# Science Advice in the White House

## The genesis of the President's Science Advisers and the National Science Foundation.

Detlev W. Bronk

There are reasons for hope that the recent precarious role of science and scientists in the national government may be redefined and strengthened by President Ford and congressional acts. There may again be an agency within the White House through which scientists will be able to participate in formulating laws and national policies that involve scientific considerations. Accordingly, it is timely and of especial interest to recall the origins of two closely related institutions that have had profound influence on national policies and on the development of science in this country during the past 25 years: the President's Science Adviser and his Science Advisory Committee, and the National Science Foundation.

1950–1951 was a remarkable period. It was the beginning of 12 years during which there was strong support of science by Presidents Truman, Eisenhower, and Kennedy. Science flourished in all branches of the government. Vannevar Bush was still the vigorous, wise creator and catalyst of scientific institutions.

The historic achievements of the Office of Scientific Research and Development (OSRD) during World War II had left a heritage of scientists and respect for science in the Department of Defense. Each of the services was developing an agency for science and technology with civilian advisory committees, such as the Office of Naval Research and the Naval Research Advisory Committee. Over all was the Research and Development Board (RDB) that had recently been created by Bush. The Korean War was a reminder of the military importance of science.

The Atomic Energy Commission was firmly established and was beginning to support much research in universities as well as within the Commission.

Supplementing the postdoctoral fellowships which they had provided for 30 years, the National Academy of Sciences and the National Research Council conducted the first country-wide program of fellowships for graduate study in the sciences with financial assistance from The Rockefeller Foundation at first and then the Atomic Energy Commission. The Academy and Research Council were at the start of a new era of unprecedented initiative in the development of science within universities and executive agencies of the federal government.

The National Science Foundation (NSF) was created in the spring of 1950 by Act of Congress after 5 years of discussion regarding its role and structure.

### Truman Seeks Advice

Early in the autumn of 1950 I received this letter from David Stowe, Administrative Assistant to President Truman:

> At the request of the President a review of scientific research of military significance and of the organization of the Government for promotion of scientific activities generally is being undertaken by Mr. William T. Golden who is serving for the purpose as a Special Consultant to the Director of the Bureau of the Budget.
>
> Mr. Golden wishes the benefit of an informal discussion with you and will communicate with you. . . . This study is important to the Government and your assistance will be greatly appreciated.

William Golden was an investment banker with a lively interest in science; now he is widely known and appreciated among scientists as treasurer of the American Association for the Advancement of Science and as trustee of many scientific institutions. During 1946–1949 he had been assistant to Atomic Energy Commissioner Lewis Strauss. It was that experience and the wide contacts with scientists and government officials he thus formed that fitted him for the study conducted for Truman.

In my first meeting with Golden, he said that his study would deal with the organization of scientific research and development within the government and the interrelationship of such agencies as the Research and Development Board of the Department of Defense, the National Science Foundation which was about to be activated, and whatever agency was to be responsible for those functions which had been performed by the Office of Scientific Research and Development during World War II. He described those organizations as "the three segments of my study."

We discussed the general dissatisfaction with the Research and Development Board which was then being investigated by a review committee of which James Killian was chairman. Golden and I agreed that the National Science Foundation, whose board was soon to have its first meeting, "should confine its activities entirely to non-military matters" except perhaps in time of war. Golden asked what I thought about the plan he was formulating for the establishment of a Scientific Adviser to the President whose functions would be "to keep fully informed on all major scientific research and development activities of a military character in all Government agencies so engaged." Should the Adviser be supplemented by an Advisory Committee? Who did I think would be a suitable Science Adviser to the President?

Although those were Golden's primary concerns, he asked discerning questions about the National Academy of Sciences and its National Research Council; he was enthusiastic about our plans for vitalizing them and their relations to all agencies of government.

The author, currently president emeritus of Rockefeller University, New York 10021, was, during the period about which he is writing, president of Johns Hopkins University, president of the National Academy of Sciences, and chairman of the executive committee of the National Science Board.

