

Pugwash

NEWSLETTER

*issued by the Council of the Pugwash
Conferences on Science and World Affairs
Nobel Peace Prize 1995*



55th Pugwash Conference, Hiroshima, Japan, July 2005

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Pugwash

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Editor:
Jeffrey Boutwell

Research Assistant:
Meghan Madden

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Anne Read

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Goetz Neuneck

To the Pugwash Community

Sir Joseph Rotblat

Following his death on 31 August 2005 at the age of 96, Sir Joseph Rotblat was remembered and honored at memorial events around the world. From Moscow to Berlin, and Beijing to Washington, DC, Jo's spirit was manifestly with us as the Pugwash community gathered to pay tribute to his life's work to eliminate nuclear weapons and uphold the principle of science serving the good of all humanity.

These tributes culminated in the truly wonderful memorial service held for Jo in London, at the Royal Society, on 9 December 2005. Organized by Robert Hinde and Sally Milne, the service was a joyous blend of reminiscences from friends, family and colleagues, and recordings of Jo's favorite music. The program for the memorial service has been printed on page 3, followed by selected tributes to Jo from John Holdren, Paolo Cotta-Ramusino, and Tom Milne, on pp. 4-8.

The next day, a special colloquium in Jo's honor was held on the subject of Pugwash and eliminating nuclear weapons. Held at University College, London, the colloquium featured papers from Douglas Roche, Hugh Beach, and John Finney, which can be found on pp. 9-25.

There can be little doubt that, through all the years ahead, Jo's indomitable spirit will remain with us all.

56th Pugwash Conference on Science and World Affairs

The *56th Pugwash Conference on Science and World Affairs - A Region in Transition: Peace and Reform in the Middle East*, will be held in Cairo, Egypt from 11-15 November 2006. As usual, the Pugwash Council will hold meetings before and after the conference, and International Student/Young Pugwash will hold its two-day international conference on 9-10 November, just prior to the start of the 56th Pugwash Conference. Given the critical role of the Middle East to international security, the Pugwash Conferences will focus the work of the conference

on such topics as: weapons of mass destruction in the region; Islam and the West; and the future of Iraq, and will emphasize especially the participation of specialists from the Middle East and East Africa.

50th Anniversary of the Pugwash Conferences

July 2007 will mark the 50th anniversary of the founding of the Pugwash Conferences on Science and World Affairs, dating back to the *1st Pugwash Conference: Appraisal of Dangers from Nuclear Weapons*, held at Thinkers' Lodge in Pugwash, Nova Scotia from 7-10 July 1957. That first meeting comprised 22 participants from 10 countries (including seven from the United States and three from the Soviet Union), the sole surviving participant of which is Prof. Paul Doty of Harvard University. [Note: There were two Pugwash conferences held in each of the years 1958, 1959, 1961, 1964, and 1965; thus the 50th anniversary of Pugwash in 2007 will mark the convening of the 57th Pugwash Conference, scheduled to be held in Italy.]

To commemorate the birth of Pugwash and the importance of Thinkers' Lodge in its history, the Canadian Pugwash Group is in the process of organizing an Extraordinary Workshop to be held from 5-7 July 2007 on the subject, "Revitalizing Nuclear Disarmament: Like-Minded States Working Together for a Nuclear Weapons-Free World." Under the direction Sen. Douglas Roche, member of the Pugwash Council, the steering committee for the project will meet in Pugwash, Nova Scotia in July of this year to discuss the 50th anniversary commemorative events.

Also of note are plans for the realization of the Pugwash Peace Exchange, a combination museum and conference center that would be built on the grounds of Thinkers' Lodge. Canadian Pugwash and the board members of the Pugwash Peace Exchange are working together to stimulate interest in the project as the Pugwash Conferences approaches its 50th anniversary.

Addressing the Nuclear Weapons Threat: The Russell-Einstein Manifesto Fifty Years On

The year 2005 marked the 50th anniversary of the Russell-Einstein Manifesto, the founding document of the Pugwash Conferences. In commemoration of the event, Pugwash recently published an Occasional Paper with essays on the nuclear threat representing a diverse range of perspectives. Among the contributors are Nobuysau Abe (UN Under Secretary General for Disarmament), Hussain Al-Shahristani (Iraq), Saideh Lotfian (Iran), Pervez Hoodbhoy (Pakistan), Douglas Roche (Canada), Rose Gottemoeller and Steven Miller (United States), and MS Swaminathan, President of the Pugwash Conferences. As noted by Joseph Rotblat in one of the final articles he

wrote before his death (reprinted on page 87 of the June 2005 issue of the *Pugwash Newsletter*), the 50th anniversary of the 1955 Russell-Einstein Manifesto should be a time of serious reflection on how far we have to go to eliminate nuclear weapons and the sources of conflict.

Acknowledgments

For continued support of the *Pugwash Newsletter*, we are grateful to the Italian National Research Council, the German Research Society, the John D. and Catherine T. MacArthur Foundation, and the Cyrus Eaton Foundation.

Jeffrey Boutwell, Editor



Cairo - Site of the 56th Pugwash Conference, November 2006.

The Life and Legacy of Sir Joseph Rotblat

Memorial Service for Sir Joseph Rotblat

The Royal Society, London, UK
9 December 2005

Programme

Introductory music played by the Cranford String Ensemble, Adrian Charlesworth (violin), Susannah Pattinson (viola), and Simon Wagland (cello), with Donald Watson (clarinet).

Welcome and Introductions to speakers and music
ROBERT HINDE, Chair, British Pugwash Group

HALINA, KATHERINE AND HARRIET SAND
Jo and family

MACIEJ NALECZ
Jo and Poland

Polonaise in A Flat, Chopin
Kol Nidrei, *Max Bruch Op.47*

JOHN MADDOX
Jo and St. Bartholomew's Hospital

DOUGLAS ROCHE
Jo and the abolition of nuclear weapons.

Sorcerer's Apprentice, Paul Dukas

MICHAEL ATIYAH
Working with Jo as President of Pugwash

PAOLO COTTA-RAMUSINO
Jo and Pugwash

Film: Jo talking with Michael Douglas, Hamburg,
2003

HITOSHI OHNISHI
Jo, Hiroshima and Japan

D.L.O. MENDIS
Jo, Sri Lanka and Pugwash

Ol' Man River, Paul Robeson

JUAN PABLO PARDO-GUERRA
International Student Pugwash

Where Have All The Flowers Gone? Joan Baez

JACK HARRIS
Jo and British Pugwash

BRUCE KENT
Jo and the abolition of war

Last Night I Had The Strangest Dream, Pete
Seeger

FRANCESCO CALOGERO
The Nobel Prize

*A Rill will be a Stream, and a Stream will be a
Flood* – commissioned by IPPNW

TOM AND SALLY MILNE
Working with Prof

Beethoven, *Ode to Joy*

PROFESSOR ROBERT HINDE
Closing Remarks

Wine Reception

RETROSPECTIVE

Joseph Rotblat (1908-2005)

John P. Holdren

Sir Joseph Rotblat, who died on 31 August in London at the age of 96, was a participant in the Manhattan Project, a pioneer in medical physics, and one of the towering figures of the 20th century in the domain of the social responsibilities of scientists. He was the only scientist to leave the American-British atomic-bomb project on moral grounds once it became clear that the Germans would not succeed in developing the bomb. Thereafter, he devoted the rest of a long career in science to clarifying the health impacts of ionizing radiation. His parallel career in public affairs focused on building international communication and cooperation to reduce the dangers posed by nuclear weapons.

Rotblat was the youngest of the 11 signers of the 1955 Russell-Einstein Manifesto, which called upon scientists to “assemble in conference to appraise the perils that have arisen as a result of the development of weapons of mass destruction.” (Most of the other signers, including Albert Einstein, Bertrand Russell, Max Born, Frederic Joliot-Curie, Linus Pauling, and Hideki Yukawa, already had Nobel Prizes.) He was instrumental in planning the resulting 1957 conference in Pugwash, Nova Scotia, which spawned a new international organization—the Pugwash Conferences on Science and World Affairs. It has since held some 300 conferences, symposia, and workshops on arms control and peace-building.

Even at the height of the Cold War, the Pugwash Conferences were able to assemble scientists and public figures from both sides of the Iron Curtain for private discussions of the thorniest science-and-security issues of the time. These meetings are widely credited with laying the technical foundations for the nuclear non-proliferation Treaty, the Partial Test Ban Treaty, the Anti-Ballistic Missile Treaty,



the Biological Weapons Convention, and the Chemical Weapons Convention, among others. Joseph Rotblat was the organization’s first and longest serving Secretary-General (1957 to 1973), and later its President (1988 to 1997). For its entire existence until his death this year, he was its animating spirit and the embodiment of its commitment to diminish the dangers from weapons of mass destruction and from war itself.

A Polish Jew, Rotblat completed his doctorate in physics at the University of Warsaw. In 1939, he accepted a research fellowship to work under James Chadwick, the discoverer of the neutron, at the University of Liverpool. Later that year, he returned to Warsaw to collect his young Polish wife, but she was too ill to travel, and he had to return to England without her. The next day Hitler invaded Poland, and Rotblat never saw his wife again.

Rotblat’s own experiments at the end of the 1930s had shown that the newly discovered fission process emitted neutrons, and he was one of the first to realize that this opened the possibility of a chain reaction that could yield immense explosive power. With Chadwick, he went to the Los Alamos National Laboratory in New Mexico in 1943 as part of the British team assigned to the Manhattan Project (although he did not become a British citizen until after the war).

When it became clear in 1944 that the Germans were losing the war—and clear, as well, through intelligence that was shared with Rotblat, that the German atomic bomb project had gone nowhere—he packed his bags, left Los Alamos, and returned to Liverpool. He later told me and others that he had no wish to work on an atomic weapon destined for use against Japan, known not to be

developing such a weapon itself.

Back in England, he switched the focus of his scientific work to medical physics, pioneering the use of linear accelerators for radiation therapy and becoming one of the world's leading authorities on fallout and the effects of ionizing radiation on humans. He also began to work on educating the public and policy-makers on the dangers of nuclear weapons and shortly after the war's end, became one of the founders of the Atomic Scientists Association—the British counterpart to the Federation of American Scientists that was established in the United States at about the same time.

In 1954, Rotblat met the eminent British philosopher and mathematician Bertrand Russell through a British Broadcasting Corporation television program about the hydrogen bomb in which they were both interviewed. He became an adviser to Russell on the details of nuclear-weapon science, and was subsequently recruited by Russell to sign the Russell-Einstein Manifesto and chair the press conference that released the document.

Recognizing that the knowledge of how to build nuclear weapons could not be eradicated, the signers of the Russell-Einstein Manifesto emphasized that safety for civilization would come only when war itself was abolished as a means of settling disputes among nations. A prohibition on nuclear weapons, while desirable, would only be a way station on the road to safety. Joseph Rotblat, however, became increasingly preoccupied with the urgency of

reaching that way station and he made its pursuit the central aim of his own life's work in the nuclear arena and a major theme within the Pugwash Conferences.

