climate at Chicago too much in favor of the World Government approach (Kaplan 1983). Even though they had criticized World Government advocates for their support of what they saw as a support of an un-democratic form of government, they identically blurred the boundary between science and technology by compacting science and technology into a measure of a nation's military might. With other political scientists, Bernard Brodie (1946) tried to institutionalize an intellectual community that could develop into an academic specialty devoted to the study of nuclear security as well as develop relationships with military contracted think tanks like the RAND Corporation, which provided the Air Force with vulnerability studies and cost-effectiveness studies on diverse operational nuclear targeting plans (Kaplan 1983: 13, 21).³²

At RAND and at Princeton's Center of International Studies (CIS), political scientists criticized the engineers and scientists who advocated the doctrine of preemptive war, some of whom worked at RAND,³³ as well as those who, like Oppenheimer, believed that science could be separated from politics in the conduct of diplomacy. Experts in political science, like Bernard Brodie, arrayed themselves against the idea of World Government, the idea of preventive war, which was newly associated with the former, and against the idea of transparency in nuclear diplomacy. Brodie argued that the destructiveness of the new H-bomb was such that a rational war strategy was *not* to bomb cities in one gigantic blow, as Soviet retaliation with a small numbers of bombs would be too devastating for the United States. At RAND, on the West Coast, they met with West Coast nuclear scientists, like Ernest Lawrence, who pushed for the acceleration of research on thermonuclear weapons and opposed Oppenheimer's policy of transparency vis-à-vis the Soviets (Amadac 2003). Bernard Brodie and Albert Wohlstetter's arguments were supported by Edward Teller, who provided them with estimates of the destructive power of his cherished H-bombs for their formalization of deterrence strategies (Kaplan 1983: 79–81). They took advantage of this technological innovation to launch a great offensive against the ideas of preventive war and world government. As fervent believers in the methods of operations research, they believed that the variables affecting the numbers of weapons surviving a first attack on each side created the conditions of deterrence to the extent that they remained secret. The viability of deterrence, or best, "preventive counter-violence," as Hobbes specialist Etienne Balibar (1998: 30) calls it, as a means of protecting the American people from nuclear attack was famously secured by the secret calculations on the number of weapons that ensured a "second strike capability." In their model, the "second strike" capability allowed the United States to deter the Soviet Union from striking in the first place, since it would be utterly destroyed after having attacked (Wohlstetter 1959). Experts developed concepts that helped them to find the optimal equilibrium between decreasing the risk of

nuclear warfare and the number of potential American casualties in the case that deterrence failed.³⁴ Here, they denied the legitimacy of the boundary between a diplomacy based on the values of science, and that based on the traditional political practices of secrecy found in military thinking.

CONCLUSION

The Acheson–Lilienthal plan was almost surely at a dead end at the end of 1946, but it still represented the official policy that Lilienthal and Truman voiced on the international scene, despite constant proof that this policy was not even a distant goal of American policy makers who promoted the acceleration of the enrollment of science and technology for use by the national security state. Between 1946 and 1949, no attempt was made to bridge this disjuncture between policy and practice. As historian David Rosenberg (1983: 8) writes, “the history of overkill is essentially a study in the failure of regulation,”³⁵ which he attributes to Truman’s lack of guidance of the policy process. Truman’s choice of political appointees (like that of Bernard Baruch), and his disregard of the international agreements signed by the United States and the Allies before the end of the war, undermined the logic of the Acheson–Lilienthal plan. Whether this was ignorance on his part or tactical thinking is hard to assess from the historical record. In this context, where formal regulation of policy and actual practice were decoupled, the role of experts on official committees, which were filled with scientists and lawyers, like Oppenheimer and Lilienthal, mattered less than in a situation where formal policy would have been effectively translated into tactics. Instead, the transnational networks of experts in nuclear science who united their forces in the FAS in order to shape U.S. post-war immediate nuclear nonproliferation policy were not afforded the ability to translate their policies into proposals; and those chosen to do so translated their philosophies into opposite directions.

