



TIMES PAST
1945

The Atom Bomb

On the 70th anniversary of Hiroshima and Nagasaki, a look at the long shadow of nuclear war

BY VERONICA MAJEROL

A mushroom cloud towers above Hiroshima, following the atomic bombing on Aug. 6, 1945.

On Aug. 6, 1945, 8-year-old Shigeaki Mori was walking across a bridge on his way to summer classes when “suddenly, I felt a massive shock wave and a blast from above,” he recalled recently. That blast, which obliterated Mori’s hometown of Hiroshima, Japan, was caused by the world’s first-ever nuclear attack.

Mori was blown off the bridge and into a shallow river. When he regained consciousness, nearly everything around him was enveloped in thick black smoke, and the few things Mori could see, like a woman walking

toward him, were horrifying.

“She was swaying . . . and holding something white,” he said. “I realized she was holding the contents of her stomach.”

The United States dropped an atomic bomb on Hiroshima—and three days later on the Japanese city of Nagasaki—70 years ago to force Japan to surrender and end World War II (1939-45). The bombings killed as many as 250,000 and led to Japan’s official surrender three weeks later, which arguably saved many thousands of American lives.

But dropping those bombs also had long-lasting consequences for the U.S. and the world that plague us today. In

the years since, more nations have developed their own nuclear arsenals. Today, the threat of an attack by rogue nations like North Korea or Iran—or from a terrorist group that gets its hands on a bomb—remains a terrifying security problem for the U.S. and the world, with no easy solution.

Einstein’s Letter

How did the U.S. come to possess the most destructive weapon the world had ever known? It started with a letter that physicist Albert Einstein wrote to President Franklin D. Roosevelt on Aug. 2, 1939—a month before Nazi Germany invaded Poland and started the Second World War. Einstein, a Jew who had fled Germany in 1933, warned Roosevelt about the potential

 Watch a video on the Manhattan Project at www.upfrontmagazine.com

 Download nuclear scientists’ 1945 petition to President Harry S. Truman at www.upfrontmagazine.com



Devastation in Hiroshima following the atomic bomb blast; a boy carrying his badly burned brother (inset).



OPPOSITE: SHIPSTECK/CORBIS; HEAD: MEMORIAL MUSEUM/DPA/CORBIS; HIROSHIMA: AP/GETTY IMAGES; AT/GETTY IMAGES; BOYS: AMMICHION/REAP; PHOTO 12: UI/GETTY IMAGES (U.S. TROOPS)

destructive power of a nuclear weapon. He urged the president to fund a project to develop an atomic bomb—and quickly, before Germany’s dictator Adolf Hitler beat him to it.

Roosevelt heeded Einstein’s warning and partnered with Britain and Canada to recruit thousands of scientists to collaborate on the Manhattan Project (so named because it began in an obscure office in New York City). Stationed at isolated sites in Tennessee, Washington State, and New Mexico beginning in 1942, the scientists worked feverishly to figure out how to unleash the enormous amounts of energy contained in atoms. Einstein had first theorized the relation between matter and energy in his 1905 equation $E = mc^2$ (see *Timeline*, p. 20). Because other countries, like the Soviet Union, Germany, and Japan, were also racing to develop an atomic weapon, the Manhattan Project was kept top secret.

Roosevelt never got to see the project’s completion. He died on April 12, 1945. Shortly after, Secretary of War Henry Stimson sent President Harry S. Truman a brief memo referring to “a highly secret matter” that “has such a

bearing on our present foreign relations . . . that I think you ought to know about it without much further delay.” (Truman had become vice president in January 1945, but Roosevelt had never told him about the Manhattan Project.)

The first test to see whether the bomb worked took place on July 16, 1945, with scientists and military experts gathering at Alamogordo, New Mexico. Just before dawn, a giant fireball exploded into a mass of dust and gaseous iron, soaring a mile a minute and forming a mushroom cloud. The blast carved a 1,200-foot crater in the desert floor. The blinding light and enormous roar traveled hundreds of miles.

