

Revisiting the Russell-Einstein Manifesto: Prescriptions for Our Future

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Szilard, 1933, imagines a chain reaction

“As I was waiting for the light to change and as the light changed to green and I crossed the street, it suddenly occurred to me that if we could find an element which is split by neutrons and which would emit two neutrons when it absorbed one neutron, such an element, if assembled in sufficiently large mass, could sustain a nuclear chain reaction.”

At its most fundamental, this is a story about chain reactions. On the day in 1933 when nuclear physicist Leo Szilard first envisioned a nuclear chain reaction, he was waiting to cross a London street. He said,

“As I was waiting for the light to change and as the light changed to green and I crossed the street, it suddenly occurred to me that if we could find an element which is split by neutrons and which would emit two neutrons when it absorbed one neutron, such an element, if assembled in sufficiently large mass, could sustain a nuclear chain reaction.”

Szilard’s insight that day led to the development of nuclear weapons.

Source: Leo Szilard in a 1960 interview, quoted in William Lanouette, *Genius in the Shadows* (Chicago: University of Chicago Press, 1992), p. 133.

Image: Leo Szilard, http://en.wikipedia.org/wiki/Le%C3%B3_Szil%C3%A1rd

Image: Old Imperial Hotel, Russell Square, London – this is where Szilard stayed (built in 1911 and demolished in 1966) -

<http://www.skyscrapercity.com/showthread.php?t=442332&page=6>



At the height of the Cold War there were 65,056 nuclear weapons in the world's stockpiles, held by five countries. (1)

Today, long after the end of the Cold War, there are still approximately 17,300 nuclear weapons, now held by 9 countries.(2) The overwhelming majority of these weapons were and still are in the US and Soviet/now Russian arsenals.

Over time, some 2,053 nuclear tests have been conducted.(3)

Sources:

(1) Table of Global Nuclear Weapons Stockpiles, 1945-2002, Natural Resources Defense Council, Available online 6 March 2015 at <http://www.nrdc.org/nuclear/nudb/datab19.asp>

(2) Hans Kristensen, "Status of World Nuclear Forces, 2013," Federation of American Scientists, accessed online 6 March 2014 at <https://www.fas.org/programs/ssp/nukes/nuclearweapons/nukestatus.html>

(3) "The Nuclear Testing Tally," Arms Control Association, February 2013, accessed online 6 March 2014 at <http://www.armscontrol.org/factsheets/nucleartesttally>
Image: <http://www.nucleardarkness.org/nuclear/highvsloowyield/>

Castle Bravo



1 March 1954

Today, we are to commemorate just one of those tests, the Castle Bravo test, which took place on 1 March 1954. If we were able to stand at a corner of history that day, and look into the distance, we would see that devastating and historic explosion also set in motion another kind of chain reaction, beyond the physical one that devastated a beautiful region and destroyed lives. It sparked a series of events that multiplied in impact and led directly to treaties banning nuclear testing and became a significant milestone on the path toward what we hope will be an eventual nuclear weapons free world.

This talk will focus on events set in motion by Castle Bravo

- Rotblat meets Russell at the BBC
- Nishiwaki shares data with Rotblat
- Rotblat determines the bomb was highly radioactive fission-fusion-fission bomb
- Anti-nuclear movement gains momentum
- Russell is concerned, contacts Einstein
- Einstein signs the manifesto as the last public act, it is released 9 July 1955
- Manifesto's message has continuing impact

Castle Bravo led Joseph Rotblat, a Polish scientist living in London, to meet Bertrand Russell, a world famous English philosopher, on a BBC program about this test and the weapons technology behind it. It led to collaboration between Rotblat and Yasushi Nishiwaki, a Japanese physicist, which made possible a true understanding of the nature of the new weaponry. Concerns about this technology then inspired what became known as the Russell-Einstein Manifesto - signed by some of the world's greatest living scientists condemning these new weapons and called for scientists from the East and West to meet to further explore the dangers facing society from these new weapons. This chain reaction led to the formation of what would become the Pugwash Conferences on Science and World Affairs, a Nobel Peace Prize winning organization seeking to ban nuclear weapons with an office near where Leo Szilard first envisioned his chain reaction, the organization I am honored to serve as executive director.

Today, I will talk a little about this history, and why the lessons and warnings of those early days are still important today. Ultimately, this is a tale of the need for a nuclear weapons free world.

Joseph Rotblat



Joseph Rotblat was born in Poland in 1908. His early childhood quickly changed from one of privilege to one of poverty and hunger during the First World War. He said that his lifelong belief that science should be used to benefit humanity came from his suffering during this time. As a young teen he qualified as an electrician. He had to teach himself in the evenings and weekends to prepare himself for entry into the Free University, as many doors were closed to him due to the growing racism around him. He quickly became recognized for his insight and intellect, and soon became a pioneer in the emerging field of nuclear physics. He was among the first people to envision that it would be possible to cause a chain reaction that would lead to a huge explosion, and he put this thought out of his mind. He went to Liverpool University in England to work with James Chadwick (giving up an invitation to join the Curies in Paris, and thereby most likely saving his life). He was paid too little in England at first to bring his wife over, and when he went back to Poland to get her, she tragically could not travel due to appendicitis. As a result, she was unable to leave Poland, which fell into German hands. She ultimately perished in the Holocaust, though Rotblat did not know that until the war ended.

