US scientists, increasingly involved in national policy either as government advisers or as private proponents of public policies they believe ought to be adopted, are essentially human beings. Their political counsel cannot be considered Olympian, but must be examined in the cold light of logic. For in the world of politics, away from the facts of the laboratory, they think—as do the rest of us—with passion...

SCIENTISTS, POLITICS, AND THE BOMB

By Herman S. Wolk

... The emergence of scientists into the mainstream of American political life is one of the great events of American history.

Six days after the atomic bomb had been released over Hiroshima, the United States government made public a general administrative and technical history of the secret atomic bomb project. Prepared by Dr. Henry D. Smyth of Princeton University, the report emphasized that the questions posed by the new atomic age were "not technical questions; they are political and social questions, and the answer given to them may affect all mankind for generations. ..." (quoted in Richard C. Hewlett and Oscar E. Anderson, Jr., The New World 1939/1946, Pennsylvania State University Press, 1962, xi). Events of the past seventeen years have proved Dr. Smyth's observation.

The years since Hiroshima have been cataclysmic ones. The world has witnessed the inception of the cold war, the Berlin Airlift, the triumph of Chinese communism, the Korean conflict, the transition from the atomic to the hydrogen age, the death of Stalin, the Hungarian Revolution, and the dawn of the space age, along with a new era of weapons technology. Most serious students of mankind agree, however, that central to the world situation today are two overpowering elements: the cold war between communism and freedom, and the stark weapons reality of the thermonuclear era. It has been the convergence of these two forces that has propelled the scientist to the center of the national and world stages.

The reasons why the scientist finds himself in a peculiarly unique position in American democratic society are not difficult to find. The most obvious and important is that he has made possible the great advances into the cosmos and has provided the United States with the tools of strategic deterrence in the age of the cold war. Thus, he is at once respected and admired for his intelligence, specialized knowledge and training, and for his leadership in a realm of crucial significance to our survival. But this is only the side of the equation that has its roots in the scientific revolution; the other side is political and is a result of the eternal truth about man as a political animal.

Because men do not work and exist in a vacuum, the advances made by scientists thrust them into the maelstrom of human events and forces. The discovery of atomic fission three months after Munich; the danger that the Nazis were ahead of the democracies in building an atomic weapon; the now-famous letter signed by Dr. Albert Einstein on August 2, 1939, and addressed to President Franklin Roosevelt; and finally, the decision to build the bomb—these events contained powerful political implications. The work accomplished by scientists on the Manhattan Project in behalf of the US and the Western democracies culminated in the mushroom clouds over Hiroshima and Nagasaki and brought the Pacific war to its fateful conclusion.
Scientists have made possible the great advance into the micro-
cosmos and macrocosmos, the world of the atom and deep space.

Having done so, and feeling responsibility for mankind's future in a
new and dangerous era, they have entered the political arena as
advisers and advocates.

They have divided into two main camps: those who are convinced
that continuance of the arms competition will doom our planet and
those who believe the nuclear risk must be taken for the sake of US
deterrence.

The first camp has campaigned hard for US-Soviet nuclear test ces-
sation, disarmament, and arms control, and has given the Russians the
benefit of the doubt at times.

The second camp has demanded iron-clad guarantees in US-Soviet
negotiations, and has proclaimed its suspicion of Soviet duplicity.

Both main camps have claimed scientific documentation of their
positions—but in fact their positions have been, unavoidably, passion-
ately political.

In retrospect, however, this was neither a beginning
nor an end. It was not the start of world tranquility nor
the end of bloodshed and tension.

For many scientists, it was a period of agony. While
their work had played so important a part in wartime
and conferred upon them prominence and power, they
were restless and uneasy because of the use made of
their scientific research. Dr. J. Robert Oppenheimer
declared that "... the physicists have known sin and
this is a knowledge which they cannot lose." Guilt and
anger were feelings not unknown to some of the scien-
tists. Dr. Norbert Wiener of the Massachusetts Instit-
tute of Technology refused an Air Force request in
1946 for a reprint of a paper relating to guided mis-
sile technology. Deep feelings brought scientists to-
gether in attempts to find common ground and solve
mutual problems of social responsibility and moral
ethics. The Federation of Atomic Scientists and later
the Federation of American Scientists were founded;
in 1950 a smaller group entered the pacifist Society for
Social Responsibility; and in Chicago, publication of the Bulletin of the Atomic Scientists
was begun.