The atom bomb came too late to affect the war in Europe, where more than 300,000 American soldiers had died; Germany had already surrendered in May. But fighting still raged in the Pacific, and Japan—which drew the U.S. into World War II by attacking Pearl Harbor in Hawaii on Dec. 7, 1941—showed no signs



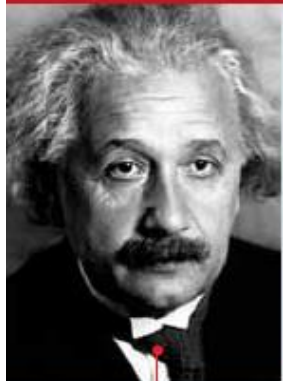
of giving up. Dropping the atomic bomb as opposed to committing U.S. troops to an invasion of mainland Japan would save half a million lives, Truman said. America’s use of the atom bomb—to this day, the only time it was ever used—is still controversial (see *Debate*, p. 22).

“The Americans had concluded that the Japanese, [with] their kamikaze

U.S. troops on the island of Okinawa, 1945. More than 100,000 Americans died in the Pacific during World War II.



Timeline THE ATOMIC AGE



The first atomic bomb is tested in the New Mexico desert, July 16, 1945.



1905 $E=mc^2$

Albert Einstein (*above*) publishes modern science's most famous equation: $E=mc^2$. It says that vast amounts of energy can be unleashed from tiny amounts of matter. It's the basis for the development of nuclear weapons.

1942 The Manhattan Project

Thousands of scientists are recruited to work on a top-secret effort to develop an atomic bomb for the U.S. during World War II. Three years later, they successfully test the bomb in the New Mexico desert.

1945 Hiroshima and Nagasaki

1949 Soviet Bomb

A U.S. spy plane learns that the Soviet Union has tested an atomic bomb. Schools begin conducting "duck and cover" drills (*above*) in case of a Soviet nuclear attack.

1951 Homegrown Spies

Americans Julius and Ethel Rosenberg are convicted of conspiring to steal designs for America's atomic bomb and deliver them to the Soviet Union. They are executed two years later.

suicide attacks and their refusal to surrender—you couldn't fight people like that with anything but full measures," says Christopher Hamner, a history professor at George Mason University in Fairfax, Virginia.

On August 6, an atomic bomb—named Little Boy by one of the nuclear physicists—was dropped on Hiroshima, a city of several hundred thousand people in southern Japan. Nearly 70 percent of the city's buildings and houses were leveled or irreparably damaged. The War Department

(today the Defense Department) said the bomb packed more explosive power than 20,000 tons of TNT.

"The force from which the sun draws its power has been loosed against those who brought war to the Far East," Truman declared.

Three days later, a second bomb, called Fat Man, was dropped on Nagasaki, about 200 miles southwest (*see map, p. 19*). The two bombs killed between 150,000 and 250,000 people—some immediately and some from radiation sickness later on.

On August 15, Japan accepted the

Allies' peace terms, and on September 2, it formally surrendered, finally ending World War II.

The Cold War

After the war, America found itself embroiled in a new conflict that would last five decades: the Cold War with the Communist Soviet Union, which had been an ally in the fight against Nazi Germany in World War II. The U.S. assumed it would have the upper hand in this battle because it was the only country in the world with atomic

The Nuclear Club Who's got nukes, and when did they get them?

COUNTRY	UNITED STATES	RUSSIA (formerly the Soviet Union)	U.K.	FRANCE	CHINA	ISRAEL	INDIA	PAKISTAN	NORTH KOREA
YEAR	1945	1949	1952	1960	1964	1967	1974	1998	2006
ESTIMATED WARHEADS TODAY	7,315	8,000	225	300	250	80-100	90-110	100-120	<10

SOURCES: FEDERATION OF AMERICAN SCIENTISTS; ARMS CONTROL ASSOCIATION; DATES FOR ISRAEL, INDIA, PAKISTAN, AND NORTH KOREA ARE APPROXIMATE.

CORBIS; ALBERT EINSTEIN; MANHATTAN PROJECT; AP IMAGES; SOVIET BOMB



October 1962:
President John F. Kennedy addresses the nation on the Cuban Missile Crisis.



A North Korean missile test last month; the country's dictator Kim Jong-Un (inset).