During the 6 months before and after that conversation, Golden had discussions with 165 scientists and engineers from universities, industries, and government and with nonscientific government officials. He thus heard a broad spectrum of opinions regarding the National Academy of Sciences, the Research and Development Board, the National Science Foundation, the proposed Scientific Adviser to the President, the interrelations among these institutions, and their several roles in the government.

As 1950 drew to a close, Golden was assured that he had widespread support for his proposal that there be appointed a President's Science Adviser. He had the unanimous approval of the Killian committee that was reviewing the Research and Development Board.

Accordingly, Golden sent to President Truman a memorandum: "Mobilizing science for war; a Scientific Adviser to the President." The memorandum recommended prompt appointment of an outstanding scientific leader as Science Adviser to the President. His functions would be:

a) To inform himself and keep informed on all scientific research and development programs of military significance within the several independent Government departments so engaged.

b) To plan for and stand ready promptly to initiate a civilian Scientific Research Agency, roughly comparable to the Office of Scientific Research and Development (OSRD) of World War II.

c) To be available to give the President independent and comprehensive advice on scientific matters inside and outside the Government, particularly those of military significance.

Before 2 weeks had gone by, unexpected opposition to Golden's proposals developed within the newly created National Science Board of the National Science Foundation.

### National Science Board

The National Science Foundation was established by Act of Congress in May 1950. The Act had the unusual provision that the ultimate power to disburse funds made available each year by Congress was lodged in a National Science Board composed of citizens appointed by the President and confirmed by the Senate. Because of this unprecedented power, the White House under the leadership of John Steelman, Assistant to the President, solicited advice widely as to the composition of the Board with regard to scientific competence; university, industrial, or political affiliation; religious, racial, and geographical representation.

The first meeting of the National Science Board was finally held during December in the Cabinet Room of the White House; the presidents of Harvard, Wisconsin, and Johns Hopkins—Conant, Fred, and Bronk—were elected chairman, vice-chairman, and chairman of the executive committee, respectively. In the course of the meeting, the President greeted each member of the Board, then asked, "What have you fellows and Sophie Aberle been talking about?" Conant replied that we had been discussing possible directors of the Foundation whom we would then recommend to him. With a smile, Truman said, "That should be easy, someone who can get along with me." He then went on for 10 or 15 minutes discussing his hopes for the Foundation, what it could, should, and should not do. He ended, "You may have trouble getting money out of those fellows over in Congress. I will help."

A month later the Board met again. Its purpose was to consider the post of director, but the discussion soon turned to Golden's recent recommendation to the President. DuBridge and I had been members of the Killian committee that had unanimously supported the proposal to create a Science Adviser to the President. We were dismayed to hear a majority of our fellow members on the Board strongly oppose the proposal.

In reporting this to the Bureau of the Budget, Conant told of the Board's concern that the appointment of a Science Adviser to the President with an Advisory Committee would lower the status of the Foundation and obstruct its congressional appropriations.

This conflict between the National Science Board and the proponents of a Science Adviser to the President with a Science Advisory Committee caused much concern in scientific and government circles. William Webster, chairman of the Research and Development Board, was especially vehement in his criticism of the National Science Board's objection, which he described as typical of "scientists' vacillation and naivete." This was unjustified because most of the members of the National Science Board had not been involved in discussions with Golden preceding his recommendations. Their desire that the Foundation take an active part in furthering military science was indeed supported by the NSF Act of 1950 which states that the Foundation's duty is "to secure the national defense" as well as "to promote the progress of science; to advance the national health, prosperity, and welfare; and for other purposes."

