THE NOBEL PRIZE

Joseph Rotblat
Nobel Lecture

Joseph Rotblat delivering his Nobel Peace Prize lecture. © Knudsens fotosenter/Dextra Photo, Norsk Teknisk Museum.

Acceptance and Nobel Lecture

Remember Your Humanity

At this momentous event in my life – the acceptance of the Nobel Peace Prize – I want to speak as a scientist, but also as a human being. From my earliest days I had a passion for science. But science, the exercise of the supreme power of the human intellect, was always linked in my mind with benefit to people. I saw science as being in harmony with humanity. I did not imagine that the second half of my life would be spent on efforts to avert a mortal danger to humanity created by science.

The practical release of nuclear energy was the outcome of many years of experimental and theoretical research. It had great potential for the

common good. But the first the general public learned about the discovery was the news of the destruction of Hiroshima by the atom bomb. A splendid achievement of science and technology had turned malign. Science became identified with death and destruction.

It is painful to me to admit that this depiction of science was deserved. The decision to use the atom bomb on Japanese cities, and the consequent buildup of enormous nuclear arsenals, was made by governments, on the basis of political and military perceptions. But scientists on both sides of the iron curtain played a very significant role in maintaining the momentum of the nuclear arms race throughout the four decades of the Cold War.

The role of scientists in the nuclear arms race was expressed bluntly by Lord Zuckerman, for many years Chief Scientific Adviser to the British Government:[1]

> *When it comes to nuclear weapons ... it is the man in the laboratory who at the start proposes that for this or that arcane reason it would be useful to improve an old or to devise a new nuclear warhead. It is he, the technician, not the commander in the field, who is at the heart of the arms race.*

Long before the terrifying potential of the arms race was recognized, there was a widespread instinctive abhorrence of nuclear weapons, and a strong desire to get rid of them. Indeed, the very first resolution of the General Assembly of the United Nations – adopted unanimously – called for the elimination of nuclear weapons. But the world was then polarized by the bitter ideological struggle between East and West. There was no chance to meet this call. The chief task was to stop the arms race before it brought utter disaster. However, after the collapse of communism and the disintegration of the Soviet Union, any rationale for having nuclear weapons disappeared. The quest for their total elimination could be resumed. But the nuclear powers still cling tenaciously to their weapons.

Let me remind you that nuclear disarmament is not just an ardent desire of the people, as expressed in many resolutions of the United Nations. It is a legal commitment by the five official nuclear states, entered into when they signed the Non-Proliferation Treaty. Only a few months ago, when the indefinite extension of the Treaty was agreed, the nuclear powers committed themselves again to complete nuclear disarmament. This is still their declared goal. But the declarations are not matched by

their policies, and this divergence seems to be intrinsic.

Since the end of the Cold War two main nuclear powers have begun to make big reductions in their nuclear arsenals. Each of them is dismantling about 2,000 nuclear warheads a year. If this program continued, all nuclear warheads could be dismantled in little over ten years from now. We have the technical means to create a nuclear-weapon-free world in about a decade. Alas, the present program does not provide for this. When the START 2 treaty has been implemented – and remember it has not yet been ratified – we will be left with some 15,000 nuclear warheads, active and in reserve. Fifteen thousand weapons with an average yield of 20 Hiroshima bombs.

Unless there is a change in the basic philosophy, we will not see a reduction of nuclear arsenals to zero for a very long time, if ever. The present basic philosophy is nuclear deterrence. This was stated clearly in the US Nuclear Posture Review which concluded: *"Post-Cold War environment requires nuclear deterrence,"*[2] and this is echoed by other nuclear states. Nuclear weapons are kept as a hedge against some unspecified dangers.

This policy is simply an inertial continuation from the Cold War era. The Cold War is over but Cold War thinking survives. Then, we were told that a world war was prevented by the existence of nuclear weapons. Now, we are told that nuclear weapons prevent all kinds of war. These are arguments that purport to prove a negative. I am reminded of a story told in my boyhood at the time when radio communication began.