1962 Cuban Missile Crisis

U.S. spy planes discover Soviet-built nuclear missile sites in Cuba, just 90 miles from Florida. After a tense 13-day standoff with the U.S., the Soviets agree to remove the missiles.

1968 U.N. Treaty

The U.N. approves the Non-Proliferation Treaty to halt the spread of nuclear arms. Nuclear nations agree to help other countries use the technology for peaceful purposes, like electricity. The treaty has been signed by 189 countries.

1969-'91 SALT

The Strategic Arms Limitation Treaty (SALT) between the U.S. and the Soviet Union in 1969 is the first of several agreements over the next two decades to reduce nuclear arsenals.

2010 'New Start'

President Obama, who vowed to make nuclear disarmament an administration priority, signs a major arms-reduction agreement with Russia, called New Start. Obama has since pushed for further reductions, but Russian President Vladimir Putin has resisted.

TODAY North Korea & Iran

The U.S. fears North Korea could sell nuclear arms to terrorists who could target the U.S. The U.S. and its allies have imposed economic sanctions on Iran to curb its suspected nuclear weapons program; ongoing talks with Iran have so far yielded no progress.

weapons. But America's nuclear monopoly abruptly ended in September 1949, when it became clear that the Soviets had developed their own bomb, helped in part by information from American spies Ethel and Julius Rosenberg.

The nuclear arms race between the U.S. and the Soviets was fierce. The irony was that both sides were extremely hesitant to use any of their bombs: They realized an attack from either side would result in immediate retaliation. That belief became known as "mutually assured destruction" (or the appropriately named acronym MAD). In schools across the U.S., students participated in "duck and cover" drills, practicing huddling under their desks in case of an attack. (Never mind that ducking under a desk in the face of a nuclear attack is pretty useless.) And the Cold War almost turned hot in 1962 with the Cuban Missile Crisis, which brought the

U.S. and Soviets to the brink of nuclear war. (See *Upfront*, Sept. 17, 2012.)



Iran's supreme leader, Ayatollah Ali Khamenei. Iran is suspected of developing nuclear weapons.

To reduce the chances of a nuclear Armageddon, dozens of countries signed the United Nations' 1968 Non-Proliferation Treaty. And in the decades leading up to the Soviet Union's collapse in 1991, the Soviets and the U.S. signed several treaties to reduce their respective nuclear arsenals. (In recent years, the U.S. and Russia, which controls the old Soviet arsenal, have further reduced their stockpiles.)

Despite these efforts, the nuclear threat remains. Today, at least nine countries, including the U.S., have the bomb (see "The Nuclear Club"). And Iran is suspected of being close to developing nuclear weapons, posing a serious threat to Israel and Saudi Arabia—both longtime U.S. allies in the region—and most of Europe. The U.S. and its allies have imposed economic sanctions on Iran and have tried negotiating with its leaders to end its nuclear

program, so far without success.

North Korea, which joined the nuclear club in 2006, is now led by the mysterious and unpredictable Kim Jong-Un. There's fear that he'll use his nuclear weapons to attack South Korea or Japan, or sell them to terrorist groups like Al Qaeda or ISIS, which could target the U.S. Speaking at a nuclear-security summit in Belgium last year, President Obama said one of his biggest concerns is "the prospect of a nuclear weapon going off in Manhattan." The massive destruction that one terrorist could unleash—even without a military force behind him—is perhaps the most frightening legacy of the creation of the atom bomb.

"[Before 1945], if you wanted to do that kind of damage, you had to field an army of 75,000 men," says Hamner, the history professor. "Today, a very determined small group of people can do an incredibly disproportionate amount of damage." •

With reporting by Reuters and Sam Roberts of *The New York Times*.

LEFT: WIKIMEDIA COMMONS; ISRAELI MISSILE CRISIS; KIM JONG-UN: NORTH KOREA; WONG WAFFE (GAP IMAGES); KIM JONG-UN: HAN DAN; SHUTTERSTOCK/ANDREW HARRIS; AYATOLLAH KHAMENEI: AP/WIDEWORLD

'New Means of Destruction'

Beginning in 1942, thousands of scientists collaborated to build the world's first atomic bombs as part of the United States government's top-secret Manhattan Project. By 1945, they had succeeded—and realized that use of the bombs against Japan could be imminent. Below is an excerpt from a petition drafted by 70 Manhattan Project scientists to President Harry S. Truman in July 1945. Read it along with the *Upfront* article about the atomic bomb. Then answer the questions below.

