

Atoms for Peace
By Leonard Weiss

Did the 50-year-old Atoms for Peace program accelerate nuclear weapons proliferation? The jury has been in for some time on this question, and the answer is yes.

The character of the Atoms for Peace program and the political decisions that shaped it have been the subject of numerous books and scholarly papers. But many popular narratives of the program begin with Dwight Eisenhower's famous December 1953 "Atoms for Peace" speech at the United Nations, giving the impression that the program as we know it and its consequences were the logical result of the proposals contained in the speech. This ignores the political context of the speech, as well as the history of earlier thought on peaceful nuclear activities following the bombing of Hiroshima and Nagasaki.

Not only did the execution of the Atoms for Peace program essentially ignore the basic idea in Eisenhower's speech, but the program also went down a path that experts had predicted would lead to proliferation. Understanding the historical background of the speech is vital to explaining why.

Truman's message to Congress

In 1945, in the aftermath of the first wartime use of nuclear weapons, discussions about the future of nuclear weapons intensified within the U.S. government. Secretary of War Henry Stimson believed that the post-war relationship between the United States and the Soviet Union depended largely on how the United States handled the question of the bomb. At a cabinet meeting, Stimson advocated sharing information about the peaceful uses of nuclear energy with the Soviets, on the grounds that the basic knowledge needed to make the bomb would not remain secret for long. Undersecretary of State Dean Acheson supported Stimson's idea; Secretary of the Navy James Forrestal opposed it.

In a post-meeting memo to President Harry Truman, Acheson argued that joint development of the bomb by the United States, Britain, and Canada would appear to the Soviets as "unanswerable evidence of an Anglo-American combination against them"

and that they would act vigorously to restore the power imbalance—especially if the United States tried to maintain “a policy of exclusion.” [1] Elements of this debate were reflected in an October 3, 1945 message from Truman to Congress that put in motion ideas that ultimately led to the Atomic Energy Act of 1946 (the McMahon Act).

Truman’s notable message contains the first official presidential reference to peaceful use of nuclear energy and its future control. In a prescient preview of the Nuclear Non-Proliferation Treaty (NPT), which would not come into being for another 25 years, he said: “The hope of civilization lies in international arrangements looking, if possible, to the renunciation of the use and development of the atomic bomb, and directing and encouraging the use of atomic energy and all future scientific information toward peaceful and humanitarian ends.”

Truman then proposed initiating “discussions with Great Britain and Canada, and then with other nations [including, presumably, the Soviet Union], in an effort to effect agreement on the conditions under which cooperation might replace rivalry in the field of atomic power.” He emphasized that the discussions would not involve weapons manufacturing information, but rather “the terms under which international collaboration and exchange of scientific information might safely proceed.”

Truman also proposed creating a U.S. Atomic Energy Commission (AEC) to direct nuclear research and to establish control over the basic materials essential to the development of nuclear energy, peaceful or otherwise. The AEC was “to interfere as little as possible with private research and private enterprise.”

Truman’s message came at a time when the United States had a monopoly on nuclear weapons as well as a head start on nuclear development. His subsequent meetings with the prime ministers of Britain and Canada resulted in the Agreed Declaration of November 15, 1945, which called for international control of nuclear energy; the signers believed that neither countermeasures nor secrecy provided adequate defense from the bomb’s revolutionary destructiveness. Truman was prepared to negotiate with the Soviets as well, but Secretary of State James Byrnes did not favor dealing directly with the Soviets and latched onto a proposal by Vannevar Bush, one of the organizers of the bomb effort, to have the United Nations be the forum in which the future of the bomb would be debated. At a meeting in Moscow, the Soviets agreed to help create a U.N. commission on atomic energy.

The Acheson-Lilienthal report

To craft U.S. policy proposals for submission to the U.N. commission, Byrnes asked Acheson to chair a committee, which consisted of Bush, James Conant, John McCloy, and Leslie Groves. Acheson appointed a board of consultants to work out the details of the proposals. The board was chaired by David Lilienthal, former head of the Tennessee Valley Authority, and included Robert Oppenheimer, former scientific director of the Manhattan Project.