As a result, subsequent proposals for the internationalization of nuclear science limited what could be internationalized to what remained purely “scientific.” The extremely limited amount of internationalization that the U.S. nuclear program achieved during the Truman years was made possible by the distinction drawn by elite nuclear scientists during the war between “science” and “technology.” The symbolic downfall of Oppenheimer in 1954 marked a turning point in the debates on nuclear non-proliferation. Overall, this moment closed the parenthesis in American history during which scientists held positions of power in the administration—a power that was rather ineffective at influencing real politics and real tactics (Grodzins and Rabinowitch 1963), as their promotion of the values of science in international affairs was consistently undermined by those who translated their policies into action. With this period came the end of a utopia in which the

security of populations did not rest on the national sovereignty of states, but on the sovereignty of a global community of experts whose sphere of activity (nuclear energy) escaped the jurisdiction of the state. The European Community of Atomic Energy (Euratom), dreamt of since 1949 by American experts (among whom John McCloy and James Conant were central players as U.S. representatives in West Germany) and European politicians (like Jean Monnet), offered an indirect transcription of certain aspects of the Acheson–Lilienthal philosophy of “international cooperative development,” which influenced one thread of thinking about nuclear proliferation in the subsequent Eisenhower years (Mallard 2009). But here, again, the dream of a democratic and supranational scientific community would be forcefully challenged by political reality.

At the opposite side of these developments, political scientists and scientists who treated science as a measure of national military power successfully institutionalized their “realist” vision of the international order, which negated the possibility of thinking about the protection of peoples outside of the sovereign mantle of the nation-state. Political scientists criticized the Acheson–Lilienthal plan not because it blurred the distinction between science and technology, but because they saw the supranationalism of scientists as a deviation from the liberal conceptions of modern democracy. After the Acheson–Lilienthal plan failed, they still concentrated their criticism against those who tried to distinguish between science and technology, and between scientific and traditional forms of diplomacy. The influence of those who participated in the 1946 Committee of the Carnegie Endowment for International Peace was felt after Eisenhower’s ascendance to power. With his proposal to set up the IAEA on purely international (rather than supranational) grounds, Eisenhower endorsed the logic that science and technology could not be separated from the nation’s jurisdiction, but were instead measures of a nation’s military power. Eisenhower and the new AEC Chairman, Lewis Strauss, viewed the IAEA as a way to level the playing field in the international competition to sell nuclear reactors under guarantees of minimal security. Their proposal was meant to generate more profits for the AEC, which in turn would fund the United States’ doubling efforts in nuclear military technology development and missile development. By asking the Soviets to contribute to the IAEA’s stockpile of nuclear materials, they also sought to deviate some of the Soviet nuclear materials from their planned military uses. If Eisenhower favored internationalization of nuclear science and technology, he did not feel constrained, as scientists like Oppenheimer felt, to separate science from technology, because his goals were opposite to those defended by Oppenheimer and his followers. For him, internationalization was the way to increase national financial and military power.

The distinctions that were drawn between science and non-science and the bridges that were built in these debates explain why discussions about

forms of rational insurance, which constitute the field that Foucault (2004) and others (Collier Lakoff and Rabinow 2003) call “bio-security” or “bio-politics,” were related to legal reformulations of sovereignty, two fields which these authors deemed separate. By drawing differently the boundaries between the fields of science, technology, and politics, scientists and politicians could therefore alternatively situate their analyses in this “hidden juncture where the juridico-institutional model of sovereignty and the bio-political model of power” (Agamben 2001: 4) meet.

NOTES

1. This chapter develops a perspective common in science studies, which analyzes how experts draw boundaries between different fields of jurisdiction (Jasanoff 1987; Abbott 1988), and how these cultural patterns that distinguish science from non-science (Gieryn 1999; Lamont and Molnár 2002) participate in the production of claims of political expertise.
2. To that extent, nuclear non-proliferation policies such as the Baruch plan involved the very definition of a new sovereign, who, according to the classical definition given by Carl Schmitt (1922/1988:13, 4) is the one who “has the monopoly of the decision that a normal situation exists,” the sovereign being the one “who decides on the exception.” See also Benjamin (1921/2000); Arendt (1951); Agamben (2001). It is therefore necessary to treat the issues raised by these debates as dealing with the question of sovereignty, and not only in the simple terms of global governance (or governmentality, as defined by Foucault (1991) and others (Collier, Lakoff and Rabinow 2004) a field of discourse independent from that of sovereignty). Whereas the neo-institutionalists, the “Stanford school” of science studies (Meyer et al. 1997, Drori et al. 2003), tend to show that transnational communities of experts who operate in a globalized world society reinforce the legitimacy of the nation-state, conceived as it was in Western thought as the most rational form of government and the ultimate locus of sovereignty, the period and actors under study multiply on the contrary a series of challenges against the legitimacy of the nation-state, specifically its power to decide on the exception.
3. The nineteenth century grammar of sovereignty was based on the triad “people, territory, nation-state” under the nineteenth century dominance of the national definition of popular sovereignty (Arendt 1951; Foucault 2004).
4. In this debate, “international liberals” (Isaacson and Thomas 1986), who sponsored the formation of international organizations, were not simply opposed to unilateralists, who opposed any commitment to international organizations on the part of their nation-state: rather, experts drew more subtle boundaries between adequate forms of international organizations—the IADA or the IAEA—which exemplified diverse legitimate forms of sovereignty and different understandings of science.
5. This article actually violated an existing agreement on military patents between the British and the Free Frenchmen—the so-called “Canadians”—who had contracted with the British that their work, first in the Cavendish laboratory (Cambridge, U.K.), then in Montreal, would ensure the recognition of French patents in the post-war period.
6. These Agreements were supplemented by measures designed to ensure the post-war Anglo-American atomic monopoly on nuclear raw materials through