The conflict was soon resolved, but the role of the National Science Foundation in military science and its relation to the Department of Defense was again an issue a year later, as it has been recently. Congressman Wolverton, who had been a member of the committee that sponsored the NSF Act, wrote to the acting director of the Office of Defense Mobilization (ODM): "It is my recollection that the principal function of the Foundation relates to adequate coordination and stimulation of scientific matters relating to the national defense." And so he asked, "What is this new Science Advisory Committee, how does it differ from the NSF and why cannot NSF act in the advisory capacity of this new committee?" The ODM replied that "there is no overlapping of functions . . . coordination with the activities of the NSF is assured by the appointment of four members of the NSB and the Director of the NSF to this new Science Advisory Committee."

Conant, DuBridge, and I continued to urge our colleagues on the National Science Board to concentrate the Foundation's initial activities on basic research and on a fellowship program. We were aided by a lengthy "Memorandum on Program for the National Science Foundation" that was prepared by Golden and sent through the director of the Bureau of the Budget to all members of the National Science Board. It began:

It is well to reiterate the preeminent need from a long term viewpoint, for advancing basic scientific knowledge. To promote such activities is the primary purpose of the National Science Foundation. To this end provision is being made for a representative of the NSF to be a member of the newly created Advisory Committee on Defense Scientific Research. This latter committee located within the ODM and reporting to the Defense Mobilizer and to the President will serve as a focus in the mobilization program for the representation of the scientific community and further will serve as the central point for knowledge of the Government as a whole in scientific research and development of military significance. Membership of the committee will consist of ex officio representatives of the appropriate governmental agencies plus a

representative selection of distinguished scientists at large.

It may be worth repeating that in accordance with the spirit of the Act, as well as the judgment of substantially all scientists with whom I have discussed the question, the National Science Foundation should confine its activities to furthering basic scientific studies and that it should not dilute its effectiveness by supporting studies of directly military or other applied character. To do so would seriously impair the long-term mission of the National Science Foundation without materially contributing to the war effort, since such work can better be done by other agencies. In the long run, of course, additions to basic scientific knowledge will contribute, as previously indicated, to both the wartime and peacetime strength of the country; but short-term results are not to be looked for.

The question of appropriations to the National Science Foundation is important but will not become a matter for immediate consideration until the Board itself analyzes its undertakings and prepares a recommended program for the near-term and long-term future. As a matter of interest, the Act as passed authorized direct appropriations not to exceed $500,000 for the FY [fiscal year] ending June 30, 1951, and not to exceed $15 million for each FY thereafter."

At its February meeting, the Board agreed that the Foundation should not become involved in military research; opposition to the appointment of a Science Adviser to the President was dropped.

After a few months of lengthy deliberations by the Board, Conant reported to Congress that

> one of the purposes of the National Science Foundation is to provide in every section of the country educational and research facilities which will assist the development of scientific pioneers. . . . There must be all over the United States intense efforts to discover latent scientific talent and provide for its adequate development. This means strengthening many institutions which have not developed their full potentialities as scientific centers, it means assisting promising young men and women who have completed their college education but require postgraduate training in order to become leaders in science and engineering. To this end a fellowship program has been placed high on the list of priorities of the National Science Board. . . . Measured solely in terms of a contribution to national defense in a period of lengthy partial mobilization, I, for one, have no question but that the money will be well spent.

On 6 April the President appointed Alan Waterman, formerly deputy chief and chief scientist of the Office of Naval Research, first director of the Foundation.

## Search for a Science Adviser

Activation of the Golden report was delayed by the process of choosing and gaining the acceptance of a Science Adviser to the President. It was a difficult, critical position to fill. Bush wisely commented that the value of the post turned on who the man was, who was the President, and how they got along together. Conant thought that an advisory committee would be better because it was unlikely that a man with a sufficient range of competence could be found.

During 6 months of conversations with more than 150 persons, Golden had been asking who should be the Adviser. The range of suggestions he discussed with me was remarkable for its diversity, and for the widely conflicting judgments on personal qualifications. Only DuBridge and Mervin Kelly were generally approved. But DuBridge would not leave the presidency of Cal Tech and Kelly was committed to Bell Telephone Laboratories, of which he was soon to become president. Conant's preference for an advisory committee was slowly gaining favor.