After six weeks of intensive work, on March 16, 1946, the board presented the committee with a 57-page policy report on the international control of atomic energy. What has come to be known as the Acheson-Lilienthal report contained some startling

conclusions about nuclear development and the risk of nuclear proliferation. The board determined that the pursuit of atomic energy and the pursuit of atomic bombs were in large part interchangeable and interdependent, and that because of global rivalries, an international inspections regime based on good faith was doomed to fail.

“We have concluded unanimously that there is no prospect of security against atomic warfare in a system of international agreements to outlaw such weapons controlled only by a system which relies on inspection and similar police-like methods,” wrote the board. “National rivalries in the development of atomic energy readily convertible to destructive purposes are the heart of the difficulty. . . . A system of inspection superimposed on *an otherwise uncontrolled exploitation of atomic energy by national governments* will not be an adequate safeguard.” [2] Despite this, the report endorsed international cooperation instead of an outright ban on nuclear weapons.

The Baruch plan

On the day the report was presented to Byrnes, Acheson learned that Truman had asked Wall Street speculator and large campaign contributor Bernard Baruch to sell the report to the rest of the world. Baruch, who had a famously monumental ego, decided to make significant changes and promote the plan as his own. In particular, Baruch scuttled the notion of international ownership of the means of production of nuclear materials because it was not in keeping with the American free enterprise system. He also added two provisions that proved fatal: one on veto-proof sanctions (“swift and sure penalties”) for violations, and another declaring that America would not relinquish its atomic bombs (which, in June 1946, numbered nine) until firm guarantees were in place that no other nation could arm itself nuclearly. Moreover, the United States would be allowed to continue to manufacture nuclear weapons until the negotiated guarantees were in place and effective. When asked by Truman what sanctions he had in mind, Baruch said he meant “war.” [3]

Truman was hesitant to accept the changes to the Acheson-Lilienthal plan but acquiesced after Baruch threatened to quit.

On June 14, 1946, at the opening session of the U.N. Atomic Energy Commission at Hunter College in the Bronx, Baruch set forth his version of the plan with the famous opening words, “We are here to make a choice between the quick and the dead.” What was “dead” at that point were the prospects for acceptance by the Soviets.

The Soviets countered with their own proposal, which would have outlawed the use and production of nuclear weapons and called for the destruction of all existing nuclear weapons. As the Cold War intensified, the Soviets further proposed that the atomic question be dealt with only within the framework of general disarmament negotiations.

Baruch didn’t want to negotiate and forced a vote at the end of the year. Unsurprisingly, the Baruch plan was approved by the U.N. Atomic Energy Commission, with only the Soviet Union and Poland abstaining. But it was then killed by a Soviet veto in the Security Council.

Truman later confessed to Acheson that choosing Baruch “was the worst mistake I ever

made.” Acheson described Baruch’s performance pithily: “It was his ball and he balled it up.” [4]

That ended the possibility of any U.S-Soviet cooperation on nuclear matters at that point. There was little likelihood of an alternate outcome.

About a month after Baruch presented his plan, Congress enacted the McMahon Act, which created the U.S. Atomic Energy Commission and the Joint Committee on Atomic Energy (JCAE) and made secrecy and the non-sharing of nuclear information official U.S. policy.

Everything concerning atomic energy, from uranium ore to nuclear fuel, was to come under the authority of, and remain the property of, the AEC. Secrecy was to be maintained and the death penalty prescribed for passing secrets to a foreign power. The law was crafted to keep the U.S. nuclear monopoly intact and to give the United States an edge in the development of nuclear technology by denying it to others. By giving the JCAE the power of authorization and by shielding its deliberations from public view, the law essentially put the entire nuclear enterprise into the hands of one congressional committee and the five AEC commissioners, who also met behind closed doors. Supporters of an open private-sector role in nuclear development were not happy with the new law, which was characterized by Connecticut Republican Cong. Clare Booth Luce as something that “might have been written by the most ardent Soviet commissar.” [5]

Toward the industrial atom

David Lilienthal was named the first chairman of the AEC. Although the AEC’s priority was making weapons, Lilienthal appointed an Industrial Advisory Group, and the AEC began a nuclear power research program.

Los Alamos, Oak Ridge, and Argonne Laboratories started work on test reactors, focusing both on nuclear weapons and power. In 1947 Congress authorized work on a nuclear submarine and a nuclear-powered airplane. (The latter literally never got off the ground. The project died after it was suggested that the weight of shielding would be prohibitive and that the problem might be solved by using only pilots who would die of old age before they succumbed to radiation poisoning.)

