Aiming for Zero:
The Trajectory Toward a Nuclear-Weapon-Free World

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Hiroshima • 23 July 2005

Professor Sir Joseph Rotblat, Oslo, December 1995

Outline of these remarks

- The legacy of Hiroshima
- The inseparability of NWS postures, proliferation, and the prospects for nuclear terrorism
- Three conceivable nuclear-weapon futures…
  - status quo, more or less ("muddling through")
  - sharply increasing ("nuclear nightmares")
  - sharply decreasing ("devaluing the nuclear currency")
- The case for devaluation
  - status quo itself is perilous
  - status quo is unstable: muddling → nightmares
- The elements of devaluation
  - public education & political will in the NWS
  - doctrinal transition in the NWS
  - "mechanics" of devaluation

Outline (continued)

- Aiming for zero: an indispensable part of devaluation
  - The history of aiming for zero
  - The necessity of aiming for zero
- Getting to zero: not an impossible dream
  - The feasibility of getting to zero
  - The benefits of being at zero
  - The trajectory from here to zero
- The role of Jo Rotblat in aiming for & getting to zero

The legacy of Hiroshima

- August 6, 1945: city of Hiroshima the victim of the 1st nuclear weapon used in conflict; half the city vanishes; 140,000 killed.
- August 9, 1945: Nagasaki the victim of the 2nd; 75,000 killed.
- The two mushroom clouds punctuate the end of a world war unprecedented in scale, ferocity, destructiveness, but equally so in embrace of massive, systematic attacks on civilian populations as a legitimate, permissible means of waging war.
- The two nuclear bombings also provide underpinnings of post-war US security policy based on nuclear deterrence: nuclear weapons are usable tools of war; if pushed too far, USA might use them again.

Paul W. Tibbets
Col. USAF
Pilot, The Enola Gay

Nuclear-weapon-state postures, proliferation, and the prospects for nuclear terrorism prospects are intertwined

- Maintaining the non-proliferation “bargain” requires that NWS take Article VI obligations seriously.

Each of the Parties to the Treaty undertakes to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament, and on a treaty on general and complete disarmament under strict and effective international control.

Non-Proliferation Treaty, Article VI, 1968

NWS postures, non-proliferation, & nuclear terrorism prospects are intertwined (continued)

- Evident intentions by NWS to
  - retain large arsenals indefinitely,
  - maintain high states of alert,
  - reserve “right” to use nuclear weapons first & against non-NWS
  - pursue development of new types of nuclear weapons for increased effectiveness or new purposes

  are all incompatible with the non-proliferation bargain and corrosive of the non-proliferation regime.

If we are not willing to admit that the control of the bomb is a problem for all nations to solve jointly, then we must resign ourselves to an atomic armaments race, a race in which all participants may be the losers and none may be the winner.

Harrison Brown, Must Destruction Be Our Destiny, 1946

Nuclear weapons are held by a handful of states which insist that these weapons provide unique security benefits, and yet reserve uniquely to themselves the right to own them. This situation is highly discriminatory and thus unstable; it cannot be sustained. The possession of nuclear weapons by any state is a constant stimulus to other states to acquire them.

Canberra Commission on the Elimination of Nuclear Weapons, August 1995

Proliferation cannot be contained in a world where a handful of self-appointed nations both arrogate to themselves the privilege of owning nuclear weapons, and extol the ultimate security assurances they assert such weapons convey.

Gen George Lee Butler, National Press Club, 1996

NWS postures, non-proliferation, & nuclear terrorism prospects are intertwined (continued)

- Constraints on numbers & dispersion of nuclear weapons (strategic & nonstrategic) are essential
  - not just to reduce probability & consequences of accidental, erroneous, or unauthorized use
  - but also to reduce chances of weapons coming into hands of proliferant states and terrorists
- Proliferation itself expands opportunities (as well as incentives) for further proliferation and for terrorist acquisition of nuclear weapons
  - by putting nuclear weapons & nuclear-explosive materials into additional hands
  - and in contexts where there is little experience with protecting them.

Three Futures

Three Futures

MUDDLING THROUGH

- 8-12 nuclear-weapon states maintain arsenals consistent with modest to expansive views of their “security needs”.
- US view of role of its nuclear weapons continues to include threat of retaliation against (even pre-emption of) chemical, biological, & conventional attack
- Russia persists in a similar view.
- Despite “nuclear disarmament” language in PTBT, NPT, etc, USA, Russia, other NWS continue to regard their nuclear-weapon “needs” to be of indefinite duration.
- Global stockpile remains at ≥10,000 weapons.
- The 180+ non-NWS grumble but nearly all remain non-nuclear.

