Revisiting the Russell-Einstein Manifesto:

Prescriptions for Our Future

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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."[1]

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

At the height of the Cold War there were 65,056 nuclear weapons in the world's stockpiles, held by five countries.[2] Today, long after the end of the Cold War, there are still approximately 17,300 nuclear weapons, now held by 9 countries.[3] 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.[4]

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

[1] Leo Szilard in a 1960 interview, quoted in William Lanoutte, Genius in the Shadows (Chicago: University of Chicago Press, 1992), p. 133.
[2] 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
[3] 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
[4] "The Nuclear Testing Tally," Arms Control Association, February 2013, accessed online 6 March 2014 at http://www.armscontrol.org/factsheets/nucleartesttally

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.

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 – which was 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.

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.

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]."[5]

Hydrogen bomb

The first hydrogen device was detonated by the US in November 1952. It was unwieldy and impractical by bomb-making standards, but still it obliterated an island in the Eniwetok Atoll. In 1953, the Soviet Union tested its first hydrogen bomb.

On March 1, 1954, the first US hydrogen bomb test took place - Castle Bravo.

Unfortunately, winds 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."[6] Two hundred miles away, radioactive ash spread like snow on the atolls of Rongelap, Alinginea, Rongerik, and Utirik, where, according to one account, "The children played in the colorful ash."[7]

[5] Quote source: Joseph Rotblat, Interview with Sandra Butcher, July 13, 2003.
[6] Quotes from Bruce Kennedy, "The Lucky Dragon: Unlucky fishing boat became a symbol of Japanese nuclear dread," CNN Interactive, Accessed July 2005, http://www.cnn.com/SPECIALS/cold.war/episodes/08/spotlight/.
[7] Quoted in Alvarez testimony.

According to Lucky Dragon crew member Yoshio Misaki, "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."[8]

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.

A former US Department of Energy Official Bob Alvarez summarized statistics,

> "the Bravo test created the worst radiological disaster in US history….the yield of Bravo dramatically exceeded predictions, being about 2.5 times higher than the best guess and almost double the estimated maximum possible yield (6 Mt predicted, estimated yield range 4-8 Mt)."[9]
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> 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.[10]
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> "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.[11]

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

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[8] Quoted in Kennedy, CNN.

[9] Quoted in 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

[10] 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

[11] National Research Council, Radiation Dose Reconstruction for Epidemiologic Uses, National Academy of Sciences Press. p. 105., quoted in Ibid.

> "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."[12]

Detective work

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: Yasushi 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.

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

[12] Interview with Dr. Herbert York, By Alex Wellerstein, At York's home in La Jolla, California, August 24, 2008, http://www.aip.org/history/ohilist/30665.html

> "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."[13]

He tried to get information from US officials. He wrote to the head of the US Atomic Energy Commission on 17 March for more information. He wrote,

> …in order to minimize possible radiation injury and damage to human subjects in Japan we need to know immediately in detail the possible types of radio active elements contained in the radio active contaminated material.[14]

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. 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.[15]

Following the meeting, Rotblat requested more information from Nishiwaki 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."[16]

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

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[13] Yasushi Nishiwaki, 22 October 1945, quoted in Masakatsu Yamazaki et. al, "Reporting to Europe the suffering from radiation exposure caused by the Bikini H-bomb: From Yasushi Nishiwaki to the Russell-Einstein Manifesto," July 23, 2013, iCHSTM 2013, Manchester, UK. Powerpoint slides and notes provided by author.

[14] Yasushi Nishiwaki , Letter to the AEC concerning contamination of Daigo Fukuryū Maru following the Castle Bravo Nuclear Test, 17 March 1954. Available 10 March 2014 at http://http://www.flickr.com/photos/rocbolt/10769141454/in/photostream/

[15] Yamazaki et al – presentation and private correspondence with the author.

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

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.[17]

According to Joseph Rotblat, "[The paper] turned out to be a sensation: the mass media picked up the story and gave it much publicity."[18] He 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."[19]

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."[20]

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.[21]

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."[22] 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 later 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.

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[17] J. Rotblat, "The Hydrogen-Uranium Bomb," Bulletin of the Atomic Scientists 11 (May 1955): 171-2, 177.
[18] 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.
[19] Joseph Rotblat, discussion with Sandra Ionno Butcher, July 13, 2003.
[20] Russell, The Autobiography of Bertrand Russell, 90.
[21] Russell, The Autobiography of Bertrand Russell, 90-91.
[22] Ibid., 90.

Following this broadcast, Russell heard from many scientists. Working with Rotblat, what eventually emerged was a plan for a statement by eminent men of science, from East and West. Russell knew for such a project to work, he had to have a signature from the most famous scientist of the day, Einstein. He wrote to 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."[23]

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."[24]

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."[25]

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 waiting for him.[26]

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."[27]

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

The Manifesto was written with beautiful language. [Audio was played]

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[23] Bertrand Russell to Albert Einstein, February 11, 1955. Quoted in Nathan and Norden, Einstein on Peace, 623-625.
[24] Albert Einstein to Bertrand Russell, February 16, 1955. Quoted in Nathan and Norden, Einstein on Peace, 625-626.
[25] Albert Einstein to Bertrand Russell, April 11, 1955. Quoted in Nathan and Norden, Einstein on Peace, 631.
[26] Russell, The Autobiography of Bertrand Russell, 94.
[27] Joseph Rotblat, Reminiscences on the 40th Anniversary of the Russell-Einstein Manifesto, 50.

> In the tragic situation which confronts humanity, we feel that scientists should assemble in conference to appraise the perils that have arisen as a result of the development of weapons of mass destruction, and to discuss a resolution in the spirit of the appended draft.
>
> We are speaking on this occasion, not as members of this or that nation, continent, or creed, but as human beings, members of the species Man, whose continued existence is in doubt….
>
> We have to learn to think in a new way. We have to learn to ask ourselves, not what steps can be taken to give military victory to whatever group we prefer, for there no longer are such steps; the question we have to ask ourselves is: what steps can be taken to prevent a military contest of which the issue must be disastrous to all parties?…
>
> [T]he best authorities are unanimous in saying that a war with H-bombs might possibly put an end to the human race. It is feared that if many H-bombs are used there will be universal death, sudden only for a minority, but for the majority a slow torture of disease and disintegration….
>
> Here, then, is the problem which we present to you, stark and dreadful and inescapable: Shall we put an end to the human race; or shall mankind renounce war?

The Manifesto was signed by Max Born, Percy Bridgman, Albert Einstein, Leopold Infeld, Frederic Joliot-Curie, Hermann Muller, Linus Pauling, Cecil Powell, Joseph Rotblat, Bertrand Russell, and Hideki Yukawa.

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."[28]

According to Rotblat,

[28] Editorial, New York Times, 11 July 1955.

> "[T]he idea that scientists should take an active part in world affairs was evidently approved by public opinion."[29]

The Manifesto gave hope to scientists and citizens around the world. Ruth Adams, who was important later 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."[30]

Chain Reactions

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."[31]

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.

In Pugwash, Nova Scotia Rotblat met three Japanese scientists,

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

[29] Rotblat, Science and World Affairs, 7.
[30] Ruth S. Adams, "Reflections 1957-2003," Address in Pugwash, Nova Scotia, July 20, 2003.
[31] 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

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.

Prescription for the future?

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.

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".

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."[32]

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

[32] Report of the Canberra Commission on the Elimination of Nuclear Weapons, August 1996, p. 18. Available online 6 March 2014 at: http://www.dfat.gov.au/publications/security/canberra-commission-report/.