At Oak Ridge, a pressurized-water reactor designed by Alvin Weinberg and Eugene Wigner, using ordinary water as a moderator and a coolant, was developed to power the first nuclear submarine, the U.S.S. *Nautilus*. This and the later-developed boiling-water reactor contained the basic engineering ideas upon which the U.S. nuclear power program was built. Serious political issues surrounded the start of the program.

Industrial America’s dislike of the AEC monopoly on the development of nuclear technology became increasingly profound as hype expanded in the print media about the future glories of nuclear power. (Autos would run for a year on a vitamin-sized nuclear pellet; electricity would be too cheap to meter.) Government control was raised as an issue in the 1948 presidential campaign by Republican candidate Thomas E. Dewey; after Dewey lost, the Industrial Advisory Group of the AEC took up the issue and

recommended that the government share nuclear information with the private sector. Lilienthal agreed, and Congress relaxed some of the McMahon Act's stringent secrecy rules.

The companies involved in the weapons program, including Westinghouse, GE, Monsanto, and Union Carbide, were anxious to transform their technical nuclear experience into commercial enterprise. Their champion was Lewis Strauss, who, after taking the reins of the AEC a few months after Eisenhower's inauguration in 1953, brokered a joint project between Westinghouse and Duquesne Lighting to build a small power reactor at Shippingport, Pennsylvania. The application for the plant was filed with the AEC in July 1953.

At the same time, other nuclear nations were developing their own plans for power plants. The Soviets were on the verge of operating the first civilian nuclear energy station, and the British were building a 100-megawatt plant they thought could be the prototype for a commercial station.

Concern was rising in the Eisenhower administration and in Congress that the United States was lagging behind in the race to demonstrate the first commercial nuclear plant and to take the lead in marketing nuclear energy. But national security was Eisenhower's highest priority at that point, and he was more worried about the nuclear arms race than about nuclear power.

A report prepared during the last year of the Truman administration would play a pivotal role in Eisenhower's decisions on the atom.

Operation Candor

The U.S. nuclear weapons monopoly had ended and an arms race had begun on August 29, 1949, when the Soviets successfully tested their own fission weapon. The Defense Department and the JCAE proposed major expansions of fissionable-material production facilities. Truman discussed these ideas at the White House in January 1952 with Dean Acheson (now secretary of state), Gordon Dean (chairman of the AEC), and Secretary of Defense Robert Lovett. When Dean questioned whether the size of the expansion was justified, Lovett replied that excess fissionable materials or components produced that were not needed for weapons could be used for peaceful purposes. Truman asked Dean if it was true "that the nuclear components could be converted to civilian use." [6] Dean said it was true, marking perhaps the first recorded instance of a U.S. president discussing the possibility of converting nuclear weapons material to peaceful uses.

As the U.S. and Soviet nuclear stockpiles began to grow rapidly, so too did concerns about the possibility that the Soviets could deliver a "knockout blow" to the United States—a nuclear strike that would wipe out the U.S. industrial base and retaliation capabilities. In April 1952, Acheson established an advisory committee headed by Robert Oppenheimer to look for new approaches to nuclear disarmament or control. The Oppenheimer Panel filed its report on January 15, 1953, shortly before Eisenhower was inaugurated as president.

The report concluded that the large increases in production of fissile material had made it virtually impossible to verify any nuclear disarmament agreement because of uncertainty in accounting for all the material that had been produced.

Seeing no immediate avenue to verifiable nuclear disarmament, the Oppenheimer committee warned that there was significant danger of a Soviet knockout-blow capability within a few years, and that until the United States had sufficiently robust defensive and offensive capabilities, the danger would persist. But the committee also felt that efforts to end the arms race were important and that the public would support those efforts if people were told of the dangers they faced.

The committee issued three main recommendations: to publicly discuss the coming crisis; to release information on the U.S. arsenal and weapons production in order to inform the public and to dissuade the Soviets from thinking that they might already have a knockout-blow capability; and to begin negotiations with the Soviets on arms control measures to limit stockpiles and delivery vehicles.

White House Assistant for International Affairs C. D. Jackson, whose main job was as Eisenhower's speechwriter and purveyor of ideas on scoring propaganda points against the Soviet bloc, was asked to produce a presidential address on the panel's ideas, which Jackson dubbed Operation Candor. Working with the State Department, Jackson had completed a few drafts when the first Soviet test of a thermonuclear weapon was announced on August 12, 1953, just nine months after the first U.S. test.

