Science in the News

Making Science a Vital Force in Foreign Policy

Following are excerpts from an address by James R. Killian, Jr., chairman of the Corporation of the Massachusetts Institute of Technology, given at the Silver Stein Award Dinner of the M.I.T. Club of New York, 13 December 1960.

Because of the need to give penetrating and realistic attention to every aspect of foreign policy, there is justification for examining such a specialized facet of world affairs as the impact of science on foreign policy.

That this impact is great hardly needs discussion. Science and technology together are constantly creating new conditions with which foreign policy must deal. Out of technology has come the revolution in warfare imposed by nuclear weapons and ballistic missile delivery systems. Out of it have come the political, social, and economic changes induced by the growing ease and speed of communication and transportation, leaving no nation isolated. The 'revolution of rising expectations' is in large part engendered by the power of technology to improve health and living standards and the growing awareness in underdeveloped countries of this benign power. It is engendered, too, by the recent demonstrations that technology is mobile, that the sophisticated technology of the West under favorable conditions can be quickly copied by countries of less sophistication.

Finally there is the acceleration in change itself generated by science, a factor which has introduced a wholly new order of dynamics into foreign affairs. These comprehensive ways in which science and technology alter the relations among peoples must be taken into consideration if we are to shape our foreign policy wisely. . . .

Prestige and Cooperation in Space

Since World War II the status-seekers in the community of nations have relied increasingly on science and technology to build their prestige. The Soviets especially have used technology as an instrument of propaganda and power politics, as illustrated by their great and successful efforts—and careful political timing—in space exploration. They have sought constantly to present spectacular accomplishments in space technology as an index of national strength, and too often the press and the public at large have interpreted these spectacular exploits as indices of strength.

It must be admitted that spectacular accomplishments in space technology have enhanced the prestige of the Soviet Union, and we can all admire their achievements. But their expensive emphasis on space exploration will not be enough in the long pull to sustain an image of strength. This will only be accomplished by a balanced effort in science and technology. True strength and lasting prestige will come from the richness, variety, and depth of a nation's total program and from an outpouring of great discoveries and creative accomplishments on a wide front by its scientists and engineers.

These observations are by way of introduction to some of my personal views and questions regarding the U.S. space program, which so often is discussed in terms of its propaganda values and so frequently evaluated in terms of a space race with the Soviets.

I believe that in space exploration, as in all other fields that we choose to go into, we must never be content to be second best, but I do not believe that this requires us to engage in a prestige race with the Soviets. We should pursue our own objectives in space science and exploration and not let the Soviets choose them for us by our copying what they do. We should insist on a space program that is in balance with our other vital endeavors in science and technology and that does not rob them because they currently are less spectacular. In the long run we can weaken our science and technology and lower our international prestige by frantically indulging in unnecessary competition and prestige-motivated projects. So far our space program has been well planned and remarkably successful; by concentrating on scientific discovery and on such practical technological objectives as improved weather forecasting and communications, we have exploited our own special genius and proceeded in the great tradition of American science and technology.

Today, however, the pressures are very great to engage in an item-by-item race with the Soviets. Our man-in-space program is the principal victim of these pressures, and it is certain to present some difficult policy questions in the near future. It may be argued that the appeal of space exploration by man is so great that nothing will deter his engaging in manned exploration. It also may be argued that our man-in-space program is trying to proceed too fast and that it is on the way to becoming excessively extravagant and will be justified only as a competitor for world prestige with the Soviet man-in-space program. Many thoughtful citizens are convinced that the really exciting discoveries in space can be realized better by instruments than by man.

Decisions must soon be made as to how far we go with our man-in-space program and the future scale of our total space efforts. Unless decisions result in containing our development of man-in-space systems and big rocket boosters, we will soon have committed ourselves to a multibillion-dollar space program. I have never seen any public statement estimating the costs of the successive generations of big boosters for man-in-space or for the other parts of the program. How many billions of dollars will they cost over the next decade or more? How much is it likely to cost to orbit a man about the earth, to achieve a manned circumnavigation of the moon, or a lunar landing? The public should have some feel for the magnitudes involved. However much they may cost, we may decide we must spend the money, but we should make this decision with a clear understanding of the startling costs entailed. We should not permit ourselves to slide unwittingly past a point of no return or to make the commitment without comparing its desirability with alternative expenditures.