He contributed a number of significant ideas to the multi-decade debate about the desirability and feasibility of eliminating nuclear weapons, along with tireless energy, unmatched eloquence, and total commitment to the cause of peace. The Pugwash Conferences served as an invaluable vehicle for pursuing these goals. Knowing full well that this quest would take longer than the span of his own life, he invested tremendous effort in recruiting to the cause, and mentoring students and young scientists. He was instrumental in founding in the 1980s, and nurturing thereafter, an international Student/Young Pugwash counterpart to the “senior” organization.

In 1995, Joseph Rotblat was awarded half of the Nobel Peace Prize with a citation that read “for efforts to diminish the part played by nuclear arms in international affairs and, in the longer run, to eliminate such arms.” The other half of the prize went to the Pugwash organization. Rotblat was elected to the United Kingdom's Royal Society in the same year and was knighted in 1998. With his passing, the world has lost a great champion of peace. But the compelling example of his life, which has already inspired and instructed so many about the social responsibilities of science and scientists, will continue to do so.

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Participants of the First Pugwash Conference, Pugwash, Nova Scotia, Canada, 7–10 July 1957.



Remembrances

In memory of Joseph Rotblat

*Paolo Cotta-Ramusino
Secretary General, Pugwash Conferences
6 September 2005*

In learning of Jo Rotblat's death, many of us experienced an immediate and almost unbearable sense of great loss. The passing away of a man whose example, words, ideas, and actions over so many years were so inspirational is certainly a dramatic event. But those of us who were so closely associated with Jo Rotblat for quite some time should really ask ourselves, what would have been Jo's suggestions at this very critical moment?

Certainly not to lock ourselves in sorrow, but instead to strengthen our activities and actions in the direction he and the Pugwash community together have been following for more than half a century. Jo was a great man whose extremely rich set of ideas can be easily traced back to one single, very important and very difficult goal: to eliminate nuclear weapons, make them illegal, remove the causes that prompt States to acquire them, and prevent their use at any cost.

He always recalled, as stated in the Russell-Einstein Manifesto, that war in the nuclear age could become a deadly global threat to mankind. Without Jo and people like him, we would now live in an even more dangerous world, with many more states having their people behind the nuclear button and many more available nuclear buttons.

But Jo was not satisfied with the progress towards the elimination of nuclear weapons. He saw that, after some good steps towards nuclear disarmament, the nuclear weapons states became oblivious to their commitment to disarm, which is, incidentally, required by the non-prolif-



Joseph Rotblat as a young man.

eration treaty. He was openly critical, in particular, of US leadership, both for not taking responsibility for getting the world out of the nuclear stalemate and for contributing to the preservation of the dangerous nuclear status quo. He was concerned about the slow but persistent nuclear proliferation: the new "unofficial" nuclear weapons states, the situation in the Middle East, the Korean peninsula, the Indian subcontinent and other places. He was worried about the failure of

the NPT Review Conference, which happened in a period when he was already critically ill, but nevertheless always extremely attentive to what happened in the world.

The task for Pugwash, and for those who were associated with Jo Rotblat, is to remember him in deeds. Critics at times called his ideas utopian, but the real "utopia" (in Greek "something that exists nowhere") is to believe that mankind can continue forever in allowing some states to have nuclear weapons and others not, that nuclear weapons can be accumulated in various arsenals and never be used, that non-nuclear-weapon States when pressured by nuclear States will not try to acquire nuclear weapons, that dangerous fissile materials are well-enough protected so as to never fall into potential terrorists' hands. Seeking an international order where nuclear weapons are banned, and understanding the required steps in the difficult path toward the elimination of nuclear weapons, is not an utopia—it is in fact realism, if we care about the future of humanity. We need to be realists as Jo Rotblat was for his long and extremely rich life.

Joseph Rotblat A Remembrance

Tom Milne

I met, and began working with, Jo (or “Prof” as I knew him) in 1990.

It was an exciting time. The Cold War had just ended and it was possible to believe that the nuclear menace could, after all, be controlled.

Jo launched and directed a seminal study on world-wide nuclear disarmament. The resulting monograph, translated into Russian, Chinese and several other languages, was the inspiration for the Australian government’s Canberra Commission on the Elimination of Nuclear Weapons.

By 1990 Jo was also well into the ninth decade of his life. He had experienced and participated in events that had shaped the twentieth century.

He wanted, in old age, to reflect on his unique experience—to share thoughts and hopes for the century to follow. He began a series of dazzling addresses to the annual Pugwash conferences and forums around the world. The nuclear issue always central, but ranging far and wide to:

- International law
- Independent funding for the United Nations
- World government
- World citizenship
- Openness in science—and especially in the weapons laboratories
- Complex social responsibilities of scientists
- Ethical vetting of scientific research (as of medical research)
- Corrupting effect of a war system on society
- Education as a source of irreversible progress

In my opinion these essays should be collected and published.

What was he like to work with?

He was resolute in keeping the goal to the forefront. He refused to get sucked into discussion of arms control minutiae – to allow the objective to be broken into fragments so small that the whole becomes unrecognisable.

He was fiercely independent. In the early days of Pugwash, a UK foreign office official, seeking to shape the Pugwash agenda, reported that the “main problem was getting Rotblat to take any notice of what we say!” Many found the same. The point is not that he was not open to new ideas, but that he did not shift with the times and fashions.

And he was generous with encouragement and advice to anyone who shared his broad objectives. Pugwash operates mainly “behind the scenes,” but Jo also sought a broader engagement with the peace movement and public. He could not be sure how or from where the best ideas would come and was genuinely interested in a wide variety of approaches. Mass movements are sometimes effective, he reasoned. And the larger the numbers involved, the greater the chance of finding persons of quality who might have an individual impact.

And as a person?

There’s a story, often told about Jo, in which it is said he pushes past a group of lads at Tottenham Court Road station and they shout at him: “What’s the hurry, you’re an old man!” And Jo replies: “Don’t you see? It’s because I’m an old man, that I’m in a hurry!”

True, I’m sure – it captures Jo’s exuberance – but a romanticized picture. The fuller picture is even better! He dashed through London’s underground system every day, barging past a group of slow-moving teenagers a mere trifle. In fact, only the escalators at Tottenham Court Road would delay him! For some reason, try as he might he couldn’t run up these in his later life! They vibrated at a frequency that made his legs go shaky!

He charged around the world in the same way. Urging taxi drivers on towards the airport – he was a disgraceful back seat driver! First on the aircraft, first off...then pole position in the terminal, at the luggage delivery point, waiting for a huge battered red suitcase that he took with him everywhere, held together by an old belt! Almost impossible to lift, packed full of Pugwash papers!

A Special Tribute to Joseph Rotblat

Impatient, demanding, impassioned, tireless – chasing conference papers, commissioning contributions to books, demanding public statements, harassing working group rapporteurs... One of the national newspaper obituaries reported a rumour that an Israeli scientist had been interned in the basement of the Pugwash office, prevented from leaving until he produced the book chapter he owed. That's absolutely true – I had to take him soup!

And the energy didn't subside much even when "off duty." After the 1999 conference in Rustenburg, South Africa, I travelled down to Cape Town with Jo and another Pugwash colleague. We were driving around looking for our hotel and had got lost in a remote part of the city and pulled to the side of the road to look at the map. We'd been warned that we should be careful on streets that we didn't know. But Jo spotted a gang of young men across the street and in a flash he was out of the car, across the road, and in amongst them, guidebook in hand, 90 years old! And came back with the directions!

"Fashion your resources to your aims, not your aims to your resources" was one of Jo's guiding principles.

The goals of nuclear and general disarmament are dismissed as a utopian dream. But Jo had lived long enough, and seen enough change, to believe that "what is a dream today may be reality tomorrow." And that this would be brought about "not by miracle but by consistent effort."

Jo devoted the main part of his long life to seeking the prohibition of nuclear weapons. Disarmament, when it comes, will be in part the result of his 60 years' consistent and impassioned effort.

There were 60 years of age between Prof and I, but we became firm friends. He inspired thousands, young and old, the world over, of which I am one. That is also his legacy.



Jo's last annual conference, Seoul, South Korea, October 2004, flanked by Robert Hinde and Sally Milne.

SIR JOSEPH ROTBLAT: SELECT QUOTATIONS

"In the nuclear age, the human race has become an endangered species."

"The Quest for Global Peace", 2002

"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 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."

**Nobel acceptance speech,
December 1995.**

"I do not believe that the people of the world would accept a policy that is inherently immoral and likely to end in catastrophe ... We have to move forward from a now outdated security system based on nuclear deterrence and alliances, to one based on cooperation and allegiance to humankind."

Message to 7th Review Conference of the Nuclear Non-Proliferation Treaty, New York, May, 2005

"I believe that we must ... seek to abolish war itself. This aim, intrinsic to the Russell-Einstein Manifesto, will take us on a long hard road. It does not necessarily mean pacifism as that is generally understood, but it means choosing to seek a world with "continual progress in happiness and wisdom", a world in which morality, law and mutual respect govern the relations between nations, and no nation uses military power to impose its will on others."

Message to 55th Pugwash Conference at Hiroshima, July 2005

"Let me, in conclusion, remind you that the basic human value is life itself; the most important of human rights is the right to live. It is the duty of scientists to see to it that, through their work, life will not be put into peril, but will be made safe and its quality enhanced."

Message to the Inheritors of the Manhattan Project, 12 July, 2005

“Pugwash and Eliminating Nuclear Weapons: The Way Forward” *A Special Colloquium in Honor of Sir Joseph Rotblat*

10 December 2005 • University College, London, UK

The day following the memorial service held for Joseph Rotblat at the Royal Society, Pugwash convened a special colloquium in honor of Jo, held at University College, London, near Russell Square. A total of 22 participants attended and heard presentations from Douglas Roche, Sir Hugh Beach, and John Finney. Discussion focused on the way forward for the Pugwash Conferences in achieving the goal so central to Jo’s life—the elimination of nuclear weapons.

The Rotblat Legacy: Interlocking Strategies for a Nuclear Weapons-Free World

By Hon. Douglas Roche, O.C.

“Morality is at the core of the nuclear issue: are we going to base our world on a culture of peace or on a culture of violence? Nuclear weapons are fundamentally immoral: their action is indiscriminate, affecting civilians as well as military, innocents and aggressors alike, killing people alive now and generations as yet unborn. And the consequence of their use might be to bring the human race to an end. All this makes nuclear weapons unacceptable instruments for maintaining peace in the world.”

— Sir Joseph Rotblat, Letter to 2005 Review Conference

These words are the quintessential Rotblat. They combine the intermingling of the scientist and the ethicist that characterized Rotblat’s personality. They speak outward to society in a pointed warning. And they were uttered just a few months before his death, reflecting his ceaseless drive to rid the world of nuclear weapons. Though physically frail, his voice could only be stilled by death itself.

Einstein is often quoted for his remark that the atomic bomb changed everything except how we think. Rotblat showed how human thinking can indeed change: how we can, in short, lift up our eyes to a vision of a nuclear weapons-free world.

As we in the Pugwash movement continue our work, it is the Rotblat vision that should guide us. I state sincerely to my Pugwash colleagues that just as Jo Rotblat was my mentor in life, so his words continue to inspire and guide me.