the Combined Development Trust, established in June 1944, as a corollary body to the Combined Policy Committee. The scientific elite believed that they could ensure the control of nuclear energy by maintaining a cartel on access to raw materials.

7. For instance, after his meeting with the President in September 1944, Niels Bohr was placed under surveillance (Norris 2003). Bohr also met the British Prime Minister on May 16, 1944, but he completely failed to convince an annoyed Churchill: "Churchill simply scratched on this memorandum: 'I do not agree.'"; see Norris (2003).
8. MET was the code-name for "metallurgical," in reference to nuclear scientists' activities on the first nuclear pile that became critical in Chicago.
9. On June 17, 1945, Robert Oppenheimer finished the final top-secret "Recommendations for the use of nuclear weapons," in which the decisions had been made by both civilian and scientists on the Interim Committee that Japan would be bombed "at the earliest possible date" (Isaacson and Thomas 1986: 293). The only member of the Interim Committee who did not agree with the bombing of Japan was actually John McCloy, the Assistant Secretary of War, who would co-sign the Acheson-Lilienthal report a year after his participation.
10. The TVA symbolized a successful technocratic path toward modernity, industrialism and energy production which could be proposed as a peaceful developmental alternative to both socialism and unregulated capitalism. Various attempts to internationalize this successful experiment were tried after the war, like the "Marshall Plan," which Dean Acheson co-authored in many ways, and which was, for instance, often lauded or decried as a "European TVA" both by fans and critics. From 1946 to 1950, Lilienthal became the first Chairman of the AEC, whose role in energy development he conceived along similar lines to the role of the TVA.
11. Acheson was, in 1946, "still considered, by himself and others, a traditional liberal, one of the Frankfurter-New Deal crowd that believed strongly in both America's global role and the need for good relations with Russia" (Isaacson and Thomas 1986: 322).
12. After General Eisenhower's victory at the presidential elections of 1953, John McCloy would have succeeded to Dean Acheson as Secretary of State, if his involvement in the Roosevelt and Truman's presidencies had not prevented his candidacy from being rejected by McCarthy's mobilization in Congress (Bird 1992).
13. Oppenheimer's conclusions were signed by 297 of the 300 scientists to whom he circulated it. Roosevelt's former Vice-President, and then Secretary of Commerce, Henri Wallace, ensured Oppenheimer of his full support, as well as Secretary of War Stimson, who widely circulated the document in the State Department and White House (Bird and Sherwin 2006: 325).
14. The scientific elite was however divided between the scientists from the East Coast, like Robert Oppenheimer, and those from the West Coast, who, like Lawrence and his associates, remained faithful to their war-time alliance with General Groves and the military.
15. Even critics of the Baruch Plan, such as Secretary of Commerce Henry A. Wallace (1946), criticized Baruch on behalf of the Lilienthal report, hence condemning not the whole plan but deviations from the original.
16. In this case, the "zone of exclusion," the park made of the territories of nuclear science, where scientists would live and work, and which would not be subjected to the same rules as other territories, is invested with promises of security, in contrast with the negative examples discussed by Agamben (2001).