During Golden's search he conferred with General Lucius Clay, assistant director of Defense Mobilization. Clay stated flatly that he did not like the title Scientific Adviser to the President and that the adviser and his committee should be located in the Office of Defense Mobilization and that the adviser should be called "Assistant to the Director of ODM for Scientific Matters." This was a step down from Golden's concept of a Presidential Adviser which he had been urging for 6 months and which had received wide support. General Clay had sufficient influence to prevail.

The concept of Science Adviser to the President was retained in part. In the draft of a letter that was to be sent by the President to the still-to-be-chosen chairman of an "Advisory Committee on Defense Scientific Research," the President said that he would welcome the recommendations of the committee and would call upon it for advice from time to time. The committee was to include the president of the National Academy of Sciences, the chairman of the Research and Development Board, the chairman of the Inter-Departmental Committee on Scientific Research and Development, the director of the National Science Foundation, and also a number of eminent scientists and engineers.

This new proposal for an Advisory Committee on Defense Scientific Research with a full-time chairman was approved by Bush who thought it "far better than a single Scientific Adviser." Alfred Loomis, who had been one of the leaders of National Defense Research Committee, also thought that it would be desirable to have the functions that were to have been those of a Science Adviser to the President placed in the Office of Defense Mobilization although "university scientists might prefer the prestige of a presidential appointment."

During the weeks following General Clay's suggestion that a Committee on Defense Scientific Research and its chairman be placed in the Office of Defense Mobilization, the search for the Adviser continued. After Kelly declined the President's appointment, Oliver Buckley, who was Kelly's superior, and was soon to retire as president of Bell Laboratories, was widely discussed. Buckley was an able administrator, a highly respected scientist who had been active in the Office of Scientific Research and Development, was a member of the General Advisory Committee of the Atomic Energy Commission, and had been offered the post of chairman of the Research and Development Board following Karl Compton's resignation. After much deliberation he finally agreed to serve although he insisted that he be designated chairman of the Science Advisory Committee of ODM, a title he preferred to that proposed by Golden.

Late in April Truman appointed Buckley and a committee comprising Waterman, Webster and Bronk as representatives of the National Science Foundation, the Research and Development Board, and the National Academy of Sciences, as well as Conant, Dryden, DuBridge, Killian, Robert Loeb, Oppenheimer, and Charles Thomas. In his letter of appointment, the President stressed the role of the chairman and members of the committee as *advisers to himself* as well as to the director of the Office of Defense Mobilization (ODM) "in the achievement of continued progress in scientific research and development. The successful performance of the Committee's functions can be of great value to this country, both during this period of emergency and in future years."

## The ODM Science Advisory Committee

The Science Advisory Committee convened in May 1951; throughout the year Buckley was chairman it met each month, usually with full attendance. From its beginning the chairman proposed that the Committee be "advisory, not operating; have no budgetary responsibilities; work with and through existing agencies; avoid fanfare and minimize public appearances." Having thus defined the Committee's principles, it was not surprising that Buckley should have written to the members: "By its structure and location, the contribution of the Committee is limited largely to policy and other general matters. It cannot be relied on as the principal source of imaginative, technical leadership in the Government."

With characteristic but perhaps too great modesty, the chairman looked to the members of the Committee for initiative in bringing matters to the Committee's attention. In consideration of problems which came to him, he leaned heavily on the advice of the members and especially on the four Washington members of the Committee: the president of the National Academy of Sciences, the director of the National Science Foundation, and the chairmen of the Research and Development Board and the Interdepartmental Committee on Scientific Research and Development. This was consistent with his wise policy of strengthening existing agencies by bringing them into effective relations with the Executive Office of the White House through the Science Advisory Committee.