Nuclear weapons and human security cannot co-exist

on the planet. Nuclear weapons are anti-human. Humanitarian law has always recognized that limitation and proportionality must be respected in warfare. But the very idea of a nuclear weapon – even a tactical nuclear weapon – is to kill massively; the killing and the poisonous radiation cannot be contained. The social and economic consequences of nuclear war in a world intimately inter-connected in life-support systems would be catastrophic. The severe physical damage from blast, fire and radiation in any type of nuclear exchange would be followed by the collapse of food production and distribution and even water supplies. The prospect of widespread starvation would confront huge masses of people. Rampant disease would follow the break-down in health care facilities. These immense brutalities would violate the universal norm of life – to go on living in a manner befitting a human being with the inherent right to life.

A Special Tribute to Joseph Rotblat

No civilization, no culture has ever denied this common foundation upon which all peoples stand. Leaving aside the massive suffering, which by itself ought to stir the consciences of the nuclear proponents, the entire question of human rights would be up-ended. The right to a social and international order, as set forth in the Universal Declaration of Human Rights, would be completely lost. The structures underpinning humanitarian law would be gone. Order would be inverted into disorder.

The humanitarian question is of growing concern to scientists and technologists who see the fruit of their work turned into instruments of death. A code of conduct for scientists, strengthening their hand in resisting more advances in the technology of killing, can come about by this emphasis on the assault to life that nuclear weapons pose. This was, in fact, the stance taken by Bertrand Russell and Albert Einstein when they signed the Russell-Einstein Manifesto in 1955, along with nine other scientists, including Joseph Rotblat. Their scientific critique of nuclear weapons ended with the stirring words: "We appeal as human beings to human beings: Remember your humanity and forget the rest."

It is empowering to note that the age of weapons of mass destruction arrived just at the time when the Universal Declaration on Human Rights and its follow-up instruments were being codified. Just when we have learned that every human, no matter the culture, religion, ideology or geography, has the right to life, we have perfected our ability to kill massively. The U.N.'s formulation of a Culture of Peace is leading us inevitably to the recognition that every human being has the right to peace, in fact, as is said in the early declarations on this subject, to the "sacred" right to peace. The gradual increase in humanity's understanding of itself will lead to a societal condemnation of nuclear weapons when it is fully understood that such instruments of evil are a violation of life itself.

The impact on humanity must be the basis of Pugwash's stance on nuclear weapons as we go forward in the post-Rotblat age of Pugwash. Both a short-term and a long-range strategy are required.

Every effort must be made to obtain a Nuclear Weapons Convention to ban the production, as well as the use, of nuclear weapons. Nuclear weapons must be formally declared illegal; any use anywhere for any reason

must be codified as a crime against humanity. The present deadlock in the operation of the Non-Proliferation Treaty combined with the increasing danger of the use of nuclear weapons demand a focused effort to start building the architecture to support a nuclear weapons-free world. Time is urgent.

All this might be considered the short-term strategy. It cannot wait for the peaceful resolution of conflict around the world, as if regional tranquility must be achieved before the nuclear weapons states will give up their arsenals. Neither can we wait for humanity to overcome its proclivity for greed, as if a more compassionate human nature must be developed before society can lay down its instruments of mass destruction.

It is true that nuclear weapons are about far more than nuclear weapons. They are about power. They are about economic exploitation. They are about racism. They are about fear. Nuclear proponents have deceived the public for a long time that nuclear weapons are about deterrence, that they are necessary to ensure our own security and that their use, while to be regretted, is justified in the protection of our way of life. Just as truth is the first casualty of war, the rationale constantly advanced for the possession of nuclear wars is deceitful and an insidious manipulation of public thinking.

A thorough analysis of the true reason for the continued existence of nuclear weapons leads into the terrain of the human psyche. The same is true of war. Is a war necessary to resolve a problem of aggression in any given circumstance, such as Vietnam, Afghanistan or Iraq? Or is war the outcome of the determination of a political or military actor to defend vested interests? The military-industrial complex, a powerful influence in political decision-making, benefits commercially from war and profiteers from the maintenance of the nuclear weapons systems. They do not want to let go, and seize on instabilities to make their case, always appealing to the fear, grief and anxiety of the human condition.

The human condition is clouded by aggression at the best of times. That may be expressing reality too mildly. We have fought wars throughout human history (though there have been intermittent periods of peace). The interaction of human beings always engenders conflict. And so the pessimists say that, human nature being what it is, we

will always need to protect ourselves. We cannot expect angels to walk the streets of the world.

This view of humanity – dark, apprehensive, acquisitive – is a significant obstacle to a nuclear weapons-free world. Nuclear weapons have become part of the condition of continued existence in a decidedly imperfect world. Yes, they are dangerous, people tell pollsters. Yes, the world would be better without them, the polls record. But behind a benevolent response lies lassitude borne of an interior conviction that the human condition is such that nuclear weapons will continue to exist. That is just the way it is.

The necessary architecture for a nuclear weapons-free world – the strengthening of international law and verification systems – is summarily rejected because pessimists assume we cannot change human thinking. Human thinking does, of course, change. Legalized slavery, colonialism, apartheid were all done away with when societal thinking matured and decided to instigate the proper political and legal machinery. But such transformations take a long time.

How long will it take for the public mind to awake, if not erupt, and decide that nuclear weapons are too dangerous a threat to the very development of the human condition that, through science, technology and the appreciation of human rights instruments, is making the world a better place? In other words, when will there be a public clamouring to excise the threat of nuclear weapons from the continuation of life on the planet?

Once such a clamour (call it a concerted campaign) starts up, and the public determines that it will be freed of the nuclear apocalypse, putting the pieces of the architecture for a nuclear weapons-free world into place will be much easier. The awakening of the public mind to the full benefits of life on earth without nuclear weapons is, perhaps, a long-term strategy. Human beings do not change overnight.

The short-term strategy, immediate action, needs a long-term strategy to be effective. The long-term strategy needs the short-term strategy to give it focus and impetus. Both strategies need each other. They are inter-locked. Immediate steps and a full vision are mutually complementary.

We have a vision – the legacy of Joseph Rotblat — to implement a two-pronged course of action. Governments, for the most part reeling with daily crises, cannot do much

because the effects of the human condition have driven them too far apart. Civil society, even that element most attuned to nuclear dangers, cannot do it alone because it does not have its hands on the levers of power. But players and groups within each can create a critical mass to move government machinery and public thinking forward at the same time. This fusion of effort occurred in the development of the Anti-Personnel Land Mines Treaty and the International Criminal Court, and it can occur in a growing movement to banish nuclear weapons from Earth.

It is not as if such an effort has to start from scratch. There is, in fact, considerable historical momentum behind the evolution of human rights thinking and the gradual rejection of any moral or legal base for nuclear weapons. The strong legal basis of the Non-Proliferation Treaty as a result of the deliberations of 1995 and 2000, the Advisory Opinion of the International Court of Justice of 1996, the formation of the New Agenda Coalition, the discernible restlessness within NATO, the formation of the Abolition 2000 network, the growing effectiveness of research centres and other institutes, the public opinion polls – all this constitutes movement forward. From a historical point of view, humanity has already begun the long journey from Hiroshima to a nuclear weapons-free world.

The challenge for Pugwash is to show how both the short-range and the long-range strategies can be advanced at the same time. While concentrating on the steps toward the abolition of nuclear weapons, Pugwash must continue to illuminate the integrated agenda for human security. Pugwash's work on issues related to development, the environment and human rights is instrumental in addressing the seeds of conflict.

Towards the end of his life, Rotblat began insisting that Pugwash must reach out to other civil society groups, collaborating in appropriate ways to work for human security and nuclear weapons abolition. Many NGOs need the expertise on nuclear weapons issues that Pugwash can provide. Pugwash itself can be strengthened by working relationships with others who have expertise in the range of human security fields.

Combining short-range and long-range strategies for the abolition of nuclear weapons, Pugwash must go forward, reaching outward in a collaborative effort with other civil society leaders to bring about true human security.

Tactical Nuclear Weapons

A British view by Hugh Beach

Tim Hare, the former Director for Nuclear Policy in the British Ministry of Defence has recently commented on UK nuclear policy in the following terms: ¹

The policy makes it clear that the role of nuclear weapons is fundamentally political and that therefore any rationale for their retention is political. The UK does not possess nuclear weapons as part of the military inventory, they have no function as war fighting weapons or to achieve lesser military objectives. ... They are indeed 'special' and reason enough not to put them into the hands of generals and admirals for the achievement of military goals.

But not all nations take so dismissive a view. In July 2005 a Chinese General spoke publicly and matter-of-factly about the likelihood that if the United States interfered in a clash between China and Taiwan, nuclear weapons would be used. ² More to the point, if Hare is right, why are NATO doctrine and deployment still based on a quite different hypothesis: why are the Americans apparently moving back towards a policy of the greater usability of nuclear weapons to fulfil military objectives?

NATO nuclear doctrine and forward basing

The classical NATO nuclear policy emerged in a series of 'guidelines' put out between 1967 and 1972. ³ The aim was to defend at three levels: direct defence (which meant conventional defence) against a non-nuclear attack for as long as possible: controlled escalation through the use of Tactical Nuclear Weapons (TNW) and finally general nuclear response if all else failed. These guidelines, under the general rubric of 'flexible response' coupled with the overt acceptance of 'first use' by NATO as a last resort, were given substance by the development of weapons systems to match. Air forces were equipped with free-falling and guided bombs and air-to surface guided missiles. Navies, in addition to aircraft bombs, developed nuclear depth charges and anti-submarine rockets. Armies were equipped with nuclear artillery of various calibres and free-flight rockets. Ground-launched cruise missiles, land-

mines and surface-to-air defence missiles were all given nuclear warheads. This force posture was developed at a time when Soviet conventional forces in western Europe outnumbered NATO's by a factor of three to one or more. ⁴ The dismemberment of the Warsaw Pact and of the Soviet Union, followed by the expansion of NATO, has meant that the ratio of conventional forces as between Russia and NATO has been more than reversed. Most of the TNW systems have been mothballed or destroyed. It might have been expected that these facts would lead to some reconsideration of the doctrine. But no such change has taken place. Thus Mr. Hoon, British Secretary of State for Defence, in a written answer to a parliamentary question on 11th July 2002, said:

A policy of no first use of nuclear weapons would be incompatible with our and NATO's doctrine of deterrence, nor would it further nuclear disarmament objectives. We have made clear, as have our NATO allies, that the circumstances in which any use of nuclear weapons might have to be contemplated are extremely remote. Our overall strategy is to ensure uncertainty in the mind of any aggressor about the exact nature of our response, and thus to maintain effective deterrence. ⁵ This makes it clear that NATO's policy still remains one of flexible response, involving the possibility of first use of nuclear weapons as a last resort.