Three Futures

NUCLEAR NIGHTMARES

- N Korea tests, S Korea follows → Japan converts its separated "civil" Pu into a formidable nuclear arsenal → Chinese reaction → Indian, Pakistani, Russian reactions…
- Iran withdraws from NPT & tests → Israel reveals size of its arsenal → Egypt, Saudi Arabia test → southern-tier former-Soviet states reconsider their nuclear options…
- Argentina & Brazil test → other Latin American states reconsider their options…
- Global stockpile grows, as do weapons on alert.
- Already high risks of "leakage" of nuclear weapons or materials into terrorist hands from inadequately protected stockpiles of 2005 are multiplied by new programs, arsenals → terrorists acquire nuclear weapons & start exploding them in cities

Three Futures

DEVALUING THE NUCLEAR-WEAPON CURRENCY

- USA declares its continuing possession of nuclear weapons is for “core” deterrence only, declares absolute no-first-use, accelerates Moscow Treaty timetable & expands its scope, ratifies CTBT, and announces its intention to work toward global prohibition on NW.
- Russia agrees to take similar steps.
- Germany, Japan, Brazil, South Africa are admitted to permanent membership in the UN Security Council on condition that they remain non-nuclear-weapon states.
- These steps + economic & diplomatic incentives persuade N Korea & Iran to roll back their programs and India & Pakistan to cap theirs.
- NPT Review Conferences begin to address conditions & timetable for a global prohibition.

The Case for Devaluation

The Case for Devaluation

DANGERS OF THE STATUS QUO

- Size, alert status, dispersion of US & Russian arsenals create dangers of accidental, erroneous, unauthorized, or inappropriately massive nuclear-weapon use far out of proportion to current deterrent needs / benefits.
- This is replicated on a smaller scale by India-Pakistan.
- Size & dispersion of current global stockpiles of weapons, components, materials → high risk of terrorist acquisition of nuclear weapons.
- US & Russian doctrines -- “first use of nuclear weapons if we like” -- poison international relations, undermine our moral authority (& will of others to cooperate) on nonproliferation, and tempt others to acquire their own nuclear deterrent or substitute for one with bioweapons.

THE STATUS QUO IS UNSTABLE

- Proliferation is being promoted by US policies:
  - preventive and/or regime-change wars at our discretion;
  - refusal to embrace no-first-use;
  - exploration of wider range of applications for nuclear weapons we possess or new types we propose to develop; and
  - refusal to embrace prohibition of nuclear weapons even as a long-term goal.

U.S. nuclear forces still require the capability to hold at risk a wide range of target types. This capability is key to the role of nuclear forces in supporting an effective deterrence strategy relative to a broad spectrum of potential opponents under a variety of contingencies. Nuclear attack options that vary in scale, scope, and purpose will complement other military capabilities.

US Department of Defense, Nuclear Posture Review, January 2002

The need is clear for a revitalized nuclear weapons complex that will...be able, if directed, to design, develop, manufacture, and certify new warheads in response to new national requirements; and maintain readiness to resume underground nuclear testing if required.

US Department of Defense, Nuclear Posture Review, January 2002

We must not play the game of politics as if we held everything in the deck. If we continue to flaunt our atomic bomb in the faces of our neighbors, if we tacitly assume our invulnerability to attack, if we continue to discuss the maintenance of our supremacy in atomic warfare, we will gain nothing; and in the process we will inspire distrust and enmity in our allies. Already other nations are beginning to fear that the United States, one of the most vociferous condemners of aggression, may be the next aggressor.

Harrison Brown, Must Destruction Be Our Destiny, 1946

THE STATUS QUO IS UNSTABLE (continued)

- Russian first-use policy and the manifest intentions of <u>all</u> the nuclear-weapon states to keep their weapons indefinitely are likewise problematic.
- A two-tier system of haves & have-nots is unstable given widespread technical capabilities & these provocations.

The Elements of Devaluation

The Elements of Devaluation

PUBLIC EDUCATION AND POLITICAL WILL

If the US public knew what US nuclear-weapon policies <u>are</u> – and the poor ratio of benefits to risks that these policies entail – they would probably withdraw their consent & thus generate the political will for change.

It is not safe for apes to play with atoms. For the scientific society to be democratic and to remain democratic, the people themselves must understand the nature of scientific forces and the problems that dominate their lives. For us who are teachers, this is our task and our commitment.