> Two wise men were arguing about the ancient civilization in their respective countries. One said: 'my country has a long history of technological development: we have carried out deep excavations and found a wire, which shows that already in the old days we had the telegraph'. The other man retorted: 'we too made excavations; we dug much deeper than you and found … nothing, which proves that already in those days we had wireless communication'!

There is no direct evidence that nuclear weapons prevented a world war. Conversely, it is known that they nearly caused one. The most terrifying moment in my life was October 1962, during the Cuban Missile Crisis. I did not know all the facts – we have learned only recently how close we were to war – but I knew enough to make me tremble. The lives of millions of people were about to end abruptly; millions of others were to

suffer a lingering death; much of our civilization was to be destroyed. It all hung on the decision of one man, Nikita Khrushchev: would he or would he not yield to the U.S. ultimatum?[3] This is the reality of nuclear weapons: they may trigger a world war; a war which, unlike previous ones, destroys all of civilization.

As for the assertion that nuclear weapons prevent wars, how many more wars are needed to refute this arguments? Tens of millions have died in the many wars that have taken place since 1945. In a number of them nuclear states were directly involved. In two they were actually defeated. Having nuclear weapons was of no use to them.

To sum up, there is no evidence that a world without nuclear weapons would be a dangerous world. On the contrary, it would be a safer world, as I will show later.

We are told that the possession of nuclear weapons – in some cases even the testing of these weapons – is essential for national security. But this argument can be made by other countries as well. If the militarily most powerful – and least threatened – states need nuclear weapons for their security, how can one deny such security to countries that are truly insecure? The present nuclear policy is a recipe for proliferation. It is a policy for disaster.

To prevent this disaster – for the sake of humanity – we must get rid of all nuclear weapons.

Achieving this goal will take time, but it will never happen unless we make a start. Some essential steps towards it can be taken now. Several studies, and a number of public statements by senior military and political personalities, testify that – except for disputes between the present nuclear states – all military conflicts, as well as threats to peace, can be dealt with using conventional weapons. This means that the only function of nuclear weapons, while they exist, is to deter a nuclear attack. All nuclear weapon states should now recognize that this is so, and declare – in Treaty form – that they will never be the first to use nuclear weapons. This would open the way to the gradual, mutual reduction of nuclear arsenals, down to zero. It would also open the way for a Nuclear Weapons Convention. This would be universal – it would prohibit all possession of nuclear weapons.

We will need to work out the necessary verification system to safeguard the Convention. A Pugwash study produced suggestions on these matters.[4] The mechanisms for negotiating such a Convention already

exists. Entering into negotiations does not commit the parties. There is no reason why they should not begin now. If not now, when?

So I ask the nuclear powers to abandon the out-of-date thinking of the Cold War period and take a fresh look. Above all, I appeal to them to bear in mind the long-term threat that nuclear weapons pose to humankind and to begin action towards their elimination. Remember your duty to humanity.

My second appeal is to my fellow scientists. I described earlier the disgraceful role played by a few scientists, caricatured as 'Dr Strangeloves,'[5] in fueling the arms race. They did great damage to the image of science.

On the other side there are the scientists, in Pugwash and other bodies, who devote much of their time and ingenuity to averting the dangers created by advances in science and technology. However, they embrace only a small part of the scientific community. I want to address the scientific community as a whole.

You are doing fundamental work, pushing forward the frontiers of knowledge, but often you do it without giving much thought to the impact of your work on society. Precepts such as 'science is neutral' or 'science has nothing to do with politics,' still prevail. They are remnants of the ivory tower mentality, although the ivory tower was finally demolished by the Hiroshima bomb.

Here, for instance, is a question: Should any scientist work on the development of weapons of mass destruction? A clear "no" was the answer recently given by Hans Bethe. Professor Bethe, a Nobel laureate, is the most senior of the surviving members of the Manhattan Project.[6] On the occasion of the 50th Anniversary of Hiroshima, he issued a statement that I will quote in full.