Even more surprising is that, as a counterpart to this doctrine, American TNW are still held ready for use on the territory of six non-nuclear members of NATO and in the UK. These arrangements date from the late 1950s and early 1960s when bi-lateral Programs of Cooperation were concluded between these countries and the US, most of which remain in force today. The weapons are stored in specially constructed vaults on twelve airfields: three each in Germany and Turkey; two in Italy, and one each in Belgium, the Netherlands, Greece and the UK. The weapons are B-61 gravity bombs, delivered by strike aircraft. All the aircraft are dual capable, being specially equipped for

nuclear munitions in addition to their normal role. The crews are trained and exercised in peacetime for their possible nuclear missions. The nuclear weapons are all owned by the US and in peacetime they remain under the sole control of the US Air Force. In most cases (but not the UK) they would be transferred to the partner nations in the event of war. The vaults have a total capacity of 360 weapons but it is believed that the holding of live weapons is about half this, say 150-180 bombs. The vaults were being refurbished in 2005 to keep them operational till 2018. The costs to the US Air Force of providing and storing the weapons and to the allied air forces of owning and operating the aircraft are said to be 'extraordinarily high'.⁶

Common sense would suggest that both the policy and practice of 'nuclear sharing' are out of date and should be scrapped. Why has this not happened? It seems clear that the continued presence of American TNW in Europe is due more to institutional paralysis than to logic: the desire to demonstrate America's continued commitment to European security, some vague concept of risk and burden sharing among NATO allies, or, most absurdly, adherence to the simplistic concept 'no nukes, no troops'. As Mr. Hoon said, in a written answer to the House of Commons on 1st February 2002: "Some US nuclear weapons remain based in the UK in accordance with long-standing NATO policy. Nuclear forces based in Europe and committed to NATO provide an essential political and military link between the European and North American members of the Alliance".⁷ It would be more rational to argue that Europe and the US share a common interest in reducing the thousands of tactical nuclear warheads in Europe left over from the cold war. Nearly all of these are Russian. As long ago as 1997, in Helsinki, Russia and the US mooted further measures to reduce tactical nuclear systems, but nothing has come of them. If the six non-nuclear members of NATO who currently train for a tactical nuclear role were ready to give this up it could open the way for repatriating all the remaining American TNW. This would meet Russia's long-standing wish to rid European territory of nuclear weapons within range of her territory. It could act as an important confidence building measure, and encourage further mutual reductions in TNW. In view of America's acute reluctance to enter into fresh treaty commitments, an exchange of unilateral announcements might

be the best method. Meanwhile increased transparency in this area is a necessary first step.

The US Nuclear Policy

Great concern has been aroused by the American Nuclear Posture review (NPR) submitted to Congress on 31 December 2001, of which excerpts have become publicly available.⁸ It establishes a New Triad consisting of:

- Offensive strike systems, both nuclear and non-nuclear
- Defences, both active and passive; and
- A revitalised defence infrastructure

bound together with enhanced command, control and information systems. In his covering letter to Congress Secretary of Defence Donald Rumsfeld said that the result would be to make the US less dependent than it has been in the past on nuclear forces to provide its offensive deterrent capability. But several of the proposals in the report suggested, on the contrary, a greater emphasis on nuclear weapons.

The report gave examples of 'immediate contingencies' for which the US must be prepared in setting requirements for nuclear strikes. These included a North Korean attack on South Korea or a military confrontation over the status of Taiwan. It listed also Iran, Syria and Libya among countries that could be involved in such contingencies, on the grounds that all sponsored or harboured terrorists and all had active programmes to develop weapons of mass destruction and missiles.

Under the heading of an 'Advanced Concepts Initiative' proposals were made for modifying existing nuclear weapons to provide additional yield flexibility, improved earth penetrating weapons and reduction of collateral damage.

Taken together these clearly implied a renewed willingness to regard nuclear weapons as useful and indeed usable weapons.

Even more alarmingly, a draft document, the Doctrine for Joint Nuclear Operations JP 3-12, appeared on the Pentagon web site in the summer of 2005.⁹ This relates specifically to the use of nuclear weapons within a theatre, i.e. tactically. It says that such use requires that nuclear and conventional plans must be coordinated to the greatest extent possible. And it gives examples of conditions

under which theatre commanders can request Presidential authority to use nuclear weapons. These include:

- an adversary using or intending to use WMD against US or allied forces or civilian populations
- imminent attack from adversary biological weapons that only nuclear weapons can safely destroy
- attacks on adversary installations including WMD, deep hardened bunkers containing chemical or biological munitions or the command infrastructure required to attack the US or its allies
- to counter potentially overwhelming adversary conventional forces including mobile and area targets (troop concentrations)
- for rapid and favourable war termination on US terms
- to ensure success of US and multinational operations
- to demonstrate US intent and capability to use nuclear weapons to deter adversary use of WMD
- to respond to adversary-supplied WMD use by surrogates against US or allied forces or civilian populations.

It appears that negotiations within the Pentagon are still in progress and the draft may well be modified before final clearance by the Secretary of Defence.¹⁰ The point, however, is that this document represents an explicit and internally coherent doctrine for the tactical use of nuclear weapons, which has found favour at a senior level. Those who regard this as a disastrous way of thinking have focussed on two projects in particular: ‘bunker-busting’ and ‘mini-nukes’.

‘Bunker-busting’

The case for developing a nuclear warhead specifically for the defeat of hardened and deeply buried targets (HDBTs) rests on the alleged existence of over 1400 underground facilities, known or suspected, for use by potential enemies as command centres, refuges or stores for missiles and nuclear, biological or chemical weapons. We are told that the depth of these structures, together with their steel and concrete reinforcement, call for highly accurate intelligence and precise weapon delivery. They may defeat any attack by conventional weapons.¹¹ In 1997 the US added an earth-penetrating version of the B61 bomb to its nuclear arsenal. But tests have shown that it could pene-

trate only about 20 feet into dry earth when dropped from 40,000 feet. This means it could not destroy very deeply buried bunkers or caves. Nor is there any prospect that the radioactivity of the weapon’s nuclear burst could be contained.¹² According to one well-founded calculation, a weapon twice the length of the B61, even if accelerated by a rocket, could not penetrate more than about 80 feet. The fallout produced by a one-kiloton warhead at that depth would kill everyone on the surface within a radius of about half a mile in still air. Wind could carry it for tens of miles.¹³ The new warhead would apparently be designed ‘with a much lower yield ... producing less fallout by a factor of ten or twenty’.¹⁴ But immense lethal fallout would still be bound to result.

In any case the notion of ‘bunker-busting’, is beset with practical difficulties. How is one to determine the location of such bunkers with the necessary pinpoint accuracy - unless of course our own troops are already there, in which case better methods suggest themselves? What is to be done if the bunkers have been thoughtfully located under schools, hospitals or apartment blocks? How can one be sure which bunkers are occupied anyway? If the target to be attacked is believed to contain chemical, biological or nuclear weapons material, how can one be sure of incinerating it all, rather than distributing it in active form over a large area. It is therefore welcome news that funding for this project has been dropped from the Fiscal 2006 budget at the request of the National Nuclear Security Administration of the Energy Department. It looks as though this project may now be dead since the statement added that the Defence Department will now focus its research into earth-penetrating technology using conventional weaponry.¹⁵

‘Mini-nukes’

The case for ‘mini-nukes’ is less well defined. The Pentagon is said to be seeking a completely new warhead design with a yield of 5 kilotons or less. This could address one or more of the requirements set out in the NPR ‘to attack mobile and re-locatable targets, to defeat chemical or biological agents, to improve accuracy and limit collateral damage’.¹⁶ It is said that to rely on high-yield strategic weapons for such purposes would be self-detering and the development of mini-nukes could ensure flexibility in decision making. In particular, America has wanted to keep its opponents guessing as to how it would respond to chemical or biolog-

ical attack. As an official explained in 1996: 'we think the ambiguity involved in the issue of nuclear weapons contributes to our own security, keeping any potential adversary who might use either chemical or biological [weapons] unsure of what our response might be'.¹⁷ More recently it seems that the veil of ambiguity has been to some extent set aside. According to a report in *The Washington Times* (31st January 2003) a classified document signed by President Bush on September 14th 2002 said: "The United States will continue to make clear that it reserves the right to respond with overwhelming force - including potentially nuclear weapons - to the use of [weapons of mass destruction] against the United States, its forces abroad, and friends and allies". The Presidential request for Funding in the Financial Year 2006 included a sum of around \$10 million for a Reliable Replacement Warhead (mininuke), but as at the time of writing this project remains to be agreed in Congress and its future is uncertain.¹⁸

Is the increased usability of NW for real?

During the hey-day of tactical nuclear planning in NATO (during the 1950s and 60s) target analysis for TNW concentrated on the blunting of dangerous enemy thrusts, the attack of troop concentrations (where the ability of neutron flux to penetrate armour and dug-in infantry positions with overhead cover was particularly useful), the destruction of bridges and the blocking of defiles (all but impossible by conventional weapons before the arrival of precision guidance) and the attack of dispersed relatively soft targets such as formation headquarters, anti-aircraft sites, supply dumps and communication nodes.¹⁹ The draft doctrine quoted above seems to be harking back to Cold War as critics have been quick to point out.

The idea of using nuclear weapons against such targets today is highly implausible. This is not because the wars of today do not present such targets. The Taleban blocking approaches to Kabul, and the Iraqi Republican Guard defending Baghdad could certainly have been suitable for attack by F-15 or F-16 aircraft using B61 bombs; or by the mini-nukes said to be under consideration for attacking mobile and re-locatable targets, with improved accuracy and less collateral damage. But in every such case modern precision weapons coupled with carpet bombing by B-52s, tank-busting runs by A-10 and the use of C-130 gun-ships

offer a far more cost-effective solution, 'minus the fallout'. And it need hardly be pointed out that the capture of a city that is being defended from house to house is as unsuitable a task for TNW as it is possible to imagine.

Still more implausible is the notion of using TNW in response to enemy use, or intending use, of chemical or biological weapons. If the aim were to retaliate upon the source of these weapons one would either have to trace the missile launchers (a notoriously difficult task) or, in the case of bombs or crop-spray aircraft, to attack their bases, which are not a lucrative target for TNW. If, more plausibly, the aim is simply to punish the regime by 'making the strongest possible response' then of course anything goes. There is no call for accuracy or minimal fallout - why not a megaton strike on the seat of government or the power base of the ruler?