Petition to President Harry S. Truman, July 17, 1945

We, the undersigned scientists, have been working in the field of atomic power. Until recently, we have had to fear that the United States might be attacked by atomic bombs during this war and that her only defense might lie in a counterattack by the same means. Today, with the defeat of Germany, this danger is averted and we feel impelled to say what follows:

The war has to be brought speedily to a successful conclusion, and attacks by atomic bombs may very well be an effective method of warfare. We feel, however, that such attacks on Japan could not be justified, at least not unless the terms which will be imposed after the war on Japan were made public in detail and Japan were given an opportunity to surrender.

If such public announcement gave assurance to the Japanese that they could look forward to a life devoted to peaceful pursuits in their homeland and if Japan still refused to surrender our nation might then, in certain circumstances, find itself forced to resort to the use of atomic bombs. Such a step, however, ought not to be made at any time without seriously considering the moral responsibilities which are involved.

The development of atomic power will provide the nations with new means of destruction. The atomic bombs at our disposal represent only the first step in this direction, and there is almost no limit to the destructive power

which will become available in the course of their future development. Thus a nation which sets the precedent of using these newly liberated forces of nature for purposes of destruction may have to bear the responsibility of opening the door to an era of devastation on an unimaginable scale.

If after this war a situation is allowed to develop in the world which permits rival powers to be in uncontrolled possession of these new means of destruction, the cities of the United States as well as the cities of other nations will be in continuous danger of sudden annihilation. All the resources of the United States, moral and material, may have to be mobilized to prevent the advent of such a world situation. Its prevention is at present the solemn responsibility of the United States—singled out by virtue of her lead in the field of atomic power. . . .

In view of the foregoing, we, the undersigned, respectfully petition: first, that you exercise your power as Commander-in-Chief, to rule that the United States shall not resort to the use of atomic bombs in this war unless the terms which will be imposed upon Japan have been made public in detail and Japan knowing these terms has refused to surrender; second, that in such an event the question whether or not to use atomic bombs be decided by you in light of the considerations presented in this petition as well as all the other moral responsibilities which are involved.

DISCUSSION QUESTIONS

1. How would you sum up the scientists' purpose in petitioning the president?
2. How would you describe the tone of the petition?
3. Under what circumstances do the writers say that use of the atomic bomb against Japan might be justified?
4. What "solemn responsibility" does the U.S. bear, according to the scientists? Why?
5. What does the petition add to your understanding of the bombing of Hiroshima and Nagasaki as outlined in the *Upfront* article?

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Should the U.S. Have Dropped the Atom Bomb?

Seventy years ago, the U.S. became the first and only nation to use a nuclear weapon in war

At least nine countries now have nuclear weapons, but the United States remains the only country that actually used an atomic bomb against an enemy. On Aug. 6, 1945, the U.S. dropped an atom bomb on the Japanese city of Hiroshima; three days later, a second bomb was dropped on Nagasaki. Six days later, on August 15, Japan announced it would surrender, effectively ending World War II. But the decision to use this devastating weapon remains controversial. (For more on the development and impact of the atomic bomb, see *Times Past*, p. 18.)

Analyze the arguments, cast your vote, and see instant results at www.upfrontmagazine.com

YES Dropping the atomic bomb was necessary to end the war with Japan at the earliest possible moment. By the early summer of 1945, Japanese leaders knew they couldn't win. But they fought on in hopes of securing better surrender terms.

President Harry S. Truman recognized that he had several options to convince Japan to end the war: 1) intensifying the already-heavy bombing of Japanese cities; 2) waiting for the Soviet Union, an ally in defeating Germany, to join the war against Japan; 3) telling Japan that the U.S. would allow Emperor Hirohito to remain on his throne after the war; and 4) invading Japan with ground troops.