Bentley Glass, The Timely and the Timeless, 1955

Public Education and Political Will (continued)

Key facts currently not known by most of the US public are:

1. There are still ~30,000 nuclear weapons in the world.
2. The Moscow Treaty doesn't cover most of them.
3. The US side is the one blocking deeper cuts.
4. USA & Russia have 1500-2000 warheads each on short-reaction-time alert.
5. The USA still reserves the right of "first use" of nuclear weapons (and Russia has followed our "lead).
6. Terrorists could make nuclear weapons if they had the materials.
7. No workable defense against nuclear attack is in sight

The Elements of Devaluation

DOCTRINAL TRANSITION

- As CISAC concluded in 1997, the only remaining, defensible function of U.S. nuclear weapons in the post-Cold-War era is "core deterrence" – meaning deterrence of other countries that possess nuclear weapons from using them to attack or coerce the United States or its allies.
- If this is so, there is no reason not to declare -- and to intend to observe -- a policy of "no first use" of nuclear weapons under any circumstances.

The United States should announce that the only purpose of US nuclear weapons is to deter nuclear attacks on the United States and its allies, adopting no first use for nuclear weapons as official declaratory policy.

US National Academy of Sciences, Committee on International Security & Arms Control, June 1997

DOCTRINAL TRANSITION (continued)

Under such a policy…

- there is no need for nuclear forces with the size, diversity, & high alert status of those built up by the United States & the Soviet Union during the Cold War,
- nor any need to continue to develop and test nuclear weapons of new types for new purposes.

"MECHANICS" OF DEVALUATION

- Changes in operational practices to reduce risks from accidental, erroneous, or unauthorized use (de-alerting and more);
- Staged deeper cuts:
  - initially to ~2000 deployed strategic weapons on each side (Moscow Treaty levels),
  - then to ~1,000 total warheads on each side,
  - then to 100s on each side (with China & others joining);
- Ratification of the CTBT

The Elements of Devaluation

“MECHANICS” OF DEVALUATION (continued)

- Negotiate global cutoff of production of nuclear-explosive materials for weapons;
- Develop a more comprehensive, global regime of monitoring, accounting, & protection for nuclear weapons, components, and materials
- Revisit the management of nuclear materials in the civil nuclear-energy sector, including
  - strengthening IAEA prerogatives, budgets
  - discouraging or prohibiting reprocessing
  - restricting U enrichment or placing it under international control
  - protecting separated civil Pu to the “nuclear weapon standard”

Aiming for Zero:
An Indispensable Part of Devaluation

History of aiming for zero

Need for prohibition of nuclear weapons was…

- recognized early by many (Manhattan Project scientists, Pugwash),
- endorsed in many treaties & statements by heads of state (cynically in many cases it seems),
- lately re-asserted by an extraordinary array of senior figures & groups (Canberra Commission, Butler/Goodpaster, CISAC…)

We must now ask ourselves by what mechanism atomic energy might be controlled under the structure of a world government, if by control we mean that no nation, as such, will be permitted to have atomic weapons.

Harrison Brown, Must Destruction Be Our Destiny, 1946

It is essential to halt and reverse the nuclear arms race in all its aspects in order to avert the danger of war involving nuclear weapons. The ultimate goal in this context is the complete elimination of nuclear weapons.

Final Document, UN First Special Session on Disarmament, June 1978

The Canberra Commission is persuaded that immediate and determined efforts need to be made to rid the world of nuclear weapons and the threat they pose to it.

Canberra Commission on the Elimination of Nuclear Weapons, August 1995

US national security would be best served by a policy of phased reductions in all states' nuclear forces and gradual movement toward the objective of eliminating all weapons of mass destruction from all countries.

Gen Andrew Goodpaster et al., Second Report of the Steering committee Project on Eliminating Weapons of Mass Destruction, Henry L. Stimson Center, December 1995

The committee has concluded that the potential benefits of a global prohibition of nuclear weapons are so attractive relative to the attendant risks that increased attention is now warranted to studying and fostering the conditions that would have to be met to make prohibition desirable and feasible.

Committee on International Security and Arms Control, US National Academy of Sciences, June 1997

Necessity of aiming for zero

- Ultimately, prohibition is the only alternative to proliferation
  - If possession does not tend toward zero, in the long run it will tend toward universality and the chances of use will tend toward unity.
- Prohibition is not only a practical but a legal and moral necessity.

There exists an obligation to pursue in good faith and bring to a conclusion negotiations leading to nuclear disarmament in all its aspects under strict and effective international control.

Unanimous Advisory Opinion of the
International Court of Justice, July 1996

As long as we sanctify nuclear weapons as the ultimate arbiter of conflict, we will have forever capped our capacity to live on this planet according to a set of ideals that value human life and eschew a solution that continues to hold acceptable the shearing away of entire societies. That simply is wrong.