But simply to say this is to show why such a concept lacks all contact with reality. Frank von Hippel has pointed out that American presidents have in the past threatened to use nuclear weapons in situations which did not threaten the existence of the nation: Truman to force an armistice in Korea; Eisenhower to stop Chinese bombardment of islands in the Taiwan strait; Nixon to obtain a face-saving exit from the war in Vietnam. In the end they all realised that the political costs of breaking the nuclear taboo 'vastly outweighed the military benefits from nuclear weapon use'.²⁰ Today these political costs would be certain to include converting the whole of the third world into violent revolution against the US; greatly encouraging recruitment into anti-American terrorist organisations; destroying NATO; discrediting the United Nations beyond repair and fatally undermining the nuclear non-proliferation regime as more and more countries came to regard a nuclear insurance policy as indispensable in a world become radically more unpredictable. As many people have pointed out 'Nukes are the only weapon that could pose a threat to US survival. Why would you want to open Pandora's box?'²¹

The UK

These arguments apply all the more strongly to the UK. The Ministry of Defence, in its *Report and Accounts, 2004-5*, says:

The UK's nuclear weapons have a continuing use as a means of deterring major strategic military threats, and a continuing role in guaranteeing the

ultimate security of the UK.²²

The reference to ‘major strategic military threats’ carries a whiff of cold-war thinking, in line with the ossified NATO doctrine referred to above. No one can pretend to foresee with any precision the geo-political context of the mid-twenty first century, but even as a worst case it is hard to envisage any power but Russia able to pose such a threat. Be that as it may, the ‘use’ and ‘role’ foreseen in this statement clearly refer to a deterrent at the political level rather than as a means of fighting a war. The British Government has not, since the end of the cold war, claimed any military use for its nuclear weapons. All battlefield or theatre nuclear weapons in British hands have been disposed of. The government then announced a ‘sub-strategic’ role for Trident in the following terms:

The ability to undertake a massive nuclear strike is not enough to ensure deterrence. An aggressor might, in certain circumstances, gamble on a lack of will ultimately to resort to such a strike. We also need the capability to undertake nuclear action on a more limited scale in order to demonstrate our willingness to defend our vital interests to the utmost, and so to induce a political decision to halt aggression without inevitably triggering strategic nuclear exchanges.²³

Malcolm Rifkind, then Defence Secretary, made it plain that this involved no concept of fighting and winning a war. It remained a question of deterrence, albeit at a slightly lower level than all-out retaliation.²⁴ As Richard Hatfield, then MOD Director of Policy explained, [the substrategic role] ‘is a form of deterrence, not necessarily a specific weapon’.²⁵ This concept has much in common with the French notion of ‘Pre-Strategic’ use, as a shot across the bows of any intending aggressor or last-but-one resort. As General Henri Bentégeat, French Chief of Defence Staff, has explained:

Deterrence has been adapted to remain credible within the enduring framework of a non-use [*non-*

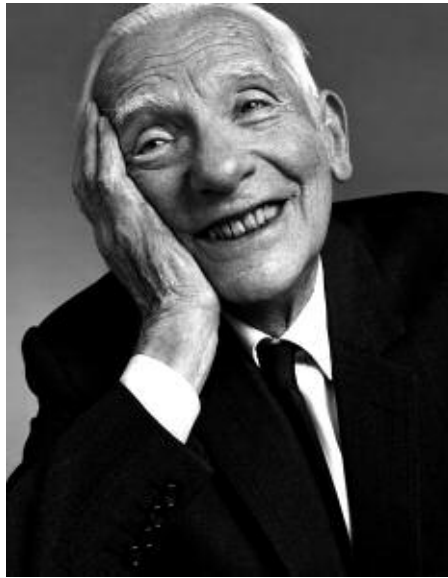


Photo by Peter Hoennemann, reprinted courtesy of TheCommunity.com

emploi] policy. Nuclear weapons are not battlefield weapons for us ... as the *force de frappe* is a political deterrent.²⁶

In replying to a parliamentary question Defence Secretary John Reid has said that the ‘Labour Party’s manifesto for the 2005 general election made clear [its] commitment to retain the UK’s independent nuclear deterrent. Although decisions on any replacement for Trident are likely to be taken in the current Parliament, it is too early to rule out, or rule in, any particular option’.²⁷ It is clear, therefore, so far as this government is concerned, that the question is

not whether to replace Trident but in what form. One such option is clearly to follow the Americans by stretching the operational life of the existing four Trident submarines and replacing the existing D5 missiles by the upgraded version known as D5A. The life of these systems could apparently be extended to 2040. An alternative solution, apparently much cheaper, might be to upgrade Tomahawk cruise missiles for long-range delivery and fit them with a new British built nuclear warhead, to be launched from aircraft. The argument in this paper has no bearing on the pros and cons of this issue save in one crucial respect. Buying a cruise missile version of the deterrent could be seen as lowering the nuclear threshold to the tactical level by giving the weapon a military function. As Michael Meacher has pointed out -reflecting what seem to be widespread misgivings in the Parliamentary labour party - ‘Frankly this is a neo-con idea for using tactical nuclear weapons rather than the massive Trident system’.²⁸ The question might then become not whether ministers wish to retain an independent British deterrent but whether they agree - or even half-agree - with the developing American doctrine of usable pre-emptive nukes.²⁹

In the quotation at the beginning of this article Tim Hare asserted that ‘the UK does not possess nuclear weapons as part of the military inventory, they have no function as war fighting weapons or to achieve lesser military objectives’. It is greatly hoped that this statement continues to hold good.

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Jo and the WMD Awareness Programme

John Finney, Dept of Physics and Astronomy, University College London

For the last three years of his life, Jo put much of his time and effort into an initiative of which he was both the instigator and the inspiration. Although this initiative was – and remains – fully consistent with the Pugwash reputation for integrity and scientific reliability, it departed in some ways from traditional ways of Pugwash operation. With the changes that were occurring in foreign policies – in particular of the Bush administration – he felt it was increasingly urgent to develop new approaches that would target not only the decision makers, but also the general public.

Jo can, of course, speak for himself. He set out his ideas specifically at a meeting of IPPNW in 2002:

The situation is grim; the way things are moving is bound to lead to catastrophe. If there is a way out, even if seemingly unrealistic, it is our duty to pursue it. ... If we can bring to the notice of the general public the grave dangers inherent in the continuation of current policies, at the same time pointing out the long-term merits of policies based on equity and morality, we may succeed in putting the nuclear issue back on the agenda of public concern.

The core of his message was clear. Pugwash should work to raise public awareness of the dangers of current nuclear weapons policies and the merits of other approaches to achieving international security. Fully recognizing that this was a tremendous task, he argued that Pugwash should collaborate with other organizations in trying to achieve this. He put more flesh on this in his public lecture at the Halifax Pugwash Conference in 2003:

The task of influencing public opinion is far too big for an organization like Pugwash to undertake by itself. Collaboration with other organizations would be essential. This would go against our traditional *modus vivendi*; Pugwash has often been accused – perhaps justifiably – of being an exclusive club. But even if our mode of work has been justified in the past, I believe that the time has come to open up.

I am not advocating that Pugwash should become a mass movement; what I am suggesting is that we should

be more willing to collaborate with other organizations in the sense of spearheading a large effort to provide information to the general public. Pugwash is a movement of scientists, but the job of the scientist is not only to do original research; education is an essential element of it. And this is in essence what I propose.”

So was born the UK WMD Awareness Programme.

The genesis of the Programme

The collaboration was initiated at a meeting that Jo called in the British Pugwash office in September 2002, to which representatives from BASIC, CND, the Movement for the Abolition of War, Abolition 2000, MEDACT, Greenpeace UK and the Oxford Research Group were invited. In characteristic style, Jo set out the current situation and the reason for the meeting. No-one was saying that nuclear weapons should not exist, nor that they are already legally forbidden. Under the Bush administration matters were getting worse: the Nuclear Posture Review saw nuclear weapons as usable and to be integrated into US military planning. There were moves to develop new nuclear weapons such as the so-called mini-nukes. There will be strong pressure to test these new weapons, and he noted the US failure to ratify the CTBT as an indicator of possible intent. If the US restarts testing, then China is likely to follow, or even Russia, India or Pakistan. He argued that we were on the threshold of a new arms race. However the public does not understand the dangers, as indicated in the continuing low salience of nuclear weapons issues in the public mind, with recent opinion polls showing that only 1-2% of the UK population saw nuclear weapons issues as important.

The question was: what can be done? Can we arouse public opinion to influence future developments? He felt that normal Pugwash channels on their own were unlikely to work. He suggested we appeal to the public on both the legal and moral aspects of nuclear weapons.

The brain storming period that ensued raised a number of potentially promising ideas on how best to proceed. There was a strong feeling that by working together, exploiting the differing expertise of each of the collaborating organizations,

we could have a greater impact on the public consciousness than could any one organization acting alone. It was agreed that as a first step a small group would produce a synopsis of the proposed “campaign” with a mission statement and proposals for fund raising. A number of other groups would also be approached to participate.

The expanded group met the following month, with additional representatives of other groups attending¹. Remarkably, the Programme aims were settled almost immediately following a rapid writing down of a stream of consciousness from Bruce Kent: the overall aim of the Programme would be (a) to raise British public awareness of the grave dangers of present nuclear weapons policies, and (b) to shift public perception towards the feasibility of a secure world free from the threat of nuclear weapons. The bulk of the meeting then discussed the much more difficult problems of how to move forward to achieve these aims. What messages did we want to get across? What target audiences could we most usefully identify? What possible actions should we take to get our messages across to those audiences?

Crucially, the first thing we did was in the Pugwash tradition of using state of the art professional knowledge – this time of the public opinion and media experts. We commissioned research on public opinion in order to inform us in developing an effective media strategy. This initial work – though the time it took frustrated Jo – convinced us that a new approach was essential if we were to have any chance of achieving our goals. Working with public opinion professionals, we then carried out a more detailed study, the results of which gave us a picture of the psychological and social landscape of the issue that we did not have before. This enabled us to put together a comprehensive communications strategy, targeted at the specific group the study identified as the most likely to respond.²

Elements of the public education programme we have implemented based on the research include the following:

- large scale (some VIP) events to highlight the urgency of the issues and periodically raise media and public interest;
- a proactive, reliable, factual and attractive website (www.comeclean.org.uk);
- communications with parliamentarians and opinion formers;
- curriculum development and youth education.

It is this strategy that we are now implementing, and building on to inform our next moves and future programme.

The first year of the Programme.

This has been encouragingly successful.

Awareness-raising events

The Programme and the website were launched in September 2004 by a series of events and media conferences focused on a visit by President Gorbachev. Jo led the launch (see figure). The activities involving President Gorbachev included:

- Interviews on the BBC TV ‘Today’ Programme, Channel 4 News, BBC Radio 4 ‘PM’, BBC World Service ‘Hardtalk’ and BBC TV ‘Newsnight’.
- A press conference which resulted in a great deal of worldwide media coverage.
- A lunch with editors and key journalists.
- A private meeting in Downing Street with Sir Nigel Sheinwald, advisor on Foreign Affairs to the Prime Minister.
- A fully booked public meeting and reception at the headquarters of the UK Trades Union Congress.
- A visit to Holland Park School in west London.

Further events have followed periodically, some of these also including high profile visitors, with the particular event tailored to the visitor involved. We have tried all the while to relate the events and visitors to issues that will attract the media (we cannot dream of *paying* for media coverage!), to target different audiences, to use existing platforms appropriate to different target audiences and to work locally on events in collaboration with local organizations.

An example of using an existing platform appropriate to our prime target audience was our participation in the Guardian Hay Festival, an annual literary festival that takes place at the ‘book town’ of Hay on Wye in the Welsh borders. Sponsored by the Guardian newspaper and Channel 4 TV, excellent print and television media coverage is pretty well guaranteed. We hosted Robert McNamara and his wife and took them to Hay for the 2005 Festival. Mr McNamara’s visit received a great deal of media coverage and the issue of nuclear policy was raised in every media item. Activities and coverage included:

A Special Tribute to Joseph Rotblat

- An advance two page spread in the Guardian newspaper.
- An advance interview with Channel 4 News.
- An interview on BBC Radio 4 Today Programme.
- A well attended press conference that was covered in the Guardian.
- BBC World TV “Hardtalk” interview.
- Coverage in a TV programme with Jonathan Dimbleby.
- Live transmissions from Hay on BBC News 24 and BBC Wales.
- Coverage of McNamara at Hay in the Times newspaper, BBC News (repeated throughout the day) and internationally.

