

The nuclear age begins

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The first nuclear explosion, named "Trinity", was detonated July 16, 1945.

Main article: History of nuclear weapons During the 1930s, innovations in physics made it apparent that it could be possible to develop nuclear weapons of incredible power using nuclear reactions. When World War II broke out, scientists and advisors among the Allies feared that Nazi Germany may have been trying to develop its own atomic weapons, and the United States and the United Kingdom pooled their efforts in what became known as the Manhattan Project to beat them to it. At the secret Los Alamos laboratory in New Mexico, scientist Robert Oppenheimer led a team of the world's top scientists to develop the first nuclear weapons, the first of which was tested at the Trinity site in July 1945.

However, Germany had surrendered in May 1945, and it had been discovered that the German atomic bomb program had not been very close to success. The Allied team produced two nuclear weapons for use in the war, one powered by uranium-235 and the other by plutonium as fissionable material, named "Little Boy" and "Fat Man". These were dropped on the Japanese cities of Hiroshima and Nagasaki in August 1945. This, in combination with the Soviet entrance in the war, convinced the Japanese to surrender unconditionally. These two weapons remain the only two nuclear weapons ever used against other countries in war. Nuclear weapons brought an entirely new and terrifying possibility to warfare: a nuclearholocaust. While at first the United States held a monopoly on the production of nuclear weapons, the Soviet Union, with some assistance from espionage, managed to detonate its first weapon (dubbed "Joe-1" by the West) in August 1949.

The post-war relations between the two, which had already been deteriorating, began to rapidly disintegrate. Soon the two were locked in a massive stockpiling of nuclear weapons. The United States began a crash-program to develop the first hydrogen bomb in 1950, and detonated its first thermonuclear weapon in 1952. This new weapon was alone over 400 times as powerful as the weapons used against Japan. The Soviet Union detonated a primitive thermonuclear weapon in 1953 and a full-fledged one in 1955. Nuclear missiles and computerized launch systems increased the range and scope of possible nuclear war. The conflict continued to escalate, with the major superpowers developing long-range missiles (such as the ICBM) and a nuclear strategy which guaranteed that any use of the nuclear weapons would be suicidal for the attacking nation (Mutually Assured Destruction).

The creation of early warning systems put the control of these weapons into the hands of newly created computers, and they served as a tense backdrop throughout the Cold War. Since the 1940s there were concerns about the rising proliferation of nuclear weapons to new countries, which was seen as being destabilizing to international relations, spurring regional arms races, and generally increasing the likelihood of some form of nuclear war.

Eventually, seven nations would overtly develop nuclear weapons, and still maintain stockpiles today: the United States, the Soviet Union (and later Russia would inherit these), the United Kingdom, France, China, India, and Pakistan. South Africa developed six crude weapons in the 1980s (which it later dismantled), and Israel almost certainly developed nuclear weapons though it never confirmed nor denied it. The creation of the Nuclear Non-proliferation Treaty in 1968 was an attempt to curtail such proliferation, but

a number of countries developed nuclear weapons since it was signed (and many did not sign it), and a number of other countries, including Libya, Iran, and North Korea, were suspected of having clandestine nuclear weapons programs