But there was no guarantee that any of these options, or a combination of them, would force the Japanese to surrender quickly, and each one posed serious military, political, and diplomatic risks. Invading Japan may have been the least uncertain militarily, but it carried the highest price: More than 100,000 Americans had already

died fighting the Japanese in the Pacific, and an invasion was certain to be very costly in American lives. And for Truman, any number of American lives that could be saved by using the bomb would be well worth it.

When the atomic bomb became available in July 1945, it was the most promising way to end the war as soon as possible and without the drawbacks of the other options.

The attacks on Hiroshima and Nagasaki persuaded Emperor Hirohito, who had wavered for weeks, that the war must end immediately. Combined with the Soviet Union's entry into the conflict after Hiroshima, the atom bombs brought about Japan's surrender within a few days.

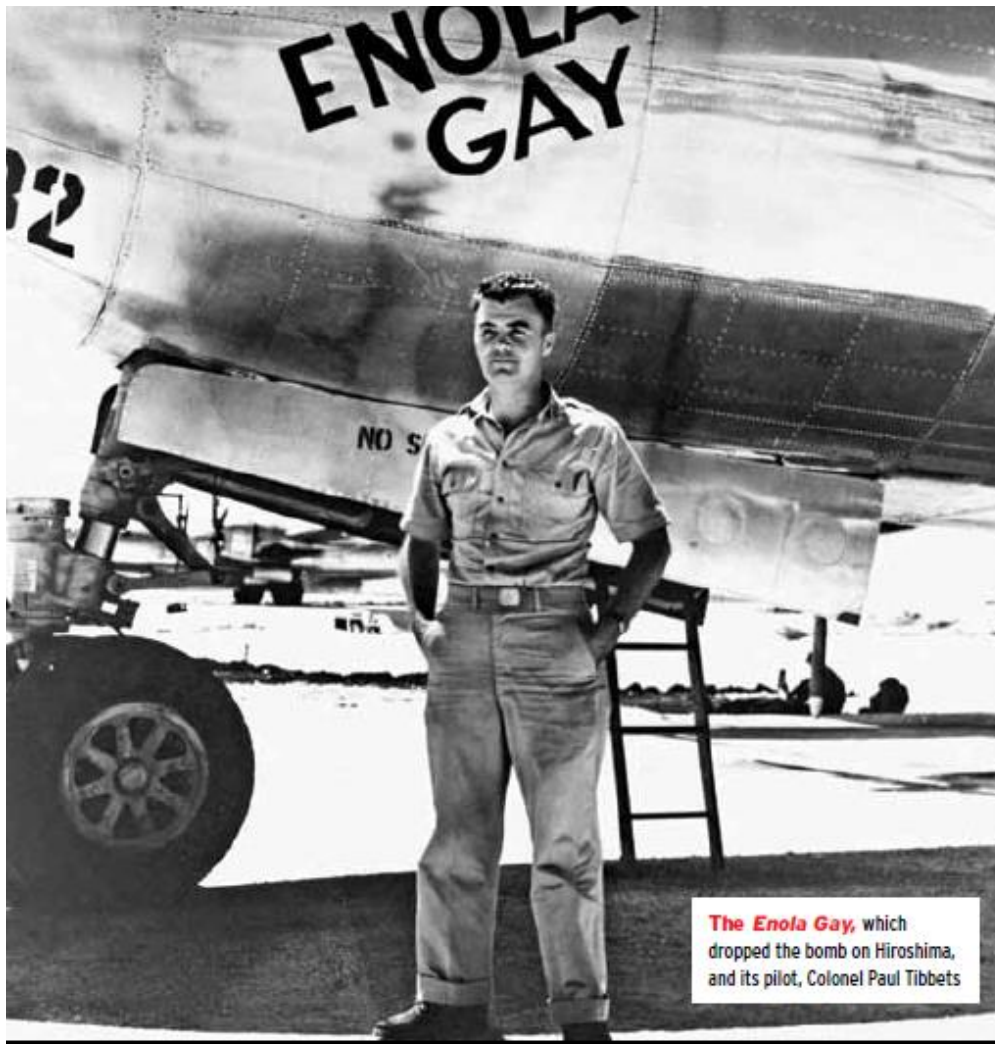
The bomb was necessary to accomplish Truman's primary objectives of forcing a prompt Japanese surrender and saving American lives, perhaps many thousands of them. •

—J. SAMUEL WALKER

Author, *Prompt and Utter Destruction: Truman and the Use of Atomic Bombs Against Japan*

An invasion of Japan could have cost thousands of American lives.