At the end of the first year Buckley reported to the President:

> Since the Committee is composed of members with a great diversity of ties to other government agencies as well as to scientific and educational institutions outside the Government, its meetings have proved to be an excellent focus for interchange of views and development of opinion. It is in this way that the Committee has principally been effective [in providing relations between scientists and the federal government].
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> It has been an added privilege of the Chairman to serve as a member of the staff of the Director of the ODM, and in this capacity a variety of tasks have been performed.
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> With informal operations of this type, the Committee has exercised a helpful influence in scientific affairs without interfering with other agencies in the conduct of their normal functions which we have been endeavoring to facilitate.

Because of these principles of working through existing agencies and avoiding publicity, it was widely thought and still said that the committee was "useful, but of little effectiveness, a status that was not overcome by Buckley's successors." With that I cannot agree. Coming soon after the notable success of the Office of Scientific Research and Development, the Science Advisory Committee suffered by contrast, but throughout 5 years it had an important role in nurturing science within the government.

At the end of the first year in June 1952, Buckley resigned because of a growing illness which was ultimately fatal. He was succeeded by DuBridge as part-time chairman.

Soon after the change in leadership the committee spent three long days at the Institute for Advanced Study as guests of Robert Oppenheimer in a searching, informal discussion of the urgent problems that confronted the scientific community. After critically debating whether there was need for the committee and after appraising its value to science and the government, it was decided that the committee should be continued because it provided a useful deliberative group that could be briefed on projects that were wider in scope than any existing service or agency. However, because the Office of Defense Mobilization was primarily concerned with production and controls, it was not considered a suitable home for the committee. It was suggested

Science Advisory Committee, Office of Defense Mobilization. Seated (left to right): Arthur S. Fleming (director, Office of Defense Mobilization), President Dwight D. Eisenhower, Lee A. DuBridge (chairman), and Isidor I. Rabi. Standing (left to right): Emanuel R. Piore, Oliver E. Buckley, Alan T. Waterman, James B. Fisk, Detlev W. Bronk, Bruce S. Old, James R. Killian, David Z. Beckler, Robert F. Bacher, Jerrold R. Zacharias, and Charles C. Lauritsen.

that the committee would be more useful to the President if it were attached more closely to him. It could thus provide for the National Security Council scientific assessments of situations involved in decisions the President was required to make. The suggestion was not accepted.

The committee continued in the Office of Defense Mobilization for another 5 years. Nevertheless, it had increasingly direct and personal relations with President Eisenhower, who had a lively interest in furthering science as a major element in the conduct of government. Once when I told him of scientists' appreciation for his understanding and support, he reminded me that he was a graduate of the first school of engineering in the country; he liked to think of himself as one of us.

DuBridge was chairman of the Science Advisory Committee throughout 4 years; he was followed by I. I. Rabi for somewhat more than a year. Because of their wide range of interests and competence, the scope of the committee's activities widened. The agendas and minutes of its meetings during those years recount how scientists were learning to play their proper role in government.

I am reminded, for instance, that our chairman told the President through the director of the Office of Defense Mobilization:

> We are seriously concerned that the operations of the Office of Science Adviser in the State Department are in some danger of being reduced to the point of ineffectiveness. . . . We feel that scientific liaison with friendly countries is essential to well rounded cultural relations. We hope that a way can be found for the Secretary of State to recognize this, support the office and the scientific attaches in our embassies abroad.

During a time when there were alarmist attacks on the loyalty of scientists, DuBridge protested to Vice President Nixon that the committee

> was seriously concerned that the extensive security and loyalty review programs carried on by many agencies of the Federal Government were being carried to extremes that involve costs and dangers to national security far greater than are warranted . . . those attacks are reducing the availability of key scientists for important posts in the Government."

DuBridge added that not one single American scientist of the thousands engaged in security programs during the past 15 years had been convicted or seriously accused of espionage or treason.