17. Lilienthal thought that Soviet and American scientists could reign over their field, collaborating in good intelligence to ensure the security of humanity without the biases introduced by dividing ideologies—Marxism versus liberalism, for instance. As phrased by Lilienthal (1963a: 4), it cannot be the “system” but “the men who operate the system,” which ensures the security of populations. He wrote that “man is not made for blueprints, Great Plans, of Final Solutions.”
18. That was the solution advocated by the report prepared by the subcommittee on atomic energy of the Carnegie Endowment of International Peace, as presented afterwards.
19. This idea was defended by Columbia physicist Isidor Rabi, at the Carnegie Endowment for international peace (see Shotwell 1946a, 1946c); or in the United Nations Atomic Energy Commission (1947: 276–277). One of the main concerns expressed by Senators during Congressional hearings on atomic energy is to avoid a “surprise attack,” which Senators associate with the specter of Pearl Harbor.
20. Scientists rarely defined this notion of “freedom.” Some (Shils 1949; Szilard 1949) refer to a “Lockean understanding of freedom,” to insist on the autonomy from the state that scientists must fight for.
21. A *coup* that promoters of the World Government like Urey (1946) meant to enlarge to other fields, where the nation-state traditionally reigned.
22. The Baruch papers at Princeton University Mudd Library contain all transcripts of the debates at the Carnegie Endowment for International Peace.
23. It also gave a very important role to the legal committee, in charge of ensuring the adequacy of the report with the existing international law embodied by the new UN statutes, where the sovereignty of the nation-state is strongly affirmed. In contrast, for an example of Lilienthal’s lack of concern for the expertise brought by the social and political sciences, see Lilienthal (1963b: 112). James Conant originally sat in the Carnegie Endowment Committee, but once he was nominated at the Board of Consultant, he stopped active consideration and found a role as a mediator between both committees.
24. Jasper (1990) shows that in the end, neo-classical economists win over the optimism of the “technological enthusiasts” in the United States, and stop the growth of the U.S. nuclear sector.
25. Romantic in the sense of Schmitt (1928), i.e., a philosophy assuming that man’s original being is good, and that laws should be built along with the desire to respect this original being (be it defined in mythical or historical terms).
26. See also Condon (1946).
27. The AEC was by far the most important funding agency in physics and in related disciplines (Forman 1987).
28. Criticisms against the IADA used some similar arguments. Against Lilienthal who praised the merits of the model for the IADA, the TVA, Groves criticized the TVA for being “essentially a new-dealer do-gooder organization with no regard for the American taxpayer” (Norris 2003).
29. Six years before, during his own confirmation hearings in 1947, Lilienthal (1963b: 146) noticed that “anti-Semitism as part of the opposition began to be somewhat clearer in Congress. There is also the march of 20,000 “fundamentalists” on their radio station in Knoxville, by crass hysteria [*sic*] preachers.”
30. Vertical proliferation concerns the quantity of nuclear weapons accumulated by one country whereas horizontal proliferation concerns the quantity of countries getting a nuclear weapon.
31. The World Government perspective was dominating in the community of experts on nuclear proliferation. Licklider (1971) finds that even in 1964, more

- than 60% of the experts believes it is the only viable long-term solution—most of the dissenters being political scientists.
32. At the end of the 1940s, Jacob Viner, Bernard Brodie, and Klaus Knorr moved to Princeton's Center for International Studies (Kaplan 1983: 188–189).
 33. For instance, a high-ranking operations researcher at RAND said, for instance, that “[t]he formation of a supra-federal government, a stronger sorority than the United Nations, powerful enough to command respect to all nations, can only be attained by bringing physically and politically the USSR back to a primeval state at any time we choose” (James Lipp, 1947, quoted in May 1998: 41–65).
 34. For instance, the concept of “counter-force,” developed by Brodie and Wohlstetter, aimed at accomplishing such a miracle. As a strategy, counter-force proposes that, in case a nuclear exchange breaks out, cities and populations of the adversary should be avoided, in anticipation that the rival will limit in return the escalation to the nuclear destruction of military forces (Kaplan 1983: 91). According to their conception of the sovereign power, political scientists had no problem thinking that the security of the “people” might be reached at the expense of the security of some quantity of its “population,” as famously Herman Kahn (1961: 96) famously popularized their strategy.
 35. By “overkill” he means that, from 1945 to 1953, the American nuclear capabilities increased from 0 to approximately 1,000, and reached 18,000 weapons in 1960.

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