This galvanized opponents of Operation Candor, who ultimately included members of Eisenhower's cabinet and Lewis Strauss, who had recently become chairman of the AEC. They feared that a candid description of the danger faced by the American people from nuclear weapons would increase anxiety without providing a solution. There was also opposition from the Joint Chiefs, who were concerned that any discussions of arms limitation might be an impediment to their push for a larger military budget based on the so-called "New Look" that involved greater reliance by the military on nuclear weapons.

Even Eisenhower found Jackson's early drafts, rife with visions of global nuclear destruction, empty of the notion of "hope." [7] Aware of the power of public opinion, Eisenhower wanted something that would calm the growing nuclear fears in the wake of the Soviet thermonuclear test.

The uranium bank

The following month, in a deft move that avoided political pitfalls, Eisenhower had the idea of a "uranium bank." Both the Soviet Union and the United States would set aside, for peaceful purposes, agreed amounts of fissile materials from their weapon stockpiles. The bank would be administered by a new international entity, the "Atomic Energy Agency." At the time, people thought that the amount of uranium worldwide was extremely limited, and Eisenhower believed a bank could decrease the threat of nuclear war by reducing weapon stockpiles—that there was, in essence, a zero-sum game between uranium for peaceful purposes and for weapons.

In his diary, Eisenhower wrote: “The United States could unquestionably afford to reduce its atomic stockpile by two or three times the amounts that the Russians might contribute . . . and still improve our relative position in the Cold War and even in the event of the outbreak of war.” [8] He suggested to Strauss that they come up with an amount of material to be turned over to the bank that the United States could readily remove from its stockpile “but which would be difficult for the Soviets to match.” [9] No such figure was ever proposed, mainly because there was no reliable intelligence on Soviet production—and it became increasingly clear that there was much more uranium in the world than originally thought.

Eisenhower’s bank proposal of September 1953 was worked on over the next three months by a group of advisers that included Jackson, Strauss, and Secretary of State John Foster Dulles. Eisenhower’s notion of an Atomic Energy Agency lacked details as to exactly how a uranium bank program would be carried out. Such an agency, Eisenhower believed, would devise methods to allocate contributed uranium for peaceful purposes like agriculture, medicine, and especially “to provide abundant electrical energy in the power-starved areas of the world.” It did not preclude a role for the private sector, but seemed to suggest that this agency would control the pace and direction of peaceful nuclear activities carried out in a substantial part of the world. This was definitely not the vision of the nuclear industry.

The speech

The bank idea was the genesis of Eisenhower’s Atoms for Peace speech. At its core, the speech was an arms control proposal that had the twin virtues of not requiring inspections of the Soviets and of being a great propaganda initiative that showed the U.S. desire for the peaceful atom. If the Soviets rejected the idea, it would have presumably labeled them as uninterested in nuclear arms control. But the Soviets applauded Eisenhower’s speech, and adroitly and indirectly rejected his plan by putting their own spin on it, pointing out that Eisenhower did not propose to outlaw nuclear weapons, as they had.

That Eisenhower’s proposal was intended as an arms control measure is supported by an entry in his diary made two days after the speech, in which he wrote that the underlying reason for the speech was “the clear conviction that the world was racing toward catastrophe” and that something had to be done to put a brake on this movement. [10]

There is no question that Eisenhower’s proposal presented an intrinsically attractive vision in a world worried about atoms for war. But the global outpouring of support for Atoms for Peace following the speech was at least partially due to an extensive and effective public relations campaign organized by Jackson. U.S. businesses sent out hundreds of thousands of pamphlets of the speech, printed in 10 languages. U.S. and foreign media were inundated with information and advertising; the U.S. Information Agency and Voice of America gave their highest level of coverage to the speech.

The PR campaign was so successful that it eclipsed the fact that the speech included a long qualitative and semi-quantitative description of the power of the U.S. nuclear arsenal: “Today, the United States’ stockpile of atomic weapons, which, of course, increases daily, exceeds by many times the explosive equivalent of the total of all

bombs and all shells that came from every plane and every gun in every theater of war in all of the years of World War II.” Although Operation Candor had been abandoned, Eisenhower managed to bluntly assess the destructive capability of the U.S. arsenal and at the same time send the message to the Soviets about American power.