The scientists had entered the "techno-political age."
The meaning of the new term became more clearly
defined in the controversy accompanying the decision
to build the hydrogen bomb. The report of the General
Advisory Committee to President Truman against a

crash program on the hydrogen bomb aggravated the
split between those scientists who felt the bomb should
be built and those who argued that a negative decision
would mirror the US desire to end the arms race. Sub-
sequently, the revocation of Oppenheimer's security
clearance by the Atomic Energy Commission and the
growing debate within the scientific community over
disarmament, arms control, and a nuclear test ban
agreement further divided the scientists.

This cleavage has continued—and indeed has acceler-
ated in some aspects—to the present day. Before
considering the highly charged problems of the present
and future, it is pertinent to ask: What have we
learned from the past? The following points suggest
themselves:

- American scientists agree that the primary goal
today is that the US and the free world continue to live
in freedom, that the world be spared a thermonuclear
war, and that scientists continue to pursue pure re-
search, free from constraint.

- Scientists can make large contributions to US na-
tional policy formulation.

- As a human being, the scientist holds political
views as varied and impassioned as other Americans.

- The scientist has no peculiar gifts which endow
him with special political insight.

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Scientists, Politics, and the Bomb—Continued

- Rapport and understanding must exist between the scientist and the politician for the benefit of national security.
- It is impossible—and undesirable—to separate scientific and political elements from the great and crucial problems of today.
- There must be greater awareness of the political context within which scientific advice is given.
- It is as dangerous to generalize about scientists as it is to attempt to categorize the military, journalists, or any other profession.

Within the context of these points, it can be seen that the full-fledged entry of scientists into politics has been on two levels: First, as advisers to the federal government or in ancillary roles as requested by the government; and secondly, as individuals or in groups lobbying for a specific point of view or legislation. The seventeen years since the US entered the atomic age have clearly shown that no matter what point of view scientists espouse, they have expressed themselves sincerely and passionately if not always effectively and wisely.

Scientists have made valuable contributions to national security in the laboratory and within the high advisory councils of government. It has become clear, however, that in many cases scientific opinion—while honestly held—has been based upon political judgment. The now-classic example has become the negotiations with the Soviet Union on a test-ban agreement involving two eminent and highly respected scientists—Dr. Hans Bethe and Dr. Edward Teller. Bethe argued in an article in The Atlantic ("The Case for Ending Nuclear Tests," August 1960) almost exactly one year before the Russians broke the nuclear test moratorium that the Soviets were conducting at Geneva what he considered to be "honest negotiations." It must be remembered that Bethe's point of view was expressed following Dr. Albert Latter's discovery of the decoupling theory which showed that it would be possible to muffle or decouple low-yield blasts underground in large holes without being detected by current methods and equipment. Thus, with international controversy raging over the "big-hole" theory, Bethe posed the question: "Can we really assume that the Russians would go to the trouble of negotiating a test cessation treaty just in order to turn around the next day and violate it?" His own reply, based upon having participated in the talks at Geneva with Soviet scientists, was that "I believe that they are sincere in wanting the test-cessation agreement and do not intend to cheat on it."

Bethe's position—apart from scientific opinion on the big-hole theory which was unanimous in stating that it would be possible to decouple underground test explosions—rested on the political judgment that we could trust the Soviets. He felt that the risks involved were outweighed by political advantages. To Edward Teller, the risks were in fact far too great. It was, and remains, his position that "an inclusive treaty could be neither policed nor enforced. It would place the United States in the untenable position of basing our national security upon Russian truthfulness" (Edward Teller, The Legacy of Hiroshima, Doubleday, 1962, p. 205). Thus, the battle was joined.

Unfortunately, arguments advanced by adherents of these two major protagonists have not always been free from emotionalism, bias, and sensationalism. And again, it must be observed that many of these polemics found their rationale in political assumptions. While attacking Teller for "factual error and emotionalism," eight scientists (Jay Orear, William F. Schreiber, Gerald Holton, Salvadore E. Luria, Edwin E. Salpeter, Philip Morrison, Matthew Meselson, and Bernard T. Feld) assailed him in terms such as "madness," "in-cinerate your hometown," "self-deception," and "arrant nonsense." To this group, Teller's position was "preposterous" and an "escape to an insane world" ("An Answer to Teller," Saturday Evening Post, April 14, 1962). These scientists, following Dr. Erich Fromm, emphasized that too much of the arms-control dialogue rested on what is possible rather than probable. And yet, they declared: "... We see that the real danger is neither inadequate weapons nor unpreparedness to survive, but the possible triggering of nuclear war by self-deception, miscalculation, or accident." And further, "the start of... a massive shelter program might well trigger nuclear war" (emphasis supplied).