Rotblat resigns



Leaving the bomb project

He feared, as did many knowledgeable scientists at the time, that Hitler might develop a nuclear weapon. He believed the only way to stop Hitler from using such a weapon was if the allies had one of their own. So he immersed himself in the development of an atomic bomb, throwing aside his morals. He eventually went to Los Alamos, where the secret US weapons program was underway, and became the only non-US, non-British scientist there. He wasn't there long before he learned that the project leaders knew Germany was not working on a bomb project. As this was his entire reason for being there, he resigned. It is said he was the only project scientist to resign on moral grounds, and he paid dearly for it. Accusations of disloyalty dogged him for years, and he was forbidden to discuss his reasons for leaving. A trunk full of personal papers mysteriously disappeared while he was en route back to the UK, and some think this was confiscated by the intelligence services.

Image: Tom Herzberg in Joseph Rotblat, "Leaving the Bomb Project," *Bulletin of the Atomic Scientists*, August 1985, Volume 41, Number 7, pp. 16-19

“The Super”

“I knew a little bit more than other people about what was going on. So I knew that it would begin an arms race and that the hydrogen bomb would come in. And then...for the first time I became worried about the whole future of mankind. Because...once you are going to develop these huge weapons, where are you going to stop? And this was my reaction on the 6th of August [1945].”

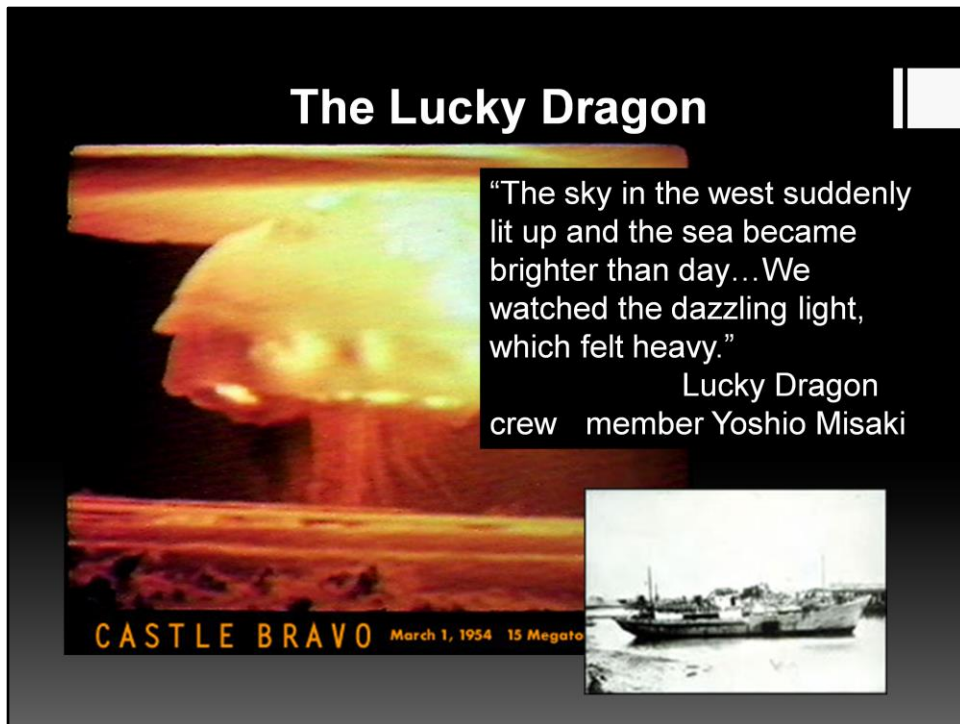
When he returned to the UK, he lost contact with what was happening in Los Alamos, and he was gravely saddened to learn of the bombings of Hiroshima and Nagasaki. As soon as he heard about the bombings, he began to fear that the next weapon to be developed would be even more powerful. At Los Alamos he worked in the office next to Edward Teller, and was friends with a fellow Pole, Stanislaw Ulam, who worked with Teller. He knew that a hydrogen bomb—‘the Super’—was on its way.

As Rotblat said,

“I knew a little bit more than other people about what was going on. So I knew that it would begin an arms race and that the hydrogen bomb would come in. And then...for the first time I became worried about the whole future of mankind. Because...once you are going to develop these huge weapons, where are you going to stop? And this was my reaction on the 6th of August [1945].”

Quote source: Joseph Rotblat, Discussion with Sandra Butcher, July 13, 2003.





Unfortunately, winds apparently shifted, and a 23-man crew of a Japanese fishing vessel—the “Lucky Dragon” were doused with radioactive fallout. They had no idea what had happened.

One account says they watched in awe, “as the sun apparently began rising—in the west.”

“The sky in the west suddenly lit up and the sea became brighter than day... We watched the dazzling light, which felt heavy. Seven or eight minutes later there was a terrific sound -- like an avalanche. Then a visible multi-colored ball of fire appeared on the horizon.”

Lucky Dragon crew member Yoshio Misaki

Word of new radiation fallout spread across Japan and around the world. One man died and several were sickened. Panic spread and the US government began releasing what some considered misleading reports.