Not a uranium bank

Despite popular support for Atoms for Peace, the proposal languished. The wary Soviets believed the uranium bank was a propaganda tool. Four months after the speech, Soviet Foreign Minister Vyacheslav Molotov delivered a note to Dulles in Geneva that essentially concluded that because plutonium was a byproduct of nuclear power, the plan for peaceful uses of nuclear energy would not reduce the amount of fissile material available for nuclear weapons.

Media hype created considerable political momentum in America for an Atoms for Peace program. Many people already thought that nuclear power stations were imminent, and Congress wanted to respond to the euphoria generated by prospects of the peaceful atom. However, reflecting the views of Lewis Strauss, the nascent nuclear industry, and general Republican philosophy, neither Congress nor the White House wanted the government to be the owner of the commercial-sized reactors that were being contemplated. Accordingly, if large-scale commercial nuclear applications were to become a reality, the limited nuclear technology information sharing already going on would have to be significantly expanded.

To reduce nuclear secrecy, the McMahon Act was amended via the 1954 Atomic Energy Act. Doing so implemented a different view of Atoms for Peace than Eisenhower’s speech endorsed. Nuclear materials and data relating to civil applications could now be transferred to friendly countries directly via cooperative agreements entered into and approved by the AEC. These agreements carried with them the right of the United States to verify that the transferred materials were being used for peaceful purposes. The 1954 act also promoted domestic commercial nuclear power by allowing utilities to finance, build, and own nuclear plants and to use fuel provided by the AEC; the act also barred the government from selling power generated by its research and military reactors.

Eisenhower deserves credit for his call to promote peaceful uses of the atom—his speech galvanized the public debate over control of nuclear development. But the Atoms for Peace program as the world has come to know it is not the uranium bank he proposed. It is instead a collection of agreements on bilateral technical cooperation and information exchange, backed up by a safeguards system that ultimately became the domain of the International Atomic Energy Agency (IAEA) after its creation by the United Nations in 1957.

Many in the U.S. government and private industry saw Atoms for Peace as the umbrella under which a U.S.-dominated world nuclear market would be realized. Under the program, the United States signed cooperative agreements with numerous countries that resulted in the sales of research reactors and the participation of foreign nuclear scientists and engineers in U.S.-approved nuclear research projects. Many nuclear scientists in countries that eventually became of proliferation concern received training

in nuclear technology in the United States, or with U.S. funding. The first country to sign an agreement was Turkey; the second was Israel.

Proliferation consequences

Following the passage of the 1954 act, the United States proposed a U.N. Conference on the Peaceful Uses of Atomic Energy. It took place in Geneva in August 1955, and was the largest scientific meeting ever held, with an estimated 25,000 participants. The atmosphere was euphoric, and much previously secret information was shared. French scientists revealed the process of plutonium extraction; the United States declassified significant amounts of data and technology for the meeting, which was presided over by Homi Bhabha, the “father” of India’s future nuclear weapons program.

In bilateral discussions before the conference, the Soviets had agreed to support the creation of an Atomic Energy Agency, and even pledged to contribute a small amount of fissile material to it. [11] But they had no intention of digging deeply into their stockpile of fissile material to make the bank anything other than a symbolic shell. They used the meeting to announce their cooperation in forming the agency.

The countries interested in the agency met in 1956 in Geneva, and the organization’s statutes were, after a month of rancorous debate, adopted in the fall of that year. The IAEA, now officially named, was to have powers of safeguards and inspection.

One of the main points of contention during the negotiations had to do with whether the IAEA would have the power to control plutonium stocks by fixing the amount each country could keep for safeguarded civil uses. The United States favored this; India and the Soviet Union opposed it. The eventual compromise basically gave the Indians and the Soviets what they wanted—complete retention of all the plutonium made in their countries.

Another issue was whether safeguards and inspections would apply to natural as well as enriched uranium. The United States supported these safeguards; India didn’t, and India prevailed.

Thus, the world ended up with a system in which each nation is free to have its own nuclear program and to receive nuclear assistance subject to inspections and material accounting—precisely the system that the Acheson-Lilienthal report said would fail to prevent proliferation. Many, if not all, of the subsequent additions to the nonproliferation regime, including the NPT, the Nuclear Supplier Agreements, the upgrading of IAEA safeguards, and the passage of export control legislation, have been needed “fixes.”