Recently, several studies (including books by Teller, Lewis Strauss, and Gen. Leslie Groves) and movements by scientists themselves have pointed to even more political activity by segments of the scientific community. Also, the Kennedy Administration has clearly indicated its intention of bringing more scientists into government. In addition, the Congress of Atomic Scientists held its first national conference on June 17, 1962, and attempted to devise a program for survival in the nuclear age. According to Washington Post reporter Howard Simons: "... All attempts to define the basic aims of the organization or to pass substantive resolutions on a wide range of challenges met with emotional debate and counterdebate" (Washington Post, June 18, 1962).

At the same time, Dr. Leo Szilard, an eminent atomic scientist who convinced Einstein that he should write the letter which resulted in the formation of the US atomic-bomb program, has proposed a lobby which would bring scholars and scientists to Washington. In an attack on US national policy and majority opinion, Szilard stated that people brought to Washington by the lobby should "have sufficient passion for the truth to give the truth a chance to prevail." While a number of US senators possessed insight into the world situation and were concerned about it, "mostly they lack the courage of their convictions," according to Szilard. It was his opinion that since "in Washington, wisdom has no chance to prevail at this point," what was desperately required was "the sweet voice of reason" (Leo Szilard, "Are We on the Road to War?" Bulletin of the Atomic Scientists, April 1962).

Possessed of a fertile imagination, Szilard had earlier proposed—in the form of fiction, but with seriousness, irony, and some sarcasm—a system of "mined cities," whereby fifteen large American and Russian cities (Continued on page 48)
would be mined with underground hydrogen bombs. Fortresses located under American cities would be manned by Russians and vice versa ("The Mined Cities," BAS, December 1961). Scientists' activity in behalf of peace movements—sometimes bordering on the pacifistic—is a direct result of guilt feeling over the use of the bomb and a sincere, idealistic drive to find a way out of the "arms dilemma." Dr. James R. Killian, Jr., has suggested an eleven-point program for putting science to work for peace. He stresses international activities, "primarily peaceful and benign ... managed by nonpolitical, private, scientific organizations." To Killian, science and peace are inseparable and call for world scientists and engineers "to deploy themselves for peace" (BAS, March 1962). Similar peace programs are based on the assumption that international scientific activity can always be counted upon to be nonpolitical.

While political activity and debate by scientists has increased, the government continues its efforts to give science a wider role in policy formulation. The State Department, in July 1962, began a reorganization of its scientific activities designed to incorporate the Office of the Science Advisor into the mainstream of department policy-making. The change, according to State, reflected the growing importance of science in foreign policy which received great impetus coincident with the orbiting of Sputnik I on October 4, 1957. C. P. Snow, the English novelist with a wide background in government, science, and the academic world, recently called for greater numbers of scientists in all levels of government. Snow feels that scientists are "future directed," possessing foresight that our kind of "existential society" badly lacks (C. P. Snow, Science and Government, Harvard, 1961, pp 80-84).

While we may agree with Snow that more scientists are required in government to counter the pull toward a status quo existential society, it would be a serious mistake to suppose that this would solve all our problems. A balance must be maintained. We must be careful not to overweight the scientific.

These many events, ideas, and words point in one direction: The scientist in general, and the nuclear scientist in particular, has come of age politically. We have noted that while scientists often base their opinions and advice on a combination of scientific-political factors, their political acumen and wisdom are not necessarily superior to those of nonscientists. Although Mr. U. Thant, Acting UN Secretary General, insisted that scientists objecting to US atmospheric tests had "no axe to grind" (New York Times, June 6, 1962), evidence indicates that, while scientists should be listened to and respected for their opinions on politics and international affairs, their insights here are not necessarily any more correct than yours or mine.

Despite divisiveness in the scientific world—not all of it undesirable by any means—it would be misleading to rigidly attempt to categorize scientists on every issue. For example, Teller and Szilard—worlds apart on many crucial contemporary questions—agree that mutual deterrence is doomed to failure. Teller feels that mutual deterrence is unworkable and "will fail be-