In a letter to Killian, I find evidence of Eisenhower's deep interest in the Committee's activities:

> I understand that you have been asked by the Science Advisory Committee of the ODM to direct a study of the country's technological capabilities to meet some of its current problems. This project grew out of suggestions which I made to the SAC and I am naturally very keenly interested in it. The results will be of great value to the Government. Accordingly, I hope very much that you will find it possible to free yourself of your many other heavy responsibilities for a period long enough to undertake this important assignment, and that others whom you choose to be members of your staff will also be able to devote time to the work."

This is not the place for a further account of the many important and timely activities of the Science Advisory Committee nor of the wise guidance by David Beckler its executive secretary.

But it should be emphasized that scientists for the first time had effective contact with the Executive Office of the President. And had it not been for the continued existence of the Science Advisory Committee, it would not have been available for transformation into the President's Science Advisory Committee with a Science Adviser to the President.

### International Geophysical Year

One of the greatest cooperative endeavors ever undertaken by scientists from many nations was a program of planned research during the International Geophysical Year (IGY) of July 1957–December 1958. Under the general direction of the Special Committee for the IGY (CSAGI) of the International Council of Scientific Unions, a wide diversity of research was initiated in many fields and places including the Antarctic, the ionosphere, and space. The United States was represented by the National Academy of Sciences; the National Science Foundation provided much of the financial support.

At a meeting of CSAGI in Rome during October 1954, a resolution was adopted recommending that "in view of the advanced state of rocket techniques . . . thought should be given to the launching of small satellite vehicles" during the IGY. The Soviet Union and the United States supported the proposal.

The U.S. National Committee for the IGY that had been organized by the Academy promptly recommended that the U.S. initiate a scientific satellite program. The Eisenhower administration enthusiastically agreed to support the project and directed the National Science Foundation to provide the necessary funding. The Defense Department was made responsible for providing the rocketry needed to place a satellite in orbit, but without interfering with the top priority ballistic missile program.

By the following summer, plans for our satellite program were sufficiently advanced to justify a public announcement. At the White House in July 1955, President Eisenhower, together with representatives of NAS and NSF, reported that "plans are going forward for the launching of small, unmanned, earth-circling satellites as part of the United States participation in the International Geophysical Year. Data that is collected will be made available to all scientists throughout the world."

Because the development and launching of the satellite vehicle (Vanguard) had been assigned to the Naval Research Laboratory, there was controversy and friction with the Army and Air Force. And Secretary of Defense Charles Wilson did not give the program enthusiastic support. On the occasion of a meeting of the National Security Council, he saw Waterman and me outside the Cabinet Room and told us that he was going to recommend that the program, which he considered a "scientific boondoggle," be abolished. When Wilson made his proposal, Eisenhower asked me what I thought would be the international reaction to our cancellation of the satellite program. I replied, "It was your decision, Mr. President, to announce our program at a press conference in the White House. Cancellation of the program within a year will bring much criticism from scientists throughout the world." After a moment of thought, the President announced that the program would be doubled: 12 Vanguards instead of 6.

Early in October 1957 a week-long, international conference on rockets and satellites, sponsored by CSAGI, was held at the National Academy of Sciences. Lloyd Berkner presided. Among the social events was a cocktail party at the Soviet Embassy on the last evening. During the party a correspondent of the *New York Times* drew Lloyd Berkner and Hugh Odishaw of our commit-

tee aside and whispered, "I have just had a call from our New York office saying that a cable from Moscow reports that the Russians put a satellite in orbit about an hour ago." Berkner quickly stood on a chair, tapped on a glass for silence, then announced to our Russian hosts and their hundred guests that Russia had put a satellite in orbit for the first time in history. There was awed surprise, "then all hell broke loose."

The final session at the Academy next morning was quite different from the series of routine resolutions that had been planned. There was much excited discussion of how the Russian feat would affect the future of the IGY satellite program and why had the Russians kept their plan secret. Finally it came time for me to bid our guests farewell "at a time when I can congratulate our Russian colleagues and our sister Academy of Sciences of the U.S.S.R. on their great achievement of yesterday." I went on:

> Friendly competition as well as cooperation is a stimulus to achievement in scientific endeavor as in other forms of human effort. Because scientists are human, they naturally wish to be the first to achieve success in a scientific undertaking to which they are committed. But because scientists are humane explorers on the frontiers of knowledge, they rejoice in new discoveries made by their colleagues.