> *As the Director of the Theoretical Division at Los Alamos, I participated at the most senior level in the World War II Manhattan Project that produced the first atomic weapons.*
>
> *Now, at age 88, I am one of the few remaining such senior persons alive. Looking back at the half century since that time, I feel the most intense relief that these weapons have not been used since World War II, mixed with the horror that tens of thousands of such weapons have been built*

since that time – one hundred times more than any of us at Los Alamos could ever had imagined.

Today we are rightly in an era of disarmament and dismantlement of nuclear weapons. But in some countries nuclear weapons development still continues. Whether and when the various Nations of the World can agree to stop this is uncertain. But individual scientists can still influence this process by withholding their skills.
Accordingly, I call on all scientists in all countries to cease and desist from work creating, developing, improving and manufacturing further nuclear weapons – and, for that matter, other weapons of potential mass destruction such as chemical and biological weapons.

If all scientists heeded this call there would be no more new nuclear warheads; no French scientists at Mururoa:[7] no new chemical and biological poisons. The arms race would be truly over.

But there are other areas of scientific research that may directly or indirectly lead to harm to society. This calls for constant vigilance. The purpose of some government or industrial research is sometimes concealed, and misleading information is presented to the public. It should be the duty of scientists to expose such malfeasance. "Whistle-blowing" should become part of the scientist's ethos. This may bring reprisals; a price to be paid for one's convictions. The price may be very heavy, as illustrated by the disproportionately severe punishment of Mordechai Vanunu.[8] I believe he has suffered enough.

The time has come to formulate guidelines for the ethical conduct of scientist, perhaps in the form of a voluntary Hippocratic Oath. This would be particularly valuable for young scientists when they embark on a scientific career. The US Student Pugwash Group has taken up this idea – and that is very heartening.

At a time when science plays such a powerful role in the life of society, when the destiny of the whole of mankind may hinge on the results of scientific research, it is incumbent on all scientists to be fully conscious of that role, and conduct themselves accordingly. I appeal to my fellow scientists to remember their responsibility to humanity.

My third appeal is to my fellow citizens in all countries: Help us to establish lasting peace in the world.

I have to bring to your notice a terrifying reality: with the development of nuclear weapons Man has acquired, for the first time in history, the technical means to destroy the whole of civilization in a single act. Indeed, the whole human species is endangered, by nuclear weapons or by other means of wholesale destruction which further advances in science are likely to produce.

I have argued that we must eliminate nuclear weapons. While this would remove the immediate threat, it will not provide permanent security. Nuclear weapons cannot be disinvented. The knowledge of how to make them cannot be erased. Even in a nuclear-weapon-free world, should any of the great powers become involved in a military confrontation, they would be tempted to rebuild their nuclear arsenals. That would still be a better situation than the one we have now, because the rebuilding would take a considerable time, and in that time the dispute might be settled. A nuclear-weapon-free world would be safer than the present one. But the danger of the ultimate catastrophe would still be there.

The only way to prevent it is to abolish war altogether. War must cease to be an admissible social institution. We must learn to resolve our disputes by means other than military confrontation.

This need was recognized forty years ago when we said in the Russell-Einstein Manifesto:

> *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 abolition of war is also the commitment of the nuclear weapon states: Article VI of the NPT calls for a treaty on general and complete disarmament under strict and effective international control.

Any international treaty entails some surrender of national sovereignty, and is generally unpopular. As we said in the Russell-Einstein Manifesto: *"The abolition of war will demand distasteful limitations of national sovereignty."* Whatever system of governance is eventually adopted, it is important that it carries the people with it. We need to convey the message that safeguarding our common property, humankind, will require developing in each of us a new loyalty: a loyalty to mankind. It calls for the nurturing of a feeling of belonging to the human race. We

have to become world citizens.

Notwithstanding the fragmentation that has occurred since the end of the Cold War, and the many wars for recognition of national or ethnic identities, I believe that the prospects for the acceptance of this new loyalty are now better than at the time of the Russell-Einstein Manifesto. This is so largely because of the enormous progress made by science and technology during these 40 years. The fantastic advances in communication and transportation have shrunk our globe. All nations of the world have become close neighbors. Modern information techniques enable us to learn instantly about every event in every part of the globe. We can talk to each other via the various networks. This facility will improve enormously with time, because the achievements so far have only scratched the surface. Technology is driving us together. In many ways we are becoming like one family.