BBC TV showed ‘The Fog of War’ just before his visit. This looked like an attempt to pre-empt Channel 4!

Mr. McNamara spoke at Hay with Professor Robert Hinde (Chair of British Pugwash) and Jon Snow (a major UK TV news anchorman and reporter) in a venue that held 1,100 people and was sold out.

Mr. McNamara also spoke in the House of Lords to a room packed to capacity with Lords and MPs.

As a third example, the Programme hosted Senator Douglas Roche, chair of the Middle Powers Initiative, jointly with the British Pugwash Group and the All Party Parliamentary Group on Non-Proliferation. He had just completed a consultation at the Atlanta Foundation with President Jimmy Carter and others and was on a European Tour to deliver their recommendations for the NPT. His schedule included:

- A press conference that resulted in an interview with the BBC’s Security Correspondent to be broadcast during the NPT Review Conference.
- A meeting with the Foreign and Commonwealth Office.
- A well attended public meeting.
- A meeting with senior NGO representatives.
- A meeting of the All Party Group in Parliament.

A major aim of these high profile events is to raise public interest periodically through the media. We learned quickly that excellent press coverage can be obtained with high profile visitors and at very low cost. Monitoring access to the website underlined the effectiveness of these

events in increasing hits on the site, further exposing the public to nuclear weapons issues. It is also important to exploit ideas and events that will attract the media: for example, the media love anniversaries around which they can build extended coverage. Although it is hardly ever possible to be sure why certain issues do get high coverage, we worked hard in advance with the media to raise the profile of the 60th Anniversary of Hiroshima and Nagasaki, and were very pleased indeed with the high degree of coverage the Anniversary spawned.

However, not all events need to be high profile to be effective. Good results can be achieved by working within environments appropriate to particular target audiences, and by working locally with other sympathetic groups. Two examples illustrate this.

First, in targeting younger people, we had a presence at the 2005 Glastonbury Music Festival, at which 5,000 ‘competition’ postcards were distributed. The question was a simple one on the number of nuclear weapons in the world and the information on the card was about the decision looming on the future of Trident. Not only did people read the cards and try the competition (for which the prize was a signed CD from a popular group) but they actively discussed the issue with their friends. The fact that the competition had to be entered via the website further encouraged access to the website and exposure to the issues we are trying to raise.

Secondly we again targeted younger people by running a concert for peace in Birmingham. In addition to commemorating Hiroshima and Nagasaki, the event also looked forward to a future world where we could live without the nuclear threat and in peace. The event was supported also by West Midlands CND, Amnesty, Oxfam, Drop Beats not Bombs, and Food not Bombs, showing again the effectiveness of combining forces with appropriate other organisations. The concert had a great deal of support from the music community in Birmingham, with 10 groups and over 40 musicians performing over a five hour period. In addition there were four speakers, one of whom was in Birmingham in place of the Reverend Jesse Jackson. Two leading graffiti artists also took part. A major part of the aims of the event was achieved in the extensive regional and local media coverage. A film and digital recording of the event was also made for future use.

The musicians taking part and the young people there felt this was exactly the right way to involve the next generation. The artists are enthusiastic to take part in a similar event at an appropriate time in the future.

A strong message coming from the events part of the programme is to take advantage of opportunities that are there. There are many of them. With limited funds, it is totally unrealistic to mount advertising campaigns of any sort in the major media. But creating interest in the media can encourage their coverage of the messages we want to get across to the particular audiences that the research suggested we should focus on.

Media targeting

Continuing the theme of using the media at minimal cost, the programme has tried a number of approaches including placing opinion pieces in the major news media. Again, these can be targeted at different audiences by using the appropriate media. Thus, our efforts are not limited to Op. Eds in the 'serious' newspapers. For example, at relatively low cost a cartoon was commissioned and placed in the *New Musical Express*, a newspaper popular amongst younger people. This was linked to a competition that would engage younger people with the NPT Review Conference, and part of the competition process encouraged access to the website. The band Radiohead and comedian Mark Thomas donated signed CDs as prizes.

A particularly successful example of using media opportunities was working with the production company for a satirical Channel 4 TV programme 'Bremner, Bird and Fortune'. The show that went out on election night 2005 contained material on British nuclear weapons policy that we had suggested might be included and for which we had provided the background material and the evidence. The item was run in the period between the times the poll closed and the results started coming in, a period when people would be watching attentively. We appear to have established a credible reputation with the show in that a further item on UK nuclear weapons was put out in a later edition of the programme.

Clearly, to be effective in getting material used in the media, relationships need to be built up with appropriate people in the media, including of course journalists. The programme is fortunate in that its coordinator (Carol Naughton) has extensive experience and expertise in

media interactions. It is also of course crucial to establish a reputation of credibility and integrity, and here the Pugwash association is critical. As the media work has shown, there are low-cost (in money if not in time) opportunities available to get our messages across to a range of audiences. They should, and can, be used effectively.

Contacts with Parliamentarians and opinion formers

These are important aspects of the Programme. As mentioned above in the context of the events we have run, visiting VIPs have made their presences felt in both Parliament and in Downing Street. The Programme has continued to exploit opportunities within the UK parliamentary system using mechanisms such as Early Day Motions to raise issues on the floor of Parliament which can then be latched on to by the press.

Again because of the access it gives to Parliamentarians, Civil Servants and the media, launching reports in Parliament can have added benefits. A case in point is a report on the UK Trident nuclear weapons system that was written by John Ainslie and published by the programme³. Its launch in the House of Commons brought in members of the House of Lords as well as the House of Commons, civil servants and the press. There was an excellent discussion involving MPs from all sides. The copies of the reports themselves were snapped up, and more requests followed by email. . The Clerk to the Defence Select Committee asked for extra copies for MPs on the committee and the Ministry of Defence (MoD) requested extra copies twice as they said it had become 'Required reading at the MoD'.

We held a lively debate at the annual conference of the governing Labour Party that also focused on Trident. The leaflets that we produced to advertise the meeting went down very well and stimulated good responses from delegates and even indeed from Jack Straw (the Foreign Secretary) who came over specifically to get one from the coordinator who was handing them out! The debate itself was excellent and feedback we had from the MPs present again underlined a clear need for good quality information on the Trident issue. The 'system' can clearly be thirsty for good quality information. The Awareness Programme works to provide this, and here again the Pugwash name gives the Programme added credibility.

The Website

The professionally-designed website (www.comeclean.org.uk) is an important device for both raising awareness generally and as a repository for good quality information on WMD issues. Expert consultants review papers before they are placed on the site, and the site includes up-to-date news items and reports. Access statistics have exceeded expectation, with the design company commenting on the unexpectedly high (to them) hit rates that we are regularly getting. As we had hoped, access indeed increases at times when high profile events are held, or when competitions requiring access to the site are run. Feedback on the site itself has been very positive.

The site also includes the educational materials we are developing for schools (see below). As this education programme develops further, the site will be used to support that programme by making available additional materials that can be used by teachers.

An attractive, easily accessible and readable website is an essential aspect of the Programme. It is inexpensive to run yet it can reach a wide range of people. To be effective, it must contain authoritative material and build up a reputation for reliability and honesty without much of the hype that is too often found on campaigning websites. Here again the Pugwash association is important in establishing the necessary integrity.

Educational programme

As 1945 recedes further into the past, the collective memory of the effects of nuclear weapons will fade unless action is taken to maintain awareness. This is especially the case with respect to today's youth, the younger fraction of which has not even a memory of the Cold War, let alone nuclear weapons. An important part of the WMD Awareness Programme is therefore its youth education programme.

Central to this is the development of teaching modules for schools that fit in with the UK Citizenship Curriculum and afford us the opportunity to implement recommendations of the UN Study on Disarmament and Non-Proliferation Education. Aimed at 14–16 years olds, the materials cover aspects of global security and WMD, particularly nuclear weapons. Six lesson plans have been completed and given to teachers for comment. They use a range of

teaching techniques including role play and the materials include cartoons, videos and CDs.

Once modified and resourced, the lesson plans, background resource material and suggested pupil activities were trialled in secondary schools in Birmingham. Initial feedback from both teachers and pupils was very positive and enabled us to refine the lesson plans and guided us in providing more resources. Pupils seem to have enjoyed the activities and commented that they have a better understanding of the issues. Our worries that teachers may be wary of using materials that could loosely be called 'political' were unfounded.

We are now working up to final production of these modules for their launching and distribution to secondary schools. A part time education officer is about to be appointed to oversee the launch and to interact with teachers in the implementation of the modules and the provision of additional and updated materials.

One of Jo's priorities was young people. This work aims to take this priority forward in a positive and effective way.

Future plans

The success of the first year of the Programme seems to have validated the approaches we have taken that were guided by the initial research. We now plan to build on this, with the following objectives for the next two years.

Initiate new research into public knowledge and attitudes about WMD and global security. The original research on which our strategy is based is now two years old, and we need to revalidate or possibly modify our approach in the light of possible shifts in attitudes since then. This will also give us signposts as to how successfully we are tailoring our messages to the reality of public perception in order to help people consider the issues in a critical and well informed way.

Arrange a series of events to involve constituencies that we have not engaged with so far. These include faith groups, visual and performing arts groups, minority communities, trades unions, women's organisations, environmental groups and scientists. For specific programme events, we will expand our way of working to encourage the involvement of major society organisations such as Amnesty, Oxfam and the Women's Institute.

Organise up to four high profile events a year, some of which will feature figures of world stature. These events will focus on global security and be of interest to a wide audience. Where possible, they will coincide with important dates to encourage media interest and coverage. Examples include events at major UK Festivals in 2006/7; for example we are developing a programme for the three weeks of the Edinburgh Festival Fringe in 2006. We are developing further our collaboration with the Guardian Hay Festival of Literature that was so successful in 2005. This year the Festival has instituted a Joseph Rotblat Memorial Lecture and we are working to invite a high profile speaker to give this. A 'cross-professions' meeting on the future of the UK's nuclear weapons policies is planned for a high profile venue in autumn 2006, and a meeting to raise discussion on the practicalities of nuclear disarmament among both scientists and the scientific media is being proposed for the 2007 UK Festival of Science in collaboration with VERTIC.

Launch the schools education programme. Funds permitting, we will distribute the education packs to all 6,900 schools by summer 2007. The education officer will visit schools as needed to explain, promote and support the programme, and negotiate other speakers as requested by the schools.

Further develop and promote the website so that it becomes even more interactive and the top site for anyone putting the term WMD into their search engine. As part of collaborative work with Acronym, BASIC, and ORG focussing on the UK Trident situation, we have created a new section on our website that will act as a clearing house for information, opinion and discussion on this issue. We will expand the kind of stimulus we have engaged in this year, such as web based competitions, to encourage visits to the site.