There was little rejoicing in the country at large. Some belittled the Russian achievement as did an admiral who was connected with the Vanguard project: "Why all the excitement? They have only fired a hunk of iron into the sky. Anyone can do that." Which we were still to do. And the press aroused widespread fear of Sputnik as a military threat and symbol of their scientific superiority. Only President Eisenhower and most scientists approved my cablegram to the president of the Russian Academy: "This is a brilliant contribution to the furtherance of science for which scientists everywhere will be grateful."

On the following Tuesday afternoon Sherman Adams, Assistant to the President, called me at the Academy: Would I come over to the White House to discuss with the President, Press Secretary Hagerty, and himself what Eisenhower should say at his press conference next day about satellites and security.

The President began by saying that he was not surprised that the Russians had failed, in characteristic fashion, to reveal their plans despite the IGY agreement to do so. But he was surprised by the ungenerous attitude of so many Americans and our press. He recalled how grateful we were to English scientists for the discovery of penicillin and how much it meant to his troops in World War II. We recalled his remark in connection with the opening of the IGY: "The most important result of the IGY is the demonstration of the ability of peoples of all nations to work together harmoniously for the common good." And so we decided that his remarks to the press should begin: "We congratulate Russian scientists upon having put their satellite into orbit." He concluded: "Our satellite program has never been considered as a race with other nations. . . . We are carrying the program forward in keeping with our arrangements with the international scientific community."

After his statement to the press was agreed on, Eisenhower turned to a discussion of the sudden, irrational furor over the status of American versus Russian science. He again recalled the discovery of penicillin. "I heard no one complain that the English achievement belittled the quality of science in America." What could be done by other than words, he asked, to assure the country that American science was indeed vigorous and was respected and supported at the highest levels of government. That led to the role of the Science Advisory Committee of the Office of Defense Mobilization. I told him of Golden's original proposal that there be a full-time Science Adviser to the President supported by an advisory committee of eminent scientists, both located within the White House. I urged him to consult at once with Rabi, the chairman of the Science Advisory Committee, develop closer relations with the committee, and give to the public assurance that it was indeed a committee advisory to himself. All this he did, and much more with the wise advice of Rabi and the committee.

A month later in a broadcast entitled "Science and national security," Eisenhower said:

> I have made sure that the very best thought and advice that the scientific community can supply, heretofore provided to me on an informal basis, will now be fully organized and formalized so that no gap can occur. The purpose is to make it possible for me, personally, whenever there appears to be any unnecessary delay in our development system, to act promptly and decisively.
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> To that end, I have created a new office called the office of Special Assistant to the President for Science and Technology. This man, who will be aided by a staff of scientists and a strong Advisory Group of outstanding experts reporting to him and to me, will have the active responsibility of helping me follow through on the program of scientific improvement of our defenses.
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> I am glad to be able to tell you that this position has been accepted by Dr. James R. Killian, President of the Massachusetts Institute of Technology. He is a man who holds my confidence, and enjoys the confidence of his colleagues in the scientific and engineering world, and in the government. . . .
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> "In conclusion, although I am now stressing the influence of science on defense, I am not forgetting that there is much more to science than its function in strengthening our defense, and much more to our defense than the part played by science. The peaceful contributions of science—to healing, to enriching life, to freeing the spirit—these are the most important products of the conquest of nature's secrets. And as to our security, the spiritual powers of a nation—its underlying religious faith, its self-reliance, its capacity for intelligent sacrifice—these are the most important stones in any defense structure.

Seven years had passed since William Golden recommended to Truman that he appoint a Science Adviser to himself and a Presidential Science Advisory Committee.