

Formulating Your Recommendation

Science for Policy Seminar

November 24 and 26, 2014
Columbia University – Applied Physics

Assignment (Part 2 of 3): *Due before Thanksgiving*

- Review and understand status
- ➔ Formulate and propose (in writing) policy options
 - ▶ What is a “policy option”?
 - ▶ Responds (in whole or part) to charge
 - ▶ Written as a one to three sentence recommendation
 - ▶ You can support policy with scientific and technical arguments
- Discuss and understand each option within your Team

Charges In Brief

- Considering the importance of space activities to our nation, I ask your panel to assess the scientific and technical strategies now being followed to prevent and deter aggression against U.S. space infrastructure and to respond rapidly to a deliberate or accidental event that may cause damaging debris contamination.
- Considering the importance of STEM education to our nation's future, I ask your panel to assess the priorities among the proposed new investments in STEM education and research and recommend policies that would make most effective use of these investments and programs.
- Considering the rapid progress of detecting and characterizing exoplanets, I ask your panel to assess the scientific and technical strategies now being followed to find and identify exoplanets with the potential to support human life.
- Considering the importance of coal use for U.S. electricity production, I ask your panel to assess the priorities among the potential new technologies that reduce carbon dioxide emissions from coal-fired power plants and to meet the new EPA targets while continuing to benefit from our nation's large coal resources

Policy Option Briefing Report

- *To whom addressed?*
- **Context** (one paragraph). Why is (are) your policy option(s) important? Relevant? Timely?
- **Key Recommendation(s)**. One sentence each, with one or two paragraphs detailing recommended **action(s)**.
- **Outline of attachments**: backup details, analyses, figures, summaries of previous work, ...
- *Total: three pages*

Albert Einstein
Old Grove Rd.
Nassau Point
Peconic, Long Island

August 2nd, 1939

F.D. Roosevelt,
President of the United States,
White House
Washington, D.C.

Sir:

Some recent work by E. Fermi and L. Szilard, which has been communicated to me in manuscript, leads me to expect that the element uranium may be turned into a new and important source of energy in the immediate future. Certain aspects of the situation which has arisen seem to call for watchfulness and, if necessary, quick action on the part of the Administration. I believe therefore that it is my duty to bring to your attention the following facts and recommendations:

In the course of the last four months it has been made probable - through the work of Joliot in France as well as Fermi and Szilard in America - that it may become possible to set up a nuclear chain reaction in a large mass of uranium, by which vast amounts of power and large quantities of new radium-like elements would be generated. Now it appears almost certain that this could be achieved in the immediate future.

This new phenomenon would also lead to the construction of bombs, and it is conceivable - though much less certain - that extremely powerful bombs of a new type may thus be constructed. A single bomb of this type, carried by boat and exploded in a port, might very well destroy the whole port together with some of the surrounding territory. However, such bombs might very well prove to be too heavy for transportation by air.

-2-

The United States has only very poor ores of uranium in moderate quantities. There is some good ore in Canada and the former Czechoslovakia, while the most important source of uranium is Belgian Congo.

In view of this situation you may think it desirable to have some permanent contact maintained between the Administration and the group of physicists working on chain reactions in America. One possible way of achieving this might be for you to entrust with this task a person who has your confidence and who could perhaps serve in an unofficial capacity. His task might comprise the following:

a) to approach Government Departments, keep them informed of the further development, and put forward recommendations for Government action, giving particular attention to the problem of securing a supply of uranium ore for the United States;

b) to speed up the experimental work, which is at present being carried on within the limits of the budgets of University laboratories, by providing funds, if such funds be required, through his contacts with private persons who are willing to make contributions for this cause, and perhaps also by obtaining the co-operation of industrial laboratories which have the necessary equipment.

I understand that Germany has actually stopped the sale of uranium from the Czechoslovakian mines which she has taken over. That she should have taken such early action might perhaps be understood on the ground that the son of the German Under-Secretary of State, von Weizsäcker, is attached to the Kaiser-Wilhelm-Institut in Berlin where some of the American work on uranium is now being repeated.

Yours very truly,

A. Einstein
(Albert Einstein)

The discovery of uranium fission in December 1938, reported in the 6 January 1939 issue of *Die Naturwissenschaften* by Otto Hahn, and Fritz Strassmann, and its correct identification as nuclear fission by Lise Meitner in the 11 February 1939 issue of *Nature*, generated intense interest among physicists. The results were quickly corroborated (Jan 25, 1939) by experimental physicists, most notably Fermi and John R. Dunning (SEAS Dean from 1950-69) at Columbia University.

Letter from Albert Einstein to President Franklin Delano Roosevelt about the possible construction of nuclear bombs

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(Albert Einstein)

Red Team (to whom?)

- NASA Orbital Debris Program Office: Dr. Jer Chyi (J.-C.) Liou (Chief Scientist) and Eugene G. Stansbery (Program Manager)
- National Defense Leaders: Chuck Hagel (Secretary of Defense) and James Clapper (Director of National Intelligence)
- NASA, OSTP, DOC, Congressional Committees, ...

White Team (to whom?)

- NSTC Committee on Science, Technology, Engineering, and Math Education: Dr. John Holdren (OSTP), Dr. Cora Marrett (NSF)
- President Barack Obama
- Congressional committees, ...

Blue Team (to whom?)

- NASA's Exoplanet Exploration Program: Dr. Wes Traub (Program Chief Scientist)
- Planetary Science Subcommittee (PSS) of NASA's Advisory Committee: Dr. Janet Luhmann (chair)
- NASA: Dr. Jim Green, Planetary Science Division Director
- ...

Green Team (to whom?)

- DOE/Office of Fossil Energy: Dr. Christopher A. Smith (Principal Deputy Assistant Secretary)
- DOE/NETI Lab: Strategic Center for Coal Dr. Sean Plasynski (Director)
- DOE/NETI Lab: Office of Coal and Power Research and Development Dr. John Wimer (Director)
- Secretary of Energy, Congressional committees, ...

Policy Option Briefing Report

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