In advocating the new loyalty to mankind I am not suggesting that we give up national loyalties. Each of us has loyalties to several groups – from the smallest, the family, to the largest, at present, the nation. Many of these groups provide protection for their members. With the global threats resulting from science and technology, the whole of humankind now needs protection. We have to extend our loyalty to the whole of the human race.

What we are advocating in Pugwash, a war-free world, will be seen by many as a Utopian dream. It is not Utopian. There already exist in the world large regions, for example, the European Union, within which war is inconceivable. What is needed is to extend these to cover the world's major powers.

In any case, we have no choice. The alternative is unacceptable. Let me quote the last passage of the Russell-Einstein Manifesto:

> *We appeal, as human beings, to human beings: Remember your humanity and forget the rest. If you can do so, the way lies open for a new paradise; if you cannot, there lies before you the risk of universal death.*

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.

1. Baron Solly Zuckerman of Burnham Thorpe, Norfolk, held a number of such governmental appointments during World War II and after.

2. More recently, in the Pugwash Newsletter of October 1998 Rotblat refers to a recently leaked secret Presidential Decision Directive outlining nuclear strategy, which requires the retention of nuclear weapons for the foreseeable future as a basis for the national security of the United States.

3. In 1962 the Soviet Union moved to install nuclear missiles in Cuba in order to deter any attack on Cuba by the United States. The United States demanded that the missiles be withdrawn, and both the United States and the Soviet Union were on the brink of a nuclear war. However, Nikita Khrushchev, Soviet premier and first secretary of the Communist Party, agreed to withdraw the missiles, and the crisis passed.

4. Rotblat refers to the Pugwash volume, Verification: Monitoring Disarmament, (1991), written and edited by high calibre experts from both the West and the Soviet Union, which illustrates how Pugwash scientists of different ideological backgrounds could cooperate in approaching a sensitive security issue. See Selected Bibliography below.

5. The 1964 black comedy anti-war film about the dropping of the bomb was entitled "Dr. Strangelove Or How I Stopped Worrying and Learned to Love the Bomb".

6. Hans Albrecht Bethe, born in Germany in 1906, resettled in the United States in 1935 to teach at Cornell University. He was at Los Alamos from 1943-46, and in 1958 he was scientific adviser to the United States at the nuclear test ban talks in Geneva. In 1967 he was awarded the Nobel Prize in Physics "for his contributions to the theory of nuclear reactions, especially his discoveries concerning the energy production in stars".

7. The South Pacific atoll of Mururoa in French Polynesia was the site of a series of French underwater nuclear bomb tests, which began in 1995 and ended in January 1996.

8. An Israeli technician, working at the Demona nuclear reactor, felt that Israel's secret production of plutonium there for nuclear weapons should be known by Israelis and the world, and as a matter of conscience he made the information public in 1985. He was lured to Rome by Israeli secret agents, kidnapped and brought back to Israel where he was secretly tried, convicted, and sentenced to eighteen years in prison. He spent at least the first 12 years in solitary confinement, while a worldwide campaign continued for his liberation. Adopted as a prisoner of conscience by Amnesty International, he has often been nominated for the Nobel Peace Prize.

From *Nobel Lectures, Peace 1991-1995*, Editor Irwin Abrams, World Scientific Publishing Co., Singapore, 1999

Nobel Prizes and laureates

Nobel Prizes 2023

Eleven laureates were awarded a Nobel Prize in 2023, for achievements that have conferred the greatest benefit to humankind. Their work and discoveries range from effective mRNA vaccines and attosecond physics to fighting against the oppression of women.

See them all presented here.

Joseph Rotblat Facts

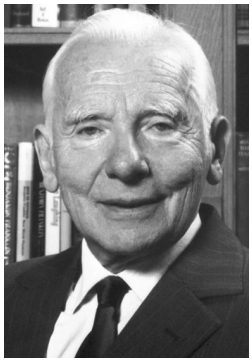

Photo from the Nobel Foundation archive.