The American people must face these questions as they seek to achieve a desirable balancing of our total national effort, particularly in the use of our scientists and engineers. I do not oppose a man-in-space program. I ask that

we give the public a better opportunity to understand and to debate the rate at which we proceed. They must seek to determine whether we are now proceeding too rapidly and whether we can manage the present program without weakening other important national programs, including defense. They must face up to the tough decision as to whether we can justify billions of dollars for man-in-space when our educational system is so inadequately supported—whether our system of values assigns greater importance to this kind of exploratory activity or to the development of intellectual quality. Will several billion dollars a year additional for enhancing the quality of education not do more for the future of the United States and its position in the world than several billion dollars a year additional for man-in-space? The image of America may be shaped by the quality of its inner life more than by its exploits in outer space. . . .

Let me next discuss the great importance of voluntary international cooperation in science, and let me start by recounting a specific policy question that came before our Department of State two years ago. Should the United States support a United Nations space research program?

Despite their advocacy of international cooperation in space research, many informed American scientists felt it would be undesirable for the United Nations Committee on the Peaceful Uses of Outer Space to undertake space research and exploration, and they strongly urged that we not support a charter for the committee that would call for this kind of operational responsibility at this time. They were led to this position by the great success of the International Geophysical Year, which was conducted not by a political body such as the United Nations, but by a private, nonpolitical, nongovernment organization, the International Congress of Scientific Unions. The conviction was strongly held that international cooperation in space research and exploration could best be encouraged and coordinated by the Space Committee (COSPAR) of this volunteer private federation. This position prevailed in the United Nations, and its Committee on the Peaceful Uses of Outer Space was limited in its responsibility to the study of the regulatory and legal aspects of space, the exchange and dissemination of information on outer space, and the encouragement of space science.

So far this seems to have been a wise position. COSPAR does not have to face political issues and as a result, its scientist members, including the representatives of the Soviet Union, have come together in the context of a true scientific conference to reach agreements—without much more display of differences than can be expected in international scientific meetings.

Political scientists may well question—and some have—the desirability of thus by-passing an international political organization in furthering international cooperation. Is it not going to be ultimately necessary, they ask, to learn how to make the political organization effective in such matters? This is a legitimate question, but this case history of the Committee on the Peaceful Uses of Outer Space is illustrative of the impact of scientific views and experience on foreign affairs, and so far the scientists are supported by the unmistakable evidence that international groups of scientists seem able to achieve cooperation of great importance when they are free of political entanglements and can act freely with the tropism toward cooperation which is traditional among scientists. So far the U.N. Committee has been boycotted by the Soviets, who have raised questions of parity in East-West membership and who have insisted on a Russian being chairman. We have urged a chairman from a neutral country. Proposals are now under consideration in the United Nations for an international conference on the peaceful uses of outer space. In my judgment such a conference is greatly to be desired.

Factors in Foreign Policy

Let me present an eleven-point program for enhancing the contributions of science and engineering to the formulation of sound foreign policy and to Free World strength.

1) Recognize and stress the contributions which science can make to peace and encourage scientific activities abroad—as, for example, the betterment of health, the improvement of agriculture, and basic research—which are manifestly peaceful and benign.

2) Encourage more of the IGY type of programs which are managed by nonpolitical, private scientific organizations.

3) Encourage more international conferences such as the Conference on the Peaceful Uses of Atomic Energy. Specifically support the proposed U.N. conferences on the peaceful uses of outer space and on technical aid.

4) Despite aggravations and difficulties, continue to encourage exchange of scientific personnel between East and West. Reduce petty restrictions on scientists invited to the United States.

5) Undertake periodically a thorough review of our technical aid policies and programs to insure that they are well adapted to the countries they are intended to help. Seek the advice of knowledgeable scientists and engineers in conducting these reviews and strive for programs which bring the benefits of science in all its phases to less-favored countries.

6) Provide in Washington a mechanism for coordinating research programs and other scientific activities which government agencies sponsor abroad and make sure that our ambassadors have the opportunity, in each country where such work is conducted, to coordinate it locally.

7) Widen the role of the science adviser to the Secretary of State and continue to build strength in the corps of science attachés. Give this science adviser a role to play in strengthening the competence of the State Department to deal with the technical aspects of arms limitation. Support the continuation of NATO's science advisory services.

8) Encourage regional programs to strengthen science not only in Europe but in other parts of the world. Science lends itself well to international efforts. CERN is an example.

9) Encourage international efforts to develop more engineer-managers or project engineers who can direct the successful development of intricate engineering systems, who can deal with new orders of reliability, who can bring wisdom and social foresight to the difficult task of handling technological change so that it benefits and does not hurt people, and who can mobilize technology with this in mind to increase productivity.

10) Do not misuse science and technology by distorting them for propaganda purposes. We will build greater prestige in the long run by insuring the quality, vigor, and integrity of our science and technology. We gain prestige by being better in more areas.

11) Encourage more scientists and engineers to prepare themselves for foreign service and for advisory and administrative responsibilities in government. Encourage universities to establish programs to educate scientists having this orientation. . . .