There is no doubt that peaceful nuclear technology has produced significant benefits. But the Faustian bargain spoken of by former Oak Ridge Director Alvin Weinberg still exists. The spread of nuclear weapons to dangerous and unstable areas of the world, and possibly to terrorists, is a cost of unfathomable dimensions. It was only a matter of time before power-hungry or threatened states—and now non-state actors—would seek to obtain such weapons.

Although this suggests the inevitability of proliferation, it is legitimate to ask whether Atoms for Peace has accelerated proliferation by helping some nations achieve more advanced arsenals earlier than would have otherwise been the case. The jury has been in for some time on this question, and the answer is yes.

India's nuclear weapons program, spurred by security concerns over China, was surely speeded by three factors: the participation of more than a thousand Indian scientists from 1955–1974 in U.S. nuclear energy research projects; the sale of U.S. heavy water to India in the 1960s, which was used subsequently in an unsafeguarded Canadian reactor that produced plutonium for India's first nuclear explosion; and U.S. assistance in building and fueling the Tarapur reactors. [12]

As Homi Sethna, chairman of the Indian Atomic Energy Commission from 1972–1983, once wrote: "I can say with confidence that the initial cooperation agreement itself has been the bedrock on which our nuclear program has been built." [13]

Although Israel received its nuclear weapons production facilities from France in a conscious act of proliferation, the historical record of the Israeli program reveals that their chief weapons scientist, David Bergmann, initially contemplated using the Atoms for Peace program to provide Israel with a reactor that could be modified to produce plutonium for a weapons research program. [14] There is no reason to believe that similar plans to misuse Atoms for Peace did not occur to other countries.

Pakistan's nuclear program began in the mid-1950s in response to the Atoms for Peace initiative. One need look no further than the examples of Iran and Iraq to find members of the NPT who have evidently used their membership to receive from a number of countries, including the United States, nuclear technology and materials that are useful in creating a nuclear weapons program or capability.

The world has paid a price for the early euphoric embrace of Atoms for Peace, when the spread of nuclear technology was unaccompanied by adequate consideration of proliferation risks. The subsequent proliferation shocks have had the salutary effect of producing support for strengthened safeguards and intrusive inspections, and in creating stronger regimes for controlling the spread of other weapon-related technologies.

But one lesson from this experience has been learned incompletely—at least by those who still harbor the notion that the NPT requires nuclear weapon states to share technology for producing separated fissile material with non-weapon states. That is that although the pace of the spread of new technology is affected by policy decisions, by the same token, policy decisions can be driven by the availability of technology. This is what the Acheson-Lilienthal report meant when it spoke of states being tempted to consider making nuclear weapons if they had a national nuclear energy program.

Nowhere is this more starkly illustrated than in a letter written immediately following the August 1955 Geneva conference by Amos de Shalit, one of Israel's top nuclear physicists, to Munya Mardor, then-head of Israel's research and planning at the Ministry of Defense. The letter commented negatively on David Bergmann's plan to hide Israel's quest for separated plutonium within a benign-looking interest in nuclear experimentation using a U.S. reactor that might be obtained under the Atoms for Peace program. The letter stated:

“We should forget about submitting a plan which does not indicate the real purposes. Practically all the people with whom we talked were fully aware of the problem of plutonium, and it is evident that the issue cannot be snuck in through talk about fissile products, power plants, etc. I do not think that there is anyone among the responsible individuals in the United States who would believe that a state which was in possession of a large-scale plutonium separation capacity, and which would have the objective capabilities of doing so, would not exploit its knowledge for military purposes or at least conduct experiments in that direction. For this reason it should be clear that to the extent that we would be allowed or helped in research involving plutonium separation, it would mean that we were being actively helped in nuclear weapons research.” [15]

Ironically, even though Eisenhower’s original uranium bank idea did not come to fruition, the current nuclear weapons dismantlement programs between the United States and Russia have the potential to realize his vision by converting at least some weapons materials into fuel for civilian reactors.

The ultimate extension of Eisenhower’s vision would be a world in which nuclear energy is used only for peaceful purposes. The world may have to wait a long time before Atoms for Peace has reached its zenith.

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