Expand our engagement with parliamentarians and political parties through events in Parliament and the Party Conferences. We will continue to work with the All Party Parliamentary Non-Proliferation Group to coordinate visits of high profile figures with meetings in parliament. We will continue to act as a catalyst to stimulate MPs to call for debates and the placing of Early Day Motions.

Develop our media work with the placement of opinion pieces and features in the newspapers and magazines,

and radio and television networks. We will continue to encourage TV production companies to commission documentaries on the subject of WMD and global security and to include aspects of these issues in popular programmes as we successfully did with the 'Bremner, Bird and Fortune' show on election night.

Funding

We have been very encouraged by the responses from a number of funding organisations that have enabled the Programme to get off the ground. Initial seed funding from British Pugwash and Greenpeace UK was critical in the early stages and in funding the research. The Joseph Rowntree Charitable Trust helped with further seed funding that enabled us to develop the Programme, and this was followed by an initial year of core funds. Other organisations that have contributed include the Network for Social Change, and donations and grants have come from a number of other organisations and private individuals. Rowntree has recently awarded us a further two years of core plus funding and Network for Social Change has just informed us that they will be supporting the schools educational programme for the coming 12 months.

Core costs have worked out at about £45,000 per year. These have largely covered the salary of one full time coordinator, half a day per week for a webmaster, and basic office and running costs. Additional funding has been obtained for specific events (Pugwash helped to fund the Gorbachev visit) and of course for the educational programme. Costs are often shared with collaborating organisations, especially in situations such as the Hay Festival, where our participation was of clear mutual benefit. Support 'in kind' has come from a number of sources. We have moved from a situation at the start where building up sufficient funds to do anything useful looked an almost impossible task to one where we – perhaps unusually for the UK NGO community – have secure core funding for a two year period.

It was good to receive the following comment from our major funder when the most recent award was given: Trustees have been encouraged by the work of the programme over the past year. ... they are very supportive of the experimental and ambitious approach that is genuinely seeking to reach new audiences.

They see this kind of approach as absolutely crucial if there is to be any prospect of raising public and political awareness on these issues.

What has been achieved?

This of course is difficult to assess objectively. Within the UK, there is a general feeling that nuclear weapons issues are now more frequently raised and discussed than they were two years ago. How the WMD Awareness Programme may have contributed to this raised profile is impossible to document, though we do feel that our impact has been significant and positive.

A recent Greenpeace UK opinion poll showed some interesting results. 46% of the UK public now oppose our developing a new nuclear weapons system to replace Trident, as against 44% that support such a development. When the cost of replacement was given, the 'against' figure increased to 54% while the 'for' percentage fell to 33%. With respect to nuclear weapons issues more generally, 87% of the UK public oppose using the bomb against a non-possessor of nuclear weapons, 77% oppose using it against a possessor state that is not using it, while 55% oppose using it in retaliation even if attacked by a nuclear weapon. These results – which contrast with the 1-2% of the population that felt that nuclear weapons issues were important a few years ago – were a surprise to many, and suggest that perhaps we are beginning to push against a door that may be opening – at least in the UK.

Concluding comments

As mentioned in the opening paragraph, in his last few years Jo felt very strongly that, as well as continuing to work in its traditional way, Pugwash should also reach out to the general public. The integrity of Pugwash could be used to advantage to inform the public of the “grave dangers inherent in the continuation of current policies”, but he realized that “the task of influencing public opinion is far too big for an organization like Pugwash to undertake by itself” and that therefore “collaboration with other organizations would be essential”.

The WMD Awareness Programme has, with Jo's encouragement, hassle, and support, tried to fulfill this aim in the UK context. The way the Programme has proceeded may perhaps provide a model that could be built

on by others, and it is encouraging that there are initiatives in other countries along related lines. The success of the UK programme was underpinned by the initial research, without which we would have been likely to go in directions that, in hindsight, would have been not just relatively ineffective but positively counterproductive. Again in the tradition of Pugwash, we looked to state of the art expertise – this time in the social sciences – to guide our strategy. In the light of this experience, we would strongly urge others interested in trying to something similar nationally to undertake an initial period of research.

When Jo returned to the UK after leaving the Manhattan Project, he worked through the British Atomic Scientists Association (BASA) to educate the public about nuclear matters. At the end of his life, he found himself back where he began his peacemaking career with BASA in the 1940s: focussing on the need for public education. As Jo said in the peroration of his public lecture in Halifax in 2003: “Pugwash is a movement of scientists, but the job of the scientist is not only to do original research; education is an essential element of it.” The WMD Awareness Programme is attempting to do this within the UK, taking advantage of the expertise and knowledge available in other concerned organizations and communities to increase the effectiveness of the attempt. With his inspiration and commitment still with us, we will continue to take this part of “Advancing the Legacy of Joseph Rotblat” forward.

Notes

- ¹The current Steering Group of the Programme consists of representatives from Abolition 2000, Acronym, Atomic Mirror, British American Security Information Council (BASIC), British Pugwash, CND, Greenpeace UK, Medical Action (MEDACT), Movement for the Abolition of War, Oxford Research Group (ORG), Pax Christi, Quaker Peace and Social Witness, Student/Young Pugwash UK, and the World Court Project. Organizations associated with the Programme include Scientists for Global Responsibility, the United Nations Association and the Verification Research, Training and Information Centre (VERTIC).
- ²A full write up of the results of the research work is available from the author.
- ³John Ainslie: “The future of the British bomb”, WMD Awareness programme 2005. Available from the Programme Coordinator caroln@blueyonder.co.uk or electronically via the Programme website www.comeclean.org.uk.

Participants

Amb. Sergey **Batsanov**, Director, Geneva Office of International Pugwash; Member, Pugwash CBW Steering Committee; Member, International Advisory Board, Geneva Centre for Democratic Reform of Armed Forces (DCAF)

Sir Hugh **Beach**, Member, British Pugwash Executive Committee; Member: Center for Defence Studies, VERTIC, and ISIS, London, UK

Dr. Jeffrey **Boutwell**, Executive Director, Pugwash Conferences on Science and World Affairs, Washington, DC, USA

Prof. Francesco **Calogero**, Member, Pugwash Council; Professor of Theoretical Physics, University of Rome “La Sapienza”, Rome, Italy

Mr. Luca **Ciciani** (Italy), PhD Candidate in Environmental Engineering, Imperial College of Science, Technology and Medicine, London, UK; Member of Steering Committee for WMD Awareness Project, Student Young Pugwash UK; National Coordinator Student Pugwash UK; Member of Society for Radiological Protection, UK

Prof. Paolo **Cotta-Ramusino**, Secretary-General, Pugwash Conferences on Science and World Affairs; Member, Pugwash Executive Committee; Professor of Mathematical Physics, University of Milan, Italy; Director, Program on Disarmament and International Security, Landau Network – Centro Volta, Como, Italy

Prof. John **Finney**, Professor of Physics, Dept. of Physics and Astronomy, University College London, UK

Prof. Robert **Hinde**, former Royal Society Research Professor (now retired), formerly: Master, St. John’s College, Cambridge, UK

Dr. Venance **Journé**, Researcher, National Scientific Research Council (CNRS), Paris, France

Prof. Michiji **Konuma**, Professor Emeritus of Physics, Keio University, Japan

Mr. Rian **Leith**, Master’s degree candidate in Diplomatic Studies, University of Pretoria, South Africa; Lecturer in Contemporary History, Tshwane University of Technology, Pretoria; National Representative, Student Young Pugwash South Africa; ISYP Board Member

Dr Tom **Milne**, Policy Development, Specialist Schools and Academies Trust, UK; Member of British Pugwash Group Executive Committee.

Dr. Götz **Neuneck**, Physicist, and Member, Pugwash Council; Project Leader, “Interdisciplinary Research Group Disarmament, Arms Control and New Technologies”, Institute for Peace Research and Security Policy (IFSH), Hamburg, Germany



Michael Douglas and Joseph Rotblat.

Photo by Peter Hoennemann, reprinted courtesy of TheCommunity.com



Jo with Ruth Adams at the First Pugwash Conference July 1957.

Prof. Hitoshi **Ohnishi**, Member, Pugwash Council; Vice President, and Professor of International Relations in the School of Law, Tohoku University, Sendai, Japan

Mr. Juan Pablo **Pardo-Guerra**, Researcher, El Colegio de Mexico (PROCIENTEC); Chair of the Executive Board, International Student/Young Pugwash

A Special Tribute to Joseph Rotblat

Dr. Georges **Parisot**, Senior Adviser, Technical and Strategic Assessment, France Telecom R&D, Paris, **France**

Senator Douglas **Roche**, O.C., Member, Pugwash Council; Chairman, Middle Powers Initiative; Author, Lecturer; Member of the Senate of **Canada** (1998-2004) and Canadian House of Commons (1972-84)

Dr. Carsten **Rohr** (**Germany/UK**), Senior Policy Analyst, Sustainable Energy Policy Division, Department for Environment, Food and Rural Affairs (Defra), UK; Member, British Pugwash Executive Committee

Dr. Mark Byung-Moon **Suh** (**Germany/South Korea**), Member, Pugwash Council; Senior Researcher and Korea Coordinator, Free University of Berlin, Germany; President, Korean Pugwash Group; Chairman, Corea Trust Fund; Visiting Scholar, Institute for Peace Affairs (IPA), Seoul

Prof. Takao **Takahara**, Professor of International Politics and Peace Research, Faculty of International Studies, Meijigakuin University, Yokohama, **Japan**

Dr. Giancarlo **Tenaglia**, voluntary Staff Member, Pugwash Conferences on Science and World Affairs, Rome, **Italy**; Member, Italian Pugwash Group

Dr. Christopher **Watson**, Senior Consultant ; Emeritus Fellow, Merton College, Oxford

PUGWASH STAFF

Sally **Milne**, Pugwash London office, 63a Great Russell St., London WC1B 3BJ, UK

Claudia Vaughn, Program Coordinator, Pugwash Conferences, via della Lungara 10, I-00165 Rome, Italy



With students from the University of Liverpool at Llandudno just after the war.

55th Pugwash Conference on Science and World Affairs *60 Years After Hiroshima and Nagasaki*

27 July 2005, Hiroshima, Japan

Hiroshima Declaration of the Pugwash Council

On the 60th anniversary of the nuclear devastation of Hiroshima and Nagasaki, we call upon political leaders, scientists, and citizens of the world to overcome the dangerous complacency regarding the ever present threat posed by nuclear weapons to the entire international community.

The decade since 1995, when Pugwash last met in Hiroshima, has been one of missed opportunities and a marked deterioration in global security, not least regarding the nuclear threat. In that time, additional states have acquired nuclear weapons, there has been little tangible progress in nuclear disarmament, new nuclear weapons are being proposed, and military doctrines are being revised that place a greater reliance on the potential use of such weapons.

We call upon all states to respect their commitments to the Nuclear Non-Proliferation Treaty, to ratify the Comprehensive Test Ban Treaty, and to conclude a Fissile Material Cut-Off Treaty, as important near-term steps to reduce the nuclear threat. Beyond that, we urge the nuclear weapons states to recognize that the security of each is best served by concluding a Nuclear Weapons Convention prohibiting such weapons.