Quotes from Bruce Kennedy, “The Lucky Dragon: Unlucky fishing boat became a symbol of Japanese nuclear dread,” CNN Interactive, <http://www.cnn.com/SPECIALS/cold.war/episodes/08/spotlight/>. Photo Source (accessed July 2005):

<http://www.parascope.com/gallery/galleryitems/hotNukes/hotNukes06.htm>.

Fukuryu Maru www.nirs.go.jp/ENG/rd/hibaku03/01.html

Bravo

U.S. Radiochemistry Society, “the Bravo test created the worst radiological disaster in US history”

National Research Council: The amount of Iodine 131 and Cesium-137 released by the Castle test series was 475 times greater and 2.5 times greater, respectively, than from the 1986 Chernobyl accident

Herb York: “I always regard Bravo yield as being at the high end but well within the predictions”

According to the U.S. Radiochemistry Society, “the Bravo test created the worst radiological disaster in US history....”

The bomb was over 1000 times more powerful than those exploded over Hiroshima and Nagasaki in 1945. The Bravo crater in the atoll reef had a diameter of 6,510 ft, with a depth of 250 ft. The cloud top rose and peaked at 130,000 feet (almost 40 km) after only six minutes. Eight minutes after the test the cloud had reached its full dimensions with a diameter of 100 km, a stem 7 km thick, and a cloud bottom rising above 55,000 feet (16.5 km), and after 10 minutes had a diameter of more than 60 miles.

“The ‘Bravo,’ test was one of six large nuclear weapons tests conducted between February 28 and May 14, 1954, which released about 4.2 billion curies of Iodine-131, and 4.9 million curies of cesium-137. The Castle series produced more than half of the total amount of these radionuclides from all tests in the Marshall Islands....By comparison, the amount of Iodine 131 and Cesium-137 released by the Castle test series was 475 times greater and 2.5 times greater, respectively, than from the 1986 Chernobyl accident.

Some people disagreed that the large yield was all a big mistake. Herb York, who was a weapons designer at the time, said:

“I don’t even know what people mean when they say that [it was a run-away], it just

was a big device in which you convert lithium and place tritium and it all burns, more readily than it would if you used ordinary lithium. And so it was hard to calculate, because computers were very poor in those days, they were nowhere near as powerful as handheld computers today, nowhere near, and so, I always regard Bravo yield as being at the high end but well within the predictions. Now other people may think otherwise, but the people I knew never thought there was anything peculiar about Bravo other than the fact that it worked well. And of course, the reason that Bravo is so famous is not that, it's the fallout. With a lesser yield the fallout would have been different but it could even have been worse, you know, I mean it would have produced less, but the question of where it fell depended exactly on how high it rose, and what the winds were at those altitudes. So if Bravo had been only half of what it was, the fallout could have been worse. More likely that it could have been less, but it could have been worse."

Source statistics: Statement of Robert Alvarez, Senior Scholar, institute for Policy Studies before the Subcommittee on Asia, the Pacific and the Global Environment, US House of Representatives, regarding the legacy of nuclear weapons testing in the Marshall Islands, May 20, 2010.

Source York Quote: Interview with Dr. Herbert York, By Alex Wellerstein, At York's home in La Jolla, California, August 24, 2008, accessed online 7 March 2014, <http://www.aip.org/history/ohilist/30665.html>

Rotblat meets Russell

- April 13, 1954
- Russell and Rotblat meet for the first time
- They educate the British public on the new hydrogen bomb
- The two stay in close contact over the years



We now know the horrible outcomes of that 1 March Castle Bravo test. But at the time, the full understanding of what had happened was not possible, and it was made more complicated by misleading government statements. It took the detective work of two men to shine light on what had happened: Yashushi Nishiwaki and Joseph Rotblat.

As news of the disaster began to spread, people began to search for more information. On April 13, 1954, the BBC Panorama Programme called upon Bertrand Russell, Joseph Rotblat, and others to help educate the British public about the new hydrogen bombs which were causing such international concern. It was a chance meeting that was to have a profound impact on the lives of both men, and the growing disarmament movement.

Information began to circulate following the Bravo test as to the nature of the weapon used and the amount of radioactivity released. Most of the public discussion indicated that the bomb was a fission-fusion device. The idea was that this device would have an increased explosive power in terms of blast and heat of about 1,000 times greater than earlier atomic weapons, without a related increase in radioactivity since there was—they said—no fission in the second stage. At the time, this was called a “clean” bomb. Rotblat relied upon these public statements in his presentation on the BBC.



Shizuoka, Japan, March 19, 54. (1)

To the Chief of The Atomic Energy Commission of U.S.A.
As you have already learned through official sources the Japanese Fishing Boat, Saigo Fukuryu Maru, suffered a considerable amount of radio active contamination and all the crew were identified to have suffered from radiation injuries. The tuna and other fish from their catch which was also identified to have a considerable amount of radio activity had been distributed all over the country and sold and partly consumed previously to other scientific investigation.