Joseph Rotblat
The Nobel Peace Prize 1995

Born: 4 November 1908, Warsaw, Russian Empire (now Poland)

Died: 31 August 2005, London, United Kingdom

Residence at the time of the award: United Kingdom

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

Prize share: 1/2

Scientist Opposed to Nuclear Weapons

When Joseph Rotblat was awarded the Nobel Peace Prize in 1995, 50 years had passed since the atom bombs were dropped on Hiroshima and Nagasaki. But it was 52 years since Joseph Rotblat had first taken a stance against the development of the new weapons of mass destruction. In his opinion, science and research should serve the cause of peace.

Of Jewish descent, Rotblat was born in Warsaw, Poland. He studied physics and took up research in Great Britain in 1939. His work on splitting the atom led him to the conclusion that it was possible to produce an atomic bomb. In 1943 he was given permission to withdraw from the Manhattan Project, in which the United States and Great Britain were cooperating on the production of nuclear weapons. To Rotblat it was clear that Germany would not manage to make an atomic bomb before the war was over. He also feared that nuclear weapons might be used in a clash with the communist Soviet Union.

During the post-war period, Joseph Rotblat has done an enormous amount of work in the cause of peace, dialogue and disarmament through the Pugwash movement, with which he shared the Nobel Peace Prize in 1995.

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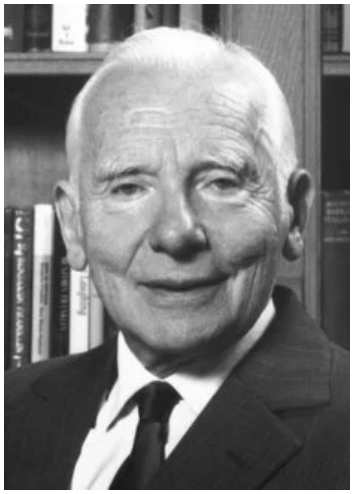
Joseph Rotblat
Biographical

Curriculum Vitae



Born Warsaw, 4 November 1908 (British citizen since 1946)
Educated at the Free University of Poland and the University of Warsaw, Poland

Academic Degrees

MA, Free University of Poland, 1932

Doctor of Physics, University of Warsaw, 1938

PhD, University of Liverpool, 1950

DSc, University of London, 1953

Honorary Degrees

Hon DSc, University of Bradford, 1973

Hon. Fellow, University of Manchester Institute of Science and Technology, 1985

Dr *Honoris causa*, University of Moscow, 1988

Hon DSc, University of Liverpool, 1989

Professional Career

1933-1939:	Research Fellow of Radiological Laboratory of Scientific Society of Warsaw
1937-1939:	Assistant Director of Atomic Physics Institute of Free University of Poland
1939:	Oliver Lodge Fellowship, University of Liverpool
1939-1944:	Work on atom bomb, University of Liverpool and in Los Alamos
1940-1949:	Lecturer and afterwards Senior Lecturer in Department of Physics, Liverpool University
1945-1949:	Director of Research in Nuclear Physics at Liverpool University
1948:	Fellow of Institute of Physics
1950-1976:	Professor of Physics in the University of London, at St.Bartholomew's Hospital Medical College, now Emeritus
1950-1976	Chief Physicist at St. Bartholomew's Hospital

Other activities and appointments

1945-1950	Chairman, Photographic Emulsion Panel of the UK Nuclear Physics Committee (development of sensitive emulsions which made possible the discovery of pi-mesons)
1946-1950	Chairman, Cyclotron Panel of the UK Nuclear Physics Committee (planned and supervised building of cyclotrons for Harwell and Liverpool)
1946-1959	Co-founder of Atomic Scientists Association; served as its Executive Vice-President from 1952-1959
1947-1950	Organized the *Atom Train* Exhibition, the first large-scale effort to educate the public about the peaceful and military applications of nuclear energy. The exhibition toured Britain, Europe and the Middle East
1955	Signatory of the Russell-Einstein Manifesto; chaired press conference which announced it
1957-1973	Secretary-General of the Pugwash Conferences on Science and World Affairs; organized numerous conferences of scientists; edited *Pugwash Newsletter*
1960-1972	Editor-in-Chief of *Physics in Medicine and Biology*