Gen George Lee Butler, University of Pittsburgh, May 1999

Getting to Zero:
Not an Impossible Dream

Feasibility of getting to zero

- Prohibition does <u>not</u> require “un-inventing” nuclear weapons
  - We’ve productively prohibited murder, slavery, and chemical & biological weapons without imagining that these were being un-invented.
- Nor is verification an insurmountable obstacle
  - Verification (including “societal verification”) can be better than most suppose.
  - Dangers from cheating are likely less than dangers to be expected if nuclear weapons are <u>not</u> prohibited.

The Benefits of Being at Zero

- Prohibition <u>would</u>…
  - resolve the proliferation-provoking inequity of the weapon-state/non-weapon-state distinction
  - resolve legal & moral status of nuclear weapons, raising barriers to acquisition
  - remove all risk of use by states that obey the prohibition
- Prohibition would <u>not</u> “make the world safe for conventional war”
  - Many trends in technology, world affairs are diminishing the attractiveness, feasibility of large-scale war.
  - That nuclear weapons could be re-constituted, out of prohibition, by countries in conflict will continue to provide a degree of “existential nuclear deterrence” of such conflict.

As for the assertion that nuclear weapons prevent wars, how many more wars are needed to refute this argument? 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.

Joseph Rotblat, Nobel Acceptance Speech, December 1995

The Benefits of Being at Zero (continued)

- There would be challenges & risks in a world of zero.
- But they would be far smaller than the dangers of a world in which nuclear weapons are permitted and thus, inevitably, widespread.

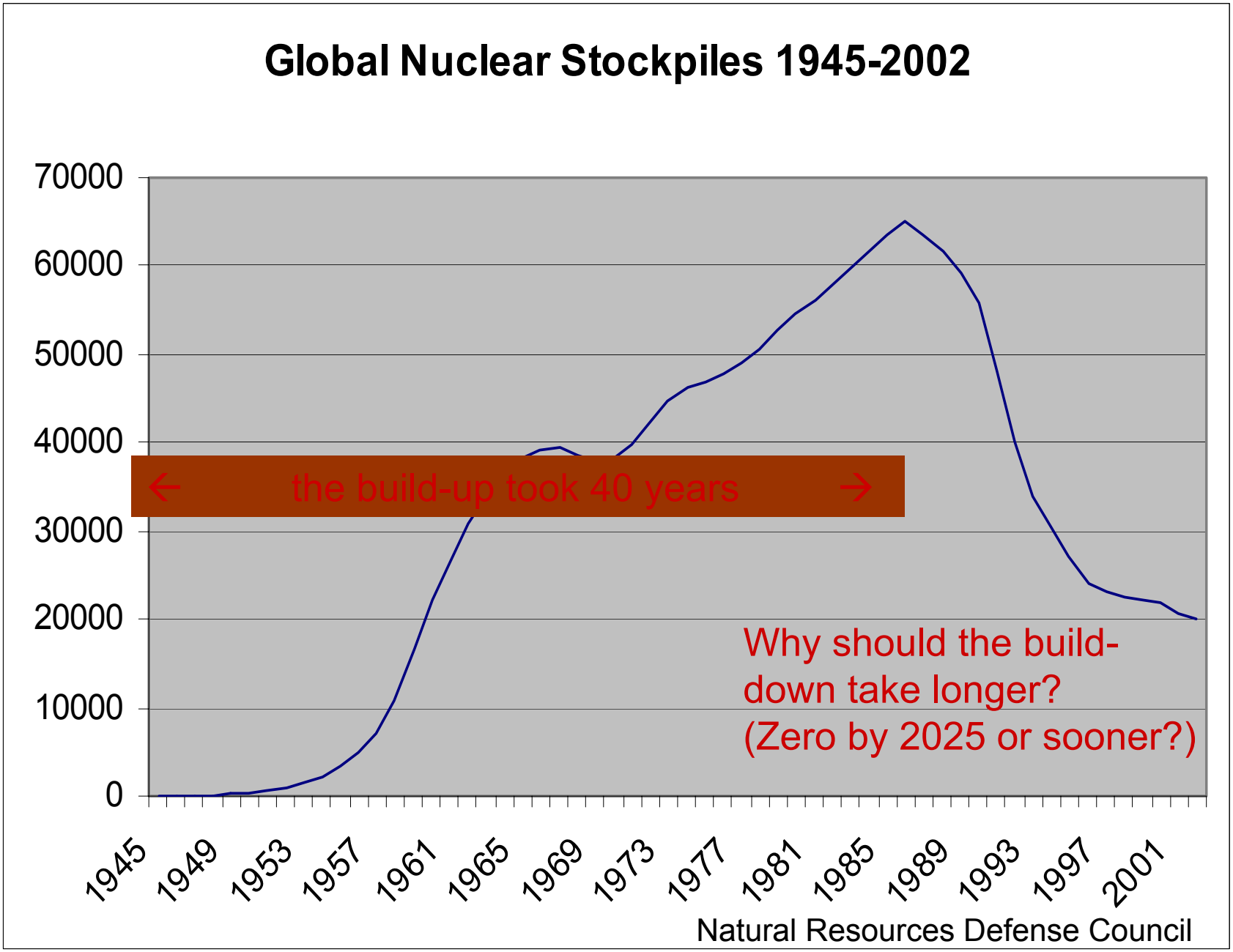
A world free of nuclear weapons but burdened with the knowledge of their possibility is far more tolerable than a world wherein an indeterminate number of actors maintain or seek to acquire these weapons under capricious and arbitrary circumstances.