U.S. AIR FORCE PHOTO



The *Enola Gay*, which dropped the bomb on Hiroshima, and its pilot, Colonel Paul Tibbets

BY THE NUMBERS

150,000-246,000

Estimated number of people killed in Hiroshima and Nagasaki, including those killed instantly and those who died of radiation sickness soon after

111,606

Number of U.S. troops killed or missing in the Pacific theater of World War II

137,582

Number of people killed in the 65 conventional bombing raids on Tokyo between Dec. 1944 and Aug. 1945

SOURCES: RADIATION EFFECTS RESEARCH FOUNDATION; ASIA PACIFIC JOURNAL; JAPAN FOCUS; PACIFIC WAR ONLINE ENCYCLOPEDIA

NO When General Dwight D. Eisenhower, then the Supreme Allied Commander, was informed by the U.S. Secretary of War that the atomic bomb was going to be used, he later recalled saying it was unnecessary because Japan was already largely defeated. Eisenhower said the bomb was “no longer mandatory as a measure to save American lives.” After the war, as president of the United States (1953-61), he even stated publicly: “It wasn’t necessary to hit them with that awful thing.”

Before the bomb was used, American intelligence officials believed the war would likely end when two things happened: When the U.S. let Japan know the emperor could remain as a figurehead, and when the Soviet army attacked. The U.S. did tell Japan the emperor could remain on his throne as part of a surrender, and the Soviets declared war, as agreed, on August 8.

But American officials chose not to test whether this intelligence was correct. For logistical reasons, an invasion of Japan couldn’t begin for another three months, so the

U.S. could have waited to see if Japan would surrender before dropping the atomic bombs. Instead, Hiroshima was bombed on August 6, and Nagasaki on August 9.

Hiroshima was of only marginal value as a military target, which is why it hadn’t already been a target of conventional bombings, and it was full of women, children, and old people, since most of the men had left to fight in the war.

Many top World War II military leaders are on record agreeing with Eisenhower that using the atomic bomb was unnecessary.

Some felt it was deeply immoral. Even Admiral William Leahy, President Truman’s chief of staff, later called the bomb a “barbarous weapon” that should not have been used. Leahy wrote, “The Japanese were already defeated and ready to surrender. . . . In being the first to use it, we . . . adopted an ethical standard common to the barbarians of the Dark Ages.”

—GAR ALPEROVITZ

Author, *The Decision to Use the Atomic Bomb*

‘It wasn’t necessary to hit them with that awful thing.’

—DWIGHT D. EISENHOWER

Analyze Authors' Claims

Read "Should the U.S. Have Dropped the Atom Bomb?" on p. 22, then follow the directions below to analyze each author's claims.

AUTHOR: J. Samuel Walker
Author, *Prompt and Utter Destruction*

AUTHOR: Gar Alperovitz
Author, *The Decision to Use the Atomic Bomb*

Author's main claim or argument in the debate:

Author's main claim or argument in the debate:

REASON 1: Name one reason the author gives for his claim.

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List any evidence the author gives to support Reason 1.

List any evidence the author gives to support Reason 1.

REASON 2: Name another reason the author presents.

REASON 2: Name another reason the author presents.

List evidence the author gives to support Reason 2.

List evidence the author gives to support Reason 2.

REASON 3: Name a third reason the author presents.

REASON 3: Name a third reason the author presents.

List evidence the author gives to support Reason 3.

List evidence the author gives to support Reason 3.

What persuasive devices does the author use?

- Appeals to emotions
- Uses data or scholarly research
- Tells why the other side's argument is weak
- Other: _____

What persuasive devices does the author use?

- Appeals to emotions
- Uses data or scholarly research
- Tells why the other side's argument is weak
- Other: _____

EVALUATE: Which author do you think makes his case more effectively? Do you spot any weaknesses—like a bias or missing information—in either argument? Explain on a separate sheet of paper.