1966-1971	Co-founder and member of governing board of the Stockholm International Peace Research Institute
1966	Co-founder of UK Panel on Gamma and Electron Irradiation
1969-1970	President, Hospital Physicists' Association
1971-1972	President, British Institute of Radiology
1972-1975	President, International Science Forum
1972-1975	Member of the Advisory Committee on Medical Research, World Health Organization
1974-1976	Treasurer, St. Bartholomew's Hospital Medical College
1974-1976	Vice-Dean, Faculty of Science, University of London
1975-1976	Montague Visiting Professor of International Relations, University of Edinburgh
1977	Governor of the Voluntary Hospital of St. Bartholomew in the City of London
1977-1978	Visiting Professor of Physics, University of Penang, Malaysia; set-up school of biophysics
1978-1988	Chairman of the British Pugwash Group
1984-1990	Member of the Management Group of World Health Organization; as rapporteur mainly responsible for *Reports on Effects of Nuclear War on Health and Health Services*
1988-	President of the Pugwash Conferences on Science and World Affairs

Membership of Academies of Science

Foreign Member, Polish Academy of Sciences, 1966

Honorary Foreign Member, American Academy of Arts and Sciences, 1972

Foreign Member, Czechoslovak Academy of Sciences, 1988

Foreign Member, Ukrainian Academy of Sciences, 1994

Fellow of the Royal Society, 1995

Honours and Awards

Commander of the British Empire (CBE), 1965

Bertrand Russell Society Award, 1983

Commander, Order of Merit (Poland), 1987

Gold Medal, Czechoslovak Academy of Sciences, 1988

Order of Cyril and Methodius (1st Cl.) (Bulgaria), 1988

Knight Commander's Cross, Order of Merit (Germany), 1989

Distinguished Citizen Award, Int. Physicians for the Prevention of Nuclear War, 1989

Honorary Member, British Institute of Radiology, 1990

Albert Einstein Peace Prize, 1992

Honorary Professor, University of Blagoevgrad, 1993

Nobel Peace Laureate, 1995

Publications

Over 300 publications, including 20 books, in the following areas:

Nuclear Physics

Medical Physics and Radiation Biology

Radiation Hazards and the Consequences of Nuclear War

Nuclear Power and Proliferation of Nuclear Weapons
Arms Control and Disarmament

The Pugwash Movement and the Social Responsibility of Scientists

From *Les Prix Nobel. The Nobel Prizes 1995*, Editor Tore Frängsmyr, [Nobel Foundation], Stockholm, 1996

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Rotblat, Joseph ed., Nuclear Weapons: The Road to Zero. Boulder, Colorado: Westview Press, 1998. Essays on the present situation and prospects for the future.

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Calogero, Francesco, M. Goldberger and S.P. Kapitza, eds. *Verification: Monitoring Disarmament*, Boulder, Colorado: Westview, 1991. Also published in Russian. Essays by top experts from U.S., Europe and Russia.

Moore, Mike. "Forty Years of Pugwash", in *Bulletin of Atomic Scientists* vol. 53, 6 (November/December 1997):40–45. Looking back after the 40th annual meeting, held at Lillehammer, Norway. Illustrated.

Szasz, Ferenc Morton, *British Scientists and the Manhattan Project*, MacMillan 1992, Ch.5.

Wittner, Lawrence, *The Struggle Against the Bomb*. Vol. 2, *Resisting the Bomb 1954–1970*, (Stanford, California: Stanford Univ. Press, 1997): 33–37, 111–114, 292–96, 418– 419. A monumental work with well researched references to the hostile attitude of Western governments toward early Pugwash activities.

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Sir Joseph Rotblat died on 31 August 2005.

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Nobel Prizes 2023

Eleven laureates were awarded a Nobel Prize in 2023, for achievements that have conferred the greatest benefit to humankind. Their work and discoveries range from effective mRNA vaccines and attosecond physics to