We happened to identify a considerable amount of radio activity from the tuna distributed to Osaka at the Osaka Central Fish Market. As much as we have learned within 2 hours of testing

海日新報社 東京局

Yasushi Nishiwaki investigates the fallout, writes to US officials

However, Nishiwaki's research raised serious questions about the accuracy of these statements. He said,

"I vividly remember arriving at my laboratory after urgent calls from the public health authority of Osaka City to go to the Central Market to examine fish brought back by the same boat on which the fishermen were injured. In examining the fish, I was greatly surprised by the high amount of radioactivity in their skin....So later, I decided to go to the port of Yaizu to examine the fishermen themselves and the radiation from the boat. From the measurements on the boat it was very apparent that some of the fishermen might have received sufficient radiation to cause their death."

Nishiwaki collected data, and went on a tour through Europe to brief leaders and experts there on the extent of the radioactive fallout. During this European visit, he met Joseph Rotblat. They certainly met at a meeting in Liege in late August/September, but Prof. Masakatsu Yamazaki (who is here today) and others have pointed out there is some question as to whether or not they might have met earlier while Nishiwaki was in London.

Photo source: Contaminated shark fins are tested and found radioactive by Dr. Nishiwaki and his American wife, Jane, in the port of Yaizu.

<http://www.flickr.com/photos/rocbolt/12279070964/in/photostream/>

Photo source: Yasushi Nishiwaki , Letter to the AEC concerning contamination of Daigo Fukuryū Maru following the Castle Bravo Nuclear Test, 17 March 1954.
<http://http://www.flickr.com/photos/rocbolt/10769141454/in/photostream/>

Rotblat Identifies Fission-Fusion-Fission Bomb



The Hydrogen-Uranium Bomb

J. ROTBLAT



In the following article a British physicist speculates on the composition and possible radiological effects of the superbomb tested in the Pacific last spring. He concludes that it "is a kind of cobalt bomb; in some respects, it is even worse." Mr. Rotblat, executive vice-president of the British Atomic Scientists' Association, is professor in the Physics Department of the Medical College, St. Bartholomew's Hospital, London. His article is reprinted from the March issue of the Atomic Scientists Journal.

the total activity, say one-quarter, we deduce that the total activity of the H-bomb was about 40 times greater than that due to the fission core; in other words, it was proportional to the total explosive power of the bomb, about 20 megatons.

On the other hand, the analyses carried out by Japanese scientists³ of the activity resulting from the test showed that it was almost entirely due to fission fragments. Measurements were made on the dust from the

- “[The paper] turned out to be a sensation: the mass media picked up the story and gave it much publicity.” Joseph Rotblat

Following the meeting, Rotblat requested more information from the scientist and became convinced that the weapon must have had a third stage—making it a fission-fusion-fission bomb. He surmised that fast neutrons from the second stage must have produced additional fission in a third stage, thus nearly increasing the radioactivity a thousand-fold from the bomb used on Hiroshima. According to one observer, Rotblat’s analysis was of the “utmost significance” in that it “made clear both the relative cheapness and simplicity with which such bombs can be made, and the potential hazard from the large amount of radioactivity released in the explosion.” [1]

Rotblat was originally convinced by Sir John Cockcroft, the head of the UK Atomic Energy Authority, not to publish this result (due to fears that the US would think Rotblat had used classified secrets and that it would rekindle bad feelings between the two countries following the Klaus Fuchs spying scandal). However a misleading report by the US Atomic Energy Commission infuriated Rotblat enough in February 1955 that he went ahead and published his report in the March issue of the ASA newsletter and in the May issue of the Bulletin of the Atomic Scientists in the US. [2]

According to Joseph Rotblat, “[The paper] turned out to be a sensation: the mass media picked up the story and gave it much publicity.” [3]

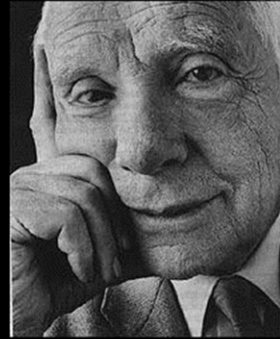
Notes:

[1] P.E. Hodgson, "The British Atomic Scientists' Association, 1946-59," *Bulletin of the Atomic Scientists* 15, no. 9 (November 1959): 394.

[2] J. Rotblat, "The Hydrogen-Uranium Bomb," *Bulletin of the Atomic Scientists* 11 (May 1955): 171-2, 177.

[3] Joseph Rotblat, "Bertrand Russell and the Pugwash Movement: Personal Reminiscences of Joseph Rotblat." This article originally appeared in the *Russell: The Journal of Bertrand Russell Studies* 18, no. 1 (Summer 1998). It was reprinted by *The Activist Magazine* 14, no. 5 (September/October 1998). It was accessed 10 March 2014 at <http://webhome.idirect.com/~occpehr/articles/pugwash.htm>.

"I was attacked viciously in the House of Lords. And I could not respond..."



It was really a very bad time for me.

But also, I became sort of very well known, a bit famous."

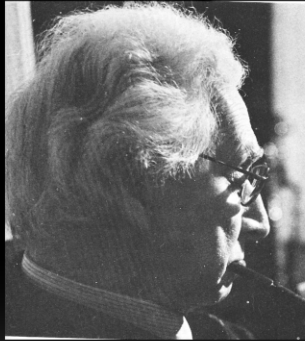
Joseph Rotblat

Rotblat said:

"This caused a terrific uproar in Britain....I was attacked viciously in the House of Lords. And I could not respond...It was really a very bad time for me. But also, I became sort of very well known, a bit famous. The Labour Party was in opposition at that time and...I became sort of their darling, the source of information. And of course, Russell was very much taken in...and Russell became very much worried about it."

Joseph Rotblat, discussion with Sandra Ionno Butcher, July 13, 2003.

Russell's "Man's Peril"



I appeal, as a human being to human beings: remember your humanity, and forget the rest.

6 to 7 million people heard the broadcast

In late 1954, Russell felt the urge to “find some way of making the world understand the dangers into which it was running blindly, head-on.”[\[1\]](#)

He began negotiations with the BBC for another show. The BBC insisted on new material from Russell (in fact, they even suggested Russell debate a popular footballer to offset his “grim forebodings.”) Russell rejected this as “utterly frivolous” and the BBC relented.[\[2\]](#)

Russell claimed the ultimate text of his presentation “was so tight-packed that anything that I have since said on the subject can be found in it at least in essence.”[\[3\]](#) In fact, many of the phrases from the Russell-Einstein Manifesto are foreshadowed in this December 23rd broadcast, called *Man's Peril*.

This conclusion will sound familiar to those who know the Russell-Einstein Manifesto.

“There lies before us, if we choose, continual progress in happiness, knowledge, and wisdom. Shall we, instead, choose death, because we cannot forget our quarrels? I appeal, as a human being to human beings: remember your humanity, and forget the rest. If you can do so, the way lies open to a new Paradise; if you cannot, nothing lies before you but universal death.”

Man's Peril was heard by an estimated six to seven million people. Among the eager listeners were scientists around the world who had been seeking ways to draw greater attention to the dangers of the nuclear age.

Photo Source: Joseph Rotblat, editor, *Proceedings of the First Pugwash Conference on Science and World Affairs*, 1982.

[1] Russell, *The Autobiography of Bertrand Russell*, 90.

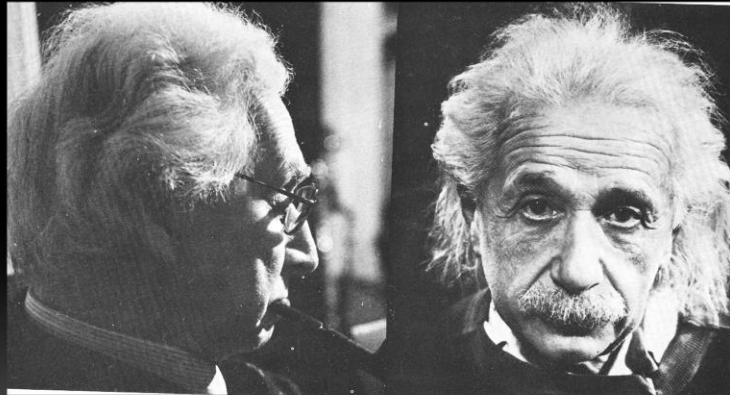
[2] Russell, *The Autobiography of Bertrand Russell*, 90-91.

[3] *Ibid.*, 90.

Source: *Man's Peril*, BBC Radio, December 30, 1954

Russell Writes Einstein

February 11, 1955

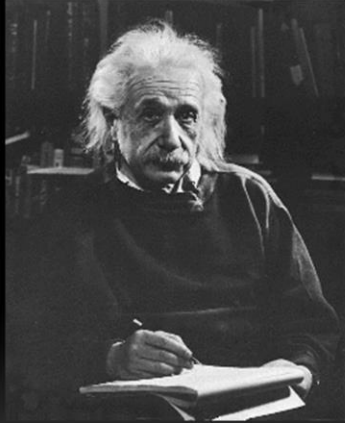


Following this broadcast, Russell heard from many scientists. Working with Rotblat, what eventually emerged was a plan for a statement by eminent men of scientists, from East and West. Russell knew for such a project to work, he had to have a signature from the most eminent scientist of the day, Einstein.

“In common with every other thinking person, I am profoundly disquieted by the armaments race in nuclear weapons. You have on various occasions given expression to feelings and opinions with which I am in close agreement. I think that eminent men of science ought to do something dramatic to bring home to the public and governments the disasters that may occur.”

Quote Source: Bertrand Russell to Albert Einstein, February 11, 1955. Quoted in Nathan and Norden, *Einstein on Peace*, 623-625.

Einstein Concurs



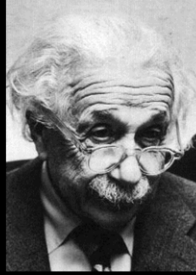
to sign your excellent statement
our choice of the prospective
With kind regards,
A. Einstein.
Albert Einstein.

Albert Einstein, the world's leading thinker, and a strong advocate for peace, replied:

"I agree with every word in your letter of February 11. Something must be done in this matter, something that will make an impression on the general public as well as on political leaders."

Quote source: Albert Einstein to Bertrand Russell, February 16, 1955. Quoted in Nathan and Norden, *Einstein on Peace*, 625-626.

Einstein's Last Act



“the last message from the man who was the symbol of the great heights the human intellect can reach, imploring us not to let all this be destroyed by human folly.”

--Joseph Rotblat

Einstein agreed to sign the appeal. He wrote a three-line letter on April 11, 1955:

“Thank you for your letter of April 5. I am gladly willing to sign your excellent statement. I also agree with your choice of the prospective signers.”[1]

Albert Einstein's signature on his letter to Russell is the last official public act of his life. He died on April 18, 1955. Russell was flying from Rome to Paris on that day, and when the pilot announced Einstein's death Russell “felt shattered.” He thought the whole plan would fall through without Einstein's endorsement. However, when he arrived at his hotel in Paris, he found Einstein's letter. [2]

Joseph Rotblat summarized the importance of Einstein's imprimatur:

“...this gives the Manifesto extra poignancy: the last message from the man who was the symbol of the great heights the human intellect can reach, imploring us not to let all this be destroyed by human folly.” [3]

[1] Albert Einstein to Bertrand Russell, April 11, 1955. Quoted in Nathan and Norden,

Einstein on Peace, 631.

[2] Russell, *The Autobiography of Bertrand Russell*, 94.

[3] Joseph Rotblat, *Reminiscences on the 40th Anniversary of the Russell-Einstein Manifesto*, 50.

Photo: mathforeurope.digibel.be/alberteinstein.html

Russell-Einstein Manifesto
London, July 9, 1955

Proclamation of the Russell-Einstein Manifesto at a Press Conference
in Caxton Hall, London, on 9th July 1955

Albert Einstein Bertrand Russell
NOTICE
TO THE WORLD
... resume war or perish!
... world peace or universal death!
AUDIO MASTERWORKS (M 122)

“We have to learn to think in a new way”

On 9 July 1955, Bertrand Russell gave a press conference in London’s Caxton Hall to release what later became known as the Russell-Einstein Manifesto. Joseph Rotblat, the youngest of the signatories, chaired the meeting.

Please listen to this excerpt of Bertrand Russell reading out the Manifesto at the July 9, 1955 press conference.

The Signatories, part 1



Max Born
UK, 1882 - 1970
Nobel Prize
in Physics, 1954



Leopold Infeld
Poland, 1898-1968



Percy Bridgman
Nobel Prize
in Physics, 1946
USA, 1882-1961



Frederic Joliot Curie
France, 1900-1958
Prize in Chemistry 1935



Albert Einstein
1879-1955
Nobel Prize
in Physics, 1921



Hermann J. Muller
USA, 1890-1967
Nobel Prize in
Physiology or
Medicine, 1946

The Manifesto was signed by Max Born, Percy Bridgman, Albert Einstein, Leopold Infeld, Frederic Joliot-Curie, Hermann Muller,

The Signatories, part 2



Linus Pauling
USA, 1901-1994
Nobel Prize in
Chemistry 1954
Nobel Peace Prize
1962



**Earl (Bertrand Arthur
William) Russell**
UK, 1872-1970
Nobel Prize in Literature
1950



**Cecil Frank
Powell**
UK, 1903-1969
Nobel Prize in
Physics 1950



Hideki Yukawa
Japan, 1907 -
1981
Nobel Prize in
Physics, 1949



Joseph Rotblat
UK, 1908 -
Nobel Peace
Prize 1995

Linus Pauling, Cecil Powell, Joseph Rotblat, Bertrand Russell, and Hideki Yukawa.

“Global Patriotism”

“What can cure this sickness of our generation?... The answer is an agreement not to go to war...”

“Lord Russell may be thanked to the degree that he has waked us up—and possibly our Communist contemporaries—to reality.”

--Editorial, *New York Times*, July 11, 1955

“AS MEMBERS OF A SPECIES”

One cannot deny that Bertrand Russell, the late Albert Einstein and seven other thinkers and philosophers were expressing what might be called a global patriotism when they signed the statement on nuclear warfare released by Lord Russell on Saturday. They were hon-

Nine Noted Scientists Urge War Ban

Warning on Nuclear Peril Was Signed by Einstein

By PETER D. WHITNEY
Special to the New York Times.
LONDON, July 8.—Nine eminent scientists, including the late Albert Einstein, have appealed by the millions to European war because the hydrogen bomb threatens “the continued existence of mankind.”

Richard Röntgen, British mathematician and philosopher,

Statements on nuclear warfare will be filed on Page 35.

stated today that Einstein, who died in 1955, had signed the appeal in a letter that reached London the day the present one was filed in New York, N. Y., April 25.

The appeal asked an either-or choice, in both the Communist and non-Communist world, as to whether it is a worthwhile, or a just, war to be fought by the average man the “very real danger of the extermination of the human race by dust and rain from radioactive clouds.”

Among the signers were seven other noted scientists. One of them, Prof. Joseph B. Con-



Bertrand Russell reads a statement subscribed to by Albert Einstein just before his death and signed by eight other scientists calling for the prohibition of war.

The world media covered the Manifesto.

The New York Times wrote in an editorial, referring to the ‘global patriotism’ of Russell, Einstein and the others:

“The sinister clouds that blossomed over Hiroshima and Nagasaki have not wholly dissipated. Their psychological fallout continues, distressing the minds of men. What can cure this sickness of our generation?...The answer is an agreement not to go to war....because, in grim truth, world-wide war would now be suicide for all concerned, aggressors and defenders alike....Lord Russell may be thanked to the degree that he has waked us up—and possibly our Communist contemporaries—to reality.”

--Editorial, *New York Times*, 11 July 1955.

A New Role for Scientists

“[T]he idea that scientists should take an active part in world affairs was evidently approved by public opinion.”

• Joseph Rotblat

According to Rotblat,

“[T]he idea that scientists should take an active part in world affairs was evidently approved by public opinion.”

Quote Source: Rotblat, *Science and World Affairs*, 7.

The Manifesto's Impact

"To those of us in Chicago [the Manifesto] was like finding a crack in the Iron Curtain.

Especially to me, and to many of those in my generation in that setting, it gave meaning and set a principled direction that we could follow with enthusiasm."

Ruth S. Adams



The Manifesto gave hope to scientists and citizens around the world. Ruth Adams, who was important in Pugwash and other efforts to eradicate nuclear weapons, summarized the Manifesto's impact:

"To those of us in Chicago [the Manifesto] was like finding a crack in the Iron Curtain. Especially to me, and to many of those in my generation in that setting, it gave meaning and set a principled direction that we could follow with enthusiasm."

Ruth S. Adams, "Reflections 1957-2003," Address in Pugwash, Nova Scotia, July 20, 2003.

Available at www.pugwash.org/reports/pac/53/remarks-adams.htm

Photo Source: Joseph Rotblat, editor, Proceedings of the First Pugwash Conference on Science and World Affairs, 1982.



Yukawa, Tomonaga, Ogawa

Rotblat, Szilard

First Pugwash
Conference
Pugwash, Nova Scotia,
Canada
July 1957



So, that is the history of how the Russell-Einstein Manifesto grew directly out of the ashes of the Castle Bravo explosion on 1 March 1954. It shows how closely linked even the very early anti-nuclear movement has been with leading voices in Japan. It was Yasushi Nishiwaki's data that made possible the full international understanding of the nature of the fission-fusion-fission bomb used that day, as explained by Joseph Rotblat to the world, despite pressures from governments for him to keep quiet about his understanding.

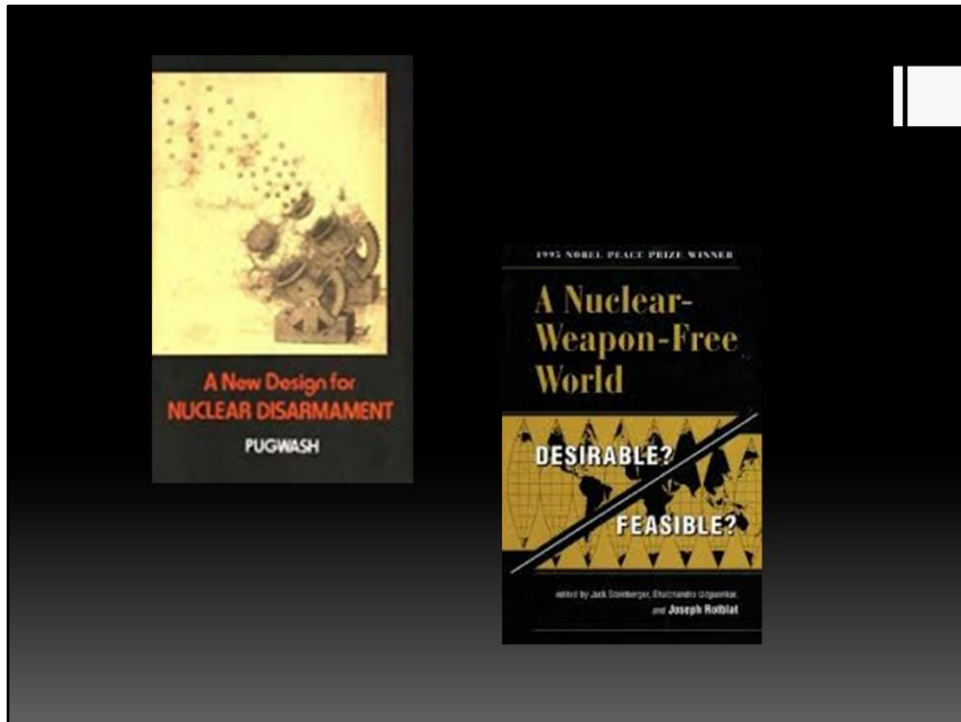
Joseph Rotblat was thrust into a very prominent role as a result of these events. He later said,

"I believe this was the beginning really of the movement...against the atom bomb, because the initial stage was not so much against the bomb but against the tests.... I believe I was very much contributing toward the beginning of the whole anti nuclear movement." [1]

The manifesto of course led to the eventual historic Pugwash Conference, which took place in Pugwash, Nova Scotia, in 1957 – a ground breaking meeting of scientists from both sides, about which for reasons of time I will not go into detail.

