World War II: A Technological and Psychological Turning Point?

- Total war: production on the home front, population centers as targets, the ‘special’
- Air power: critical new component of warfare
- Big projects: Rad Lab, B-29 bomber, Manhattan Project

Postwar: Federal government in science and technology
Military-Industrial-Academic complex
Pearl Harbor – U.S. Naval base and Army airfield

Source: US Naval Historical Society.
Battle of Britain: Civilian areas legitimized as targets for aerial bombing Attacks.

Terror weapons: V-1 and V-2 rockets

Source: U.S. National Archives. V1 rocket in flight, London ca. 1944. 306-NT-3157V.
London during ‘the Blitz’

Rotterdam: leveled by Nazis
B-17 over Europe

Source: US Air Force, over Germany ca. 1943.
Allied Strategic Bombing against Germany

Contrails of combat aircraft over Europe

Source: US National Archives.
The Air War in against Japan
Boeing B-29 bomber – a modern aircraft

Pressurized cabin
Top speed = 365 mph
Range = 5,830 miles
Ceiling = 31,850 feet
20,000-pound bomb load

Boeing built 2,766 B-29s at plants in Wichita, Kansas, and in Renton, Washington. Bell Aircraft Co. built 668 in Georgia, and the Glenn L. Martin Co. built 536 in Nebraska. Total = 3,970
B-29 traffic jam at Tinian airfield, 1945
(incendiary strikes against Japanese cities)
How to win airfields for B-29s

Photo: Naval Historical Center
The cost: Tarawa

Source: US National Archives. Photo by WO Obie Newcomb, Jr., November 1943. 127-N-63458
The cost: Iwo Jima

TO: General Carl Spaatz
Commanding General
United States Army Strategic Air Forces

25 July 1945

1. The 509 Composite Group, 20th Air Force will deliver its first special bomb as soon as weather will permit visual bombing after about 3 August 1945 on one of the targets Hiroshima, Koeura, Niigata and Nagasaki. To carry military and civilian scientific personnel from the War Department to observe and record the effects of the explosion of the bomb, additional aircraft will accompany the airplane carrying the bomb. The observing planes will stay several miles distant from the point of impact of the bomb.

2. Additional bombs will be delivered on the above targets as soon as made ready by the project staff. Further instructions will be issued concerning targets other than those listed above.

3. Dissemination of any and all information concerning the use of the weapon against Japan is reserved to the Secretary of War and the President of the United States. No communiques on the subject or releases of information will be issued by commanders in the field without specific prior authority. Any news stories will be sent to the War Department for special clearance.

4. The foregoing directive is issued to you by direction and with the approval of the Secretary of War and of the Chief of Staff, USA. It is desired that you personally deliver one copy of this directive to General MacArthur and one copy to Admiral Nimitz for their information.

This is the 1st page of a 2-page letter.

THOS. I. HANDY
General, G.S.G.
Acting Chief of Staff

[Signature]

[Stamp: SECRET]
[Stamp: 8 F 324]
Trinity - Los Alamos, New Mexico

Photos: Los Alamos National Laboratory
“Little Boy” atomic bomb
“Fat Man” atomic bomb, Hiroshima

Nagasaki detonation
Nowhere in the Governmental structure receiving its funds from Congress is there an agency adapted to supplementing the support of basic research in the universities, both in medicine and the natural sciences; adapted to supporting research on new weapons for both Services; or adapted to administering a program of science scholarships and fellowships.

A new agency should be established, therefore, by the Congress for the purpose. Such an agency, moreover, should be an independent agency devoted to the support of scientific research and advanced scientific education alone.

Vannevar Bush, 1945
Director, OSRD

From “Science: The Endless Frontier. A Report to the President.” Washington D.C. July 1945
General Dwight D. Eisenhower, Supreme Allied Commander

Photo: U.S. National Archives
“In the councils of government, we must guard against the acquisition of unwarranted influence, whether sought or unsought, by the military-industrial complex. The potential for the disastrous rise of misplaced power exists and will persist.

Akin to, and largely responsible for the sweeping changes in our industrial-military posture, has been the technological revolution during recent decades. In this revolution, research has become central; it also becomes more formalized, complex, and costly.

The prospect of domination of the nation's scholars by Federal employment, project allocations, and the power of money is ever present and is gravely to be regarded.

Yet, in holding scientific research and discovery in respect, as we should, we must also be alert to the equal and opposite danger that public policy could itself become the captive of a scientific-technological elite.”

President Dwight D. Eisenhower, 1961