Nuclear weapons must be declared illegal and immoral. Steps must be taken to devalue the dangerous importance of nuclear weapons in military doctrines and greatly reduce the numbers of strategic and tactical nuclear weapons, prior to their prohibition and elimination.

The dangers are clear. A nuclear confrontation could spin out of control in the event of a major regional conflict. To protect against the threat of a terrorist use of a nuclear device, far more needs to be done to control and eliminate excess nuclear fissile material to prevent a catastrophic attack. Pugwash has proposed concrete steps for the elimination of highly enriched uranium to prevent it falling into the hands of terrorists. We call upon governments to act on these recommendations, and quickly.

Members of the Pugwash Council, meeting just steps away from Hiroshima's ground zero, urge our fellow scientists and citizens to confront the threat of nuclear weapon use that could materialize at any time, without warning, in any part of the world. To political and government leaders, our message is simple, but stark: as long as nuclear weapons exist, they will one day be used.

Only by acting in the spirit of the 1955 Russell-Einstein Manifesto—"we appeal, as human beings, to human beings: Remember your humanity, and forget the rest"—can a nuclear catastrophe be averted. What happened in Hiroshima and Nagasaki must never happen again.

Conference Statement of the Pugwash Council

27 July 2005, Hiroshima, Japan

The Pugwash Council, meeting during the 55th Pugwash Conference held in Hiroshima, Japan from 22-27 July 2005, on the 60th anniversary of the nuclear devastation of Hiroshima and Nagasaki, is extremely concerned with the ever present threat posed by nuclear weapons to global security.

The decade since 1995, when Pugwash last met in Hiroshima, has been one of missed opportunities and a marked deterioration in global security, not least regarding the nuclear threat. In that time, additional states have acquired nuclear weapons, there has been little tangible progress in nuclear disarmament, new nuclear weapons are being proposed, and military doctrines are being revised that place a greater reliance on the potential use of such weapons.

Hopes in the immediate post-Cold War period in the 1990s that a new global order might be emerging have been dashed by the rise of radical international terrorism, unilateral military interventions and threats of pre-emption, and the lack of progress in meeting basic human security needs.

All of these issues will require a renewed commitment to the tenets of international law and equity, true multilateral cooperation, and the strengthening of regional and international organizations that can give needed priority to the human security of all, rather than the national prerogatives of some.

Nuclear Weapons

The Seventh Review Conference of the Nuclear Non-Proliferation Treaty (NPT), held in the spring of 2005 in New York, ended in deadlock. The five original nuclear-weapons states (US, Russia, UK, France and China) showed themselves unwilling to take decisive action to implement their obligations under Article VI of the NPT to move decisively toward the irreversible elimination of their nuclear arsenals. The obstructionist attitude of the US administration in particular pre-ordained the NPT Review Conference to failure. Other states must share the blame as well, however, for missing a solid opportunity at the Review Conference to resolve problems such as equitable access to civilian nuclear technologies, as allowed under Article IV, while at the same time tightening protections that such materials not be diverted to military use.

The broad framework of nuclear weapons disarmament is in danger of collapsing. The Comprehensive Test Ban Treaty (CTBT) has not entered into force, the US and Russia need to accelerate and enlarge the reductions called for by the Moscow Treaty, and negotiations have yet to begin on a Fissile Material Cut-off Treaty (FMCT) to eliminate production of weapons-grade Highly Enriched Uranium (HEU) and plutonium. Far more needs to be done to control and dispose of existing stockpiles of HEU that run the risk of falling into the

hands of terrorist groups. Significant numbers of tactical nuclear weapons continue to be deployed in Europe and elsewhere, while pressures mount from certain quarters for developing and deploying space weapons. Given that no weapons are currently deployed in space, now is the time to preserve the sanctuary of space for its tremendously important civilian benefits.

High oil prices, the development of new and safer nuclear technologies, and concerns over global climate change have once more made nuclear power a potentially attractive option for generating energy. Serious attention must be paid, however, to the proliferation ramifications of building a new generation of nuclear power plants and spent fuel reprocessing facilities. Of special concern are necessary measures to prevent plutonium-based fuel cycles. Options such as multilateral control of nuclear fuel cycles, as recently presented in a report from the International Atomic Energy Agency, could help strengthen the barrier between civil and military nuclear programs.

In this regard, more information is needed on the recent talks between the US and India on resuming full cooperation in civilian nuclear issues. While we grant the necessity of sharing technology and best practices to make nuclear power as safe and efficient as possible, one must carefully weigh the precedent for other countries of such cooperation between a

nuclear-weapons state and a non-member of the NPT.

The Pugwash Council calls upon all states to respect their commitments to the NPT, to ratify the CTBT, and to conclude a FMCT, as important near-term steps to reduce the nuclear threat. Additional measures such as the adoption of nuclear No First Use policies and the de-alerting of nuclear delivery systems would provide additional security against miscalculation and inadvertent use of nuclear weapons in a crisis.

Additionally, the Pugwash Council believes that constructive work should be started by like-minded States to identify the legal, political and technical requirements for the elimination of nuclear weapons. As recommended by the Middle Powers Initiative, these efforts would be a contribution to the NPT process and could provide the framework for eventual negotiations for a Nuclear Weapons Convention prohibiting and eliminating such weapons.

Nuclear weapons must be declared illegal and immoral. Meeting just steps away from Hiroshima's ground zero, we urge our fellow scientists and citizens to confront the threat of nuclear weapon use that could materialize at any time, without warning, in any part of the world. To political and government leaders, our message is simple, but stark: as long as nuclear weapons exist, they will one day be used.

Regional Conflicts

In East Asia, there are hopeful signs that the resumption of the Six-Party talks could lead to a relaxation of tensions and a negotiated solution

over the nuclear program of the Democratic People's Republic of Korea (DPRK). The DPRK's withdrawal from the NPT in early 2003 posed one of the gravest challenges ever to the non-proliferation regime. An agreement that codifies North Korea's stated commitment to a nuclear-free Korean peninsula, and the return of the DPRK to the NPT, would be a major boost for global non-proliferation.

Similarly, the situation in South Asia gives reason for optimism that India and Pakistan will continue to improve relations and open up toward each other. The Pugwash initiative in December 2004 on the Kashmir issue is one element in a broad array of confidence-building measures between the two countries. Nonetheless, great caution is needed to ensure that possible future tensions do not lead to conflict and the possible use of nuclear weapons, making the implementation of nuclear confidence-building measures between the two states all the more important.

The situation in the Middle East is, of course, far more worrisome. Terrorism and instability continue to plague Iraq, postponing the date for the needed withdrawal of US and foreign troops so that Iraq can build its own political future. Similar concerns exist in Afghanistan. Israel and the Palestinians have a long way to go in resolving their conflict, the next stage of which is the critically-important Israeli withdrawal from the Gaza Strip, which must be followed by a return to negotiations aimed at a just and peaceful solution.

Pugwash has invested much effort on the issue of a WMD-free Middle

East. Major complicating factors include Israel's policy of nuclear opacity, Middle East states that have not yet signed and ratified either or both of the Chemical or the Biological Weapons conventions, and the lack of resolution on the modalities and aims of Iran's uranium enrichment program.

In this volatile region in the world, bold steps are needed to reduce threats from nuclear, chemical, and probable biological weapons, through steps toward implementing a WMD-free zone in the Middle East. More broadly, international support for democratic reforms and economic development could do much to blunt the attraction of radical terrorist groups. Of critical importance to enhancing regional security will be a solution to the Israeli-Palestinian conflict.

Conflict and instability in other regions of the world, from the newly independent states in central Asia and the Caucasus, to West and East Africa and Southeast Asia, is of concern as well, even if these areas are not as prominent in terms of the threat of nuclear-weapons use. Effective cooperation among regional and international organizations, rather than unilateral action, preemption or excessive use of military force, presents the best chance for resolving conflicts. In particular, dialogue must be promoted between old and new strategic alliances, namely between NATO and the CSTO (Collective Security Treaty Organization), as well as between the European Union and NATO, regarding potential cooperation in peace support and in any future crisis.

Human Security

True global security will never be possible until the fundamental components of human security, including equitable access to food, water, healthcare, education, and economic opportunity, are attained.

At the 55th Pugwash Conference in Hiroshima, these and other themes were touched on by speakers such as Judge C.G. Weeramantry of Sri Lanka, who gave the Dorothy Hodgkin Memorial Lecture, by Dr. Nobuyasu Abe (Under Secretary General for Disarmament Affairs at the United Nations), Mayor Tadatashi Akiba of Hiroshima, Prof. John Holdren (Harvard University), and by Prof. M.S. Swaminathan and Prof. Paolo Cotta-Ramusino, the President and Secretary General, respectively, of Pugwash.

In the context of the UN Millennium Development Goals announced in 2000 and being reviewed in the fall of 2005 at the United Nations, the sad truth remains that human security for the world's peoples is at greater and greater risk. The large

majority of them continue to face unacceptable deprivation in their access to basic human necessities. Intensive international cooperation, especially between industrial and developing countries, is needed to redress these imbalances, many of which contribute directly to human insecurity and conflict. As noted during the 55th Pugwash Conference, the promise of new technologies for advances in the sustainable use of resources is clear, yet such benefits are not distributed evenly to the world's peoples. It is critically important for scientists to remember their individual responsibility regarding the beneficial applications of their work in promoting true human security for all individuals, and to carry that message to the public, governments, and international institutions.

* * *

The 55th Pugwash Conference is the first that our co-founder and past President, Sir Joseph Rotblat, has not been able to attend since Pugwash was founded in 1957. As a co-signatory of the 1955 Russell-Einstein

Manifesto, the founding document of the Pugwash Conferences, Sir Joseph, in his message to the conference, recalled the words of the Russell-Einstein Manifesto on its 50th anniversary – “we appeal, as human beings, to human beings: Remember your humanity, and forget the rest”.

The Pugwash Council urges all of us to act in this spirit, and for national governments, multilateral institutions, and international NGOs to lead the international community away from a misplaced reliance on nuclear weapons and the catastrophic dangers that await us if clear progress is not made to decisively reduce and eventually eliminate nuclear weapons.

What happened in Hiroshima and Nagasaki must never happen again.

The 55th Pugwash Conference, 60 Years After Hiroshima and Nagasaki, was attended by 159 participants from 37 countries, including 29 International Student/Young Pugwash participants, and was held at the International Conference Center Hiroshima.



55th Pugwash Conference on Science and World Affairs *60 Years After Hiroshima and Nagasaki*

MESSAGES OF WELCOME

Opening Address

Hitoshi Ohnishi

Your excellencies, honoured guests, ladies and gentlemen.

On behalf of Pugwash Japan, I wish to extend my heartfelt welcome to dear colleagues upon your visit to Hiroshima again.

We are now going to start the 55th Annual Conference of Pugwash with deep emotion associated with the past and a firm resolution towards the future.

Looking back at the history, the year of 2005 is especial for us, at least, in a triple sense: first, the year is the 60th anniversary of the end of the Second World War and the Bombings against Hiroshima and Nagasaki; second, in July 1955, or just half a century ago, the Russell-Einstein Manifesto was announced, and, as a direct outcome of the Manