ENGINEERING

Eng 1 Eng 2 Capstone Aerospace

NTI DAY 4

Please complete the attached assignment and turn in within 3 days of the NTI Day.

Coach Gilly

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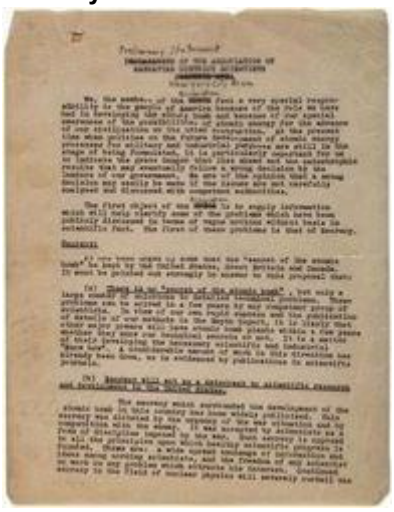
Physicists Predict a Nuclear Arms Race, 1945

This text is provided courtesy of the Gilder Lehrman Institute of American History.



Preliminary statement of the Association of Manhattan District Scientists, August 1945.
(Gilder Lehrman Collection)

This declaration of concern, written after the United States bombed Hiroshima and Nagasaki, offers insight into the Manhattan Project, an atomic development program led by the United States. The "Preliminary Statement of the Association of Manhattan District Scientists" emphasizes the need to control atomic weaponry and acknowledge the consequences of its use. The scientists warn of the havoc that nuclear weapons could wreak if not handled with extreme care and consideration. They also stressed their "very special responsibility to the people of America ... because of our special awareness of the possibilities of atomic energy for the advance of our civilization or its utter destruction."

A heavily edited draft of the statement was found among the photographs and personal accounts of Mildred Goldberg, a Manhattan Project secretary. Goldberg unknowingly became a key contributor to the development of the atomic bomb as she typed out and organized the scientists' notes. She described a pleasant work environment and expressed glowing admiration of the men she worked for -including Irving Kaplan, Francis Bonner, Andre J. De Bethune, William Nierenberg, and Howard Levi. This statement's significance weighs even more heavily when one considers that this warning was written during a time when policies controlling the development of atomic energy were in their infancy.

FULL TEXT

PRELIMINARY STATEMENT OF THE ASSOCIATION OF

MANHATTAN DISTRICT SCIENTISTS

NEW YORK CITY AREA

We, the members of the Association feel a very special responsibility to the people of America because of the role we have had in developing the atomic bomb and because of our special awareness of the possibilities of atomic energy for the advance of our civilization or its utter destruction. At the present time when policies on the future development of atomic energy processes for military and industrial purposes are still in the stage of being formulated, it is particularly important for us to indicate the grave danger that lies ahead and the catastrophic results that may eventually follow a wrong decision by the leaders of our government. We are of the opinion that a wrong decision may easily be made if the issues are not carefully analyzed and discussed with competent authorities.

The first object of the Association is to supply information which will help clarify some of the problems which have been publicly discussed in terms of vague notions without basis in scientific fact. The first of these problems is that of Secrecy.

Secrecy:

It has been urged by some that the "secret of the atomic bomb" be kept by the United States, Great Britain and Canada. It must be pointed out strongly in answer to this proposal that:

(a) There is no "secret of the atomic bomb", but only a large number of solutions to detailed technical problems. These problems can be solved in a few years by any competent group of scientists. In view of our own rapid success and the publication of details of our methods in the Smyth Report, it is likely that other major powers will have atomic bomb plants within a few years whether they know our technical secrets or not. It is a matter of their developing the necessary scientific and industrial "know how". A considerable amount of work in this direction has already been done, as is evidenced by publications in scientific journals.

(b) Secrecy will act as a deterrent to scientific research and development in the United States.

The secrecy which surrounded the development of the atomic bomb in this country has been widely publicized. This secrecy was dictated by the urgency of the war situation and by competition with the enemy. It was accepted by scientists as a form of discipline imposed by the war. Such secrecy is opposed to all the principles upon which healthy scientific progress is founded. These are: a wide spread exchange of information and ideas among working scientists, and the freedom of any scientist to work on any problem which attracts his interest. Continued secrecy in the field of nuclear physics will severely curtail the formulation of new ideas by restricting the number of scientists who will be able to work in the field, and by restricting the free exchange of ideas. It is a safe assumption that the majority of American scientists will not be willing to work under these conditions. Furthermore, if we adopt a policy of secrecy, other countries will be forced to follow suit. The result will be that research in nuclear physics will degenerate into a form of international competition. The resulting loss to the United States is amply demonstrated by the contribution to the development of the atomic bomb made by scientists of many nationalities.

(c) Secrecy will inevitably lead to an atomic armaments race:

Under any conditions a large part of the scientific and industrial development of any great power will be directed toward the utilization of nuclear energy. A policy of secrecy is bound to lead to one of suspicion. Scientists of other countries will be spurred on to develop atomic bombs of their own in self-defense. This in turn, will lead to further emphasis on the military applications on our own part. The result will be an armaments race, with all its disastrous possibility.

The second large problem raised by the atomic bomb is that of its tremendous destructive possibilities. During the war years, all of our effort on the application of nuclear energy has been directed toward its destructive possibilities. Although much has been written about the wonderful new age on which we are about to enter, there is very little scientific information available on the subject of the constructive possibilities of the utilization of nuclear energy. However, we have been made strongly aware of the dangers inherent in the mishandling of this tremendous force by the peoples of the world. We have seen in the case of Hiroshima and Nagasaki that one crude, pioneering atomic bomb is sufficient to destroy a city of medium size. It is certain that further development will result in bombs of vastly greater destructive potential. The Pearl Harbor attack which destroyed most of our Pacific Fleet may be dwarfed in a future war by a disaster in which as much as a quarter of our population and a major part of our industry will suddenly disappear. This may even be a conservative estimate of the damage that will occur before we are in a position to retaliate, if retaliation be any longer possible. It will be a small consolation to have the largest supply of the world's best bombs; it may be too late to use them. It is possible that we may not even know who our attackers are.

It is obvious that the destructive potentialities of the atomic bomb raises certain social, political and military problems. Although we do not feel that it is within our province to offer detailed answers to these problems, we feel it desirable to state them. In the absence of any adequate method of controlling the development and use of atomic bombs, it would be necessary for this country to take steps to minimize or counteract the possible disastrous consequences of the use of atomic bombs by an enemy power. These steps may be defensive or offensive. The defensive measures would of necessity include:

(a) Intensive research and development of methods for preventing atomic bombs from being dropped either by plane or by rockets. Experience in the recent war has indicated the difficulty of total defensive measures. Although it is likely that methods of defense will be developed, the problem of preventing any atomic bombs from reaching us would seem to pose great difficulties - and it must be remembered that a small number of bombs could cause tremendous damage.

(b) Large military and naval potential: It must be emphasized that the atomic bomb is a weapon most effectively used against the civilian population localized in heavily industrial areas. It would be used primarily against our production centers. We could no longer rely heavily on our ability to out-produce the enemy in the period following the outbreak of war. It would be necessary to have large amounts of war potential immediately available on the outbreak of war. That is, we would be forced to live in a perpetual state of preparation, not to mention fear. Furthermore, it is highly doubtful that the atomic bomb would "make large armies obsolete". On the contrary, it would probably be necessary to maintain a large standing army to repel possible invasion after an atomic bomb attack.

(c) Decentralization of large cities and industrial areas: The necessity for such decentralization is obvious in view of the enormous destructive potentialities of the atomic bomb. The social and

economic problems involved in such a process would be of a magnitude hitherto unconsidered and the time required may be too long for such a measure to be effective.

In contrast to the defensive measures outlined, certain offensive measures may be suggested.

Among these are:

(a) The manufacture of more, bigger, and better bombs than those possessed by any other nation: It has already been pointed out that in the event of a sudden onslaught by an enemy power, enormous damage may be done before we can retaliate. Furthermore, such retaliation even if possible, would leave a world in which the extent of destruction would make that of the recent war appear negligible. In any case, we would live in a world of suspicion, fear and even panic, where the temptation of great initial advantage would be difficult for an aggressively-minded power to resist.

(b) Preventive Conquest: We might attempt to guarantee American security by a preventive conquest of all other nations which are potential rivals. This possibility is not only morally untenable, but virtually impossible of realization. It would have to be undertaken immediately to have any chance of success. At the present time the great majority of the American people would be opposed to a war of aggression. Several years of relentless [propaganda] and indoctrination of the youth were required before even Nazi Germany could embark on its program of world conquest. Lacking totalitarian techniques and fighting against the American tradition of fair play as well as the present warweariness, the advocates of a policy of world conquest cannot hope to prepare the American people psychologically for a war against any other major power, much less against all other large nations, for some time to come. Within a few years, however, other nations will have atomic armaments and it will then be too late.

Name: _____ Date: _____

1. What weapon did the members of the Association of Manhattan District Scientists have a role in developing?

2. The authors of the "Preliminary Statement of the Association of Manhattan District Scientists" mention the "grave danger that lies ahead" with the weapon they have developed. What is one example of a danger that they mention in the text?

3. What is the main idea of this text?

4. What was most likely the scientists' purpose in writing this "Preliminary Statement"?

Support your answer with evidence from the text.