Gen George Lee Butler, University of Pittsburgh, May 1999

The trajectory for getting to zero

THE UNITED STATES MUST LEAD. IT SHOULD NOW…

- Declare “core deterrence only” and “no first use”.
- Pursue augmentation of the “Moscow Treaty” to:
  - include nonstrategic & nondeployed warheads;
  - tighten targets & timetables, to reach 1,000 <u>total</u> for USA & RF by 2010, 500 by 2015 with inclusion of other nuclear-weapon states at lower levels;
  - add verification provisions;
  - require destruction of excess weapons.
- Announce a goal of achieving a global prohibition of nuclear weapons by 2025.


Global Nuclear Stockpiles 1945-2002
70000
60000
50000
40000
30000
20000
10000
0
1945
1949
1953
1957
1961
1965
1969
1973
1977
1981
1985
1989
1993
1997
2001
← the build-up took 40 years →
Why should the build-down take longer?
(Zero by 2025 or sooner?)
Natural Resources Defense Council

THE UNITED STATES MUST LEAD (continued)

- The United States should drastically upgrade US contributions to international cooperative efforts to ameliorate the roots of conflict and terrorism in poverty, environmental impoverishment, and oppression.

It is clear that the future course of history will be determined by the rates at which people breed and die, by the rapidity with which nonrenewable resources are consumed, by the extent and speed with which agricultural production can be improved, by the rate at which the underdeveloped areas can industrialize, by the rapidity with which we are able to develop new resources, as well as by the extent to which we succeed in avoiding future wars. All of these factors are interlocked. —Harrison Brown, *The Challenge of Man's Future,* 1954

The division of mankind threatens it with destruction. Civilization is imperiled by: a universal thermonuclear war; catastrophic hunger for most of mankind; stupefaction from the narcotic of "mass culture"; bureaucratic dogmatism, a spreading of mass myths that put entire peoples and continents under the power of cruel and treacherous demagogues; and destruction or degeneration from the unforseeable consequences of swift changes in the conditions of life on our planet. In the face of these perils, any action increasing the division of mankind, any preaching of the incompatibility of world ideologies and nations is madness and a crime. Only universal cooperation . . . will preserve civilization.—Andrei Sakharov, *Progress, Coexistence, and Intellectual Freedom,* 1968

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?

Russell-Einstein Manifesto, 9 July 1957

The role of Joseph Rotblat in aiming for and getting to zero

- Only major Manhattan Project scientist to resign from the project on moral grounds before its completion
- Shifted his career to study and education on the effects of nuclear-weapon radiation on humans
- Youngest signer of the Russell-Einstein manifesto; instrumental in its announcement & promotion
- Founding member of the Pugwash Conferences; Secretary-General and President of Pugwash; participant in every Conference from 1957 to 2004.

The role of Joseph Rotblat (continued)

- Tireless author & campaigner on the necessity & feasibility of zero.
- A principal architect & developer of the concept of “societal verification”.
- Nobel Peace Prize (1995) for his lifetime efforts toward the elimination of nuclear weapons.
- An inspiration to legions of others laboring toward this end.

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.

Joseph Rotblat, Nobel Acceptance Speech, December 1995

Professor Sir Joseph Rotblat, Seoul, October 2004

“Above all, remember your humanity.”

FOR ELABORATION OF THESE VIEWS SEE ALSO…

Committee on International Security & Arms Control, *The Future of U.S. Nuclear Weapons Policy*. National Academy of Sciences, 1997.
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http://books.nap.edu/html/ctbt/0309085063.pdf

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http://bcsia.ksg.harvard.edu/publication.cfm?program=STPP&ctype=testimony&item_id=27

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