[1] Joseph Rotblat, Interview, National Life Stories Collection, Tape 20, National Library (UK), 2002, Available 10 March 2014 at <http://sounds.bl.uk/Oral->

history/Science/021M-C0464X0017XX-2100V0



In Pugwash, Nova Scotia Rotblat met three Japanese scientists, and Yukawa invited him to come to Japan a few weeks after the conference to attend a congress against atom bombs. He decided then to visit Hiroshima. It was 12 years after the bombing and the city was not rebuilt yet. He met the mayor and went to the hospital and met victims. Michiji Konuma, who is here today, was at the time a graduate student, and met Joseph Rotblat on his 1954 visit to Japan. Michiji himself played a very important role in the Pugwash as it evolved over time, including serving on the Pugwash Council. Japanese scientists have always been extremely important in the organization's history. One example is a 1975 symposium in Kyoto, "A New Design towards Complete Nuclear Disarmament" that was organized by Hideki Yukawa, Sin-itiro Tomonaga, Toshiyuki Toyoda and others. This symposium resulted in a book, which was an important part of the Pugwash efforts to promote a nuclear weapons free world, which led to later Pugwash books on a "Nuclear Weapons Free World: Desirable? Feasible?" that led directly to the Canberra Commission on the Elimination of Nuclear Weapons sponsored by the Australian government and involving Jo Rotblat. We have here today also Tatsu Suzuki, who I first met when I was part of Student Pugwash USA, when we launched a kind of Hippocratic Oath for young scientists. Tatsu was involved with an effort to get young Japanese scientists to agree not to work on nuclear weapons. His work educating us all about the issues involved with nuclear energy has been incredibly important, especially following the Fukushima crisis. And of course Pugwash Council member Taka Takaharo has brought us all together to this important center of learning for this interesting meeting. There

are many others, and I apologize if for the interest of time I have not mentioned more of the fine work done by Japanese Pugwashites, including hosting several landmark conferences in Japan over the years



**1995 Hiroshima Pugwash
Conference**

Taka asked me to also talk about the Russell-Einstein Manifesto's relevance for the future. I was going to give a breakdown of the dismal status of various arms control and disarmament initiatives. We cannot forget those early statistics I read out: At the height of the Cold War there were 65,056 nuclear weapons in the world's stockpiles, held by five countries. Today, there are still approximately 17,300 nuclear weapons, now held by 9 countries. The vast majority of these are held by the US and Russia.

Of course there are fears that there may be proliferation of nuclear weapons. But stopping the spread of nuclear weapons is only a part of the task. The rest of the task is getting rid of those weapons that do exist. This is part of the Non-Proliferation Treaty's requirement on nuclear weapons states. There is a growing movement now to re-engage governments on the humanitarian impact of these weapons and their illegality.

The Russell-Einstein Manifesto still has the prescription for the future. It certainly still drives the ongoing work of the Pugwash Conferences.



The Manifesto calls on us all to ‘learn to think in a new way.’ The dangers we face are evolving, and they threaten our very survival. Today, that means that the Cold War mentality is not appropriate for this complicated world.

The Manifesto is above all a call for people to seek dialogue and understanding across the lines that divide us. At the time of its writing that meant that people had to have the courage to reach across the Iron Curtain. Today that means we need to create space for people to meet who do not normally have a chance to meet each other. Pugwash works a great deal at the moment on seeking a peaceful resolution of the Iranian nuclear issue. In the Middle East, in South Asia, and elsewhere, dialogue and understanding remain a critical first step to create the conditions for resolution of the issues surrounding weapons of mass destruction and their possible proliferation.

The Manifesto says we must remember our humanity – all too often in today’s post-9/11 world, this aspect of policy making seems to be lost.



The Manifesto is not just a call for nuclear disarmament. It is a call for the end of war. As that 1955 New York Times editorial said, it is a call for a new “global patriotism.” Pugwash today continues its work to seek conflict resolution in those areas where nuclear risks are present. We seek peace. Jo Rotblat used to say that nuclear abolition was his short-term goal, and the abolition of war was his long-term goal. These are not impossible goals to reach.

Nobel Peace Prize 1995

To Pugwash and to Joseph Rotblat

“for their efforts to diminish the part played by nuclear arms in international politics and in the longer run to eliminate such arms.”



So, the chain reaction of events started on 1 March 1954 continues. It is impossible to know where it will end, but I believe firmly that we are on the path to nuclear abolition. Many people's lives have been affected over time by the events as they unfolded. I have given only a very broad brush stroke of the complicated history. It is possible to track more closely the way different people intersected in this time period – people like Jo Rotblat and Yasushi Nishiwaki. People like Yukawa and Konuma and others. All of these events had a part to play in the awarding of the 1995 Nobel Peace Prize to Joseph Rotblat and to Pugwash "for their efforts to diminish the part played by nuclear arms in international politics and, in the longer run, to eliminate such arms".

What it's all about...



A single nuclear weapon can release in one micro-second more energy than all the conventional weapons used in all wars throughout history.

--Canberra Commission

I would like to leave you with one final thought from the Canberra Commission, which as I mentioned was a direct result of Pugwash work on a nuclear weapons free world.

The report reminds us:

“The destructive power of nuclear weapons dwarfs that of any conventional weapon or non-nuclear weapon of mass destruction. A single nuclear weapon can release in one micro-second more energy than all the conventional weapons used in all wars throughout history.”

We still have yet to fulfill the vision of the Russell-Einstein Manifesto. But we will.

The quest for a war-free world has a basic purpose: survival.

But if in the process we learn how to achieve it by love rather than by fear, by kindness rather than by compulsion; if in the process we learn to combine the essential with the enjoyable, the expedient with the benevolent, the practical with the beautiful, this will be an extra incentive to embark on this great task.



Above all, remember your humanity.

Joseph Rotblat with Joey Butcher at Thinker's Lodge, Pugwash, Nova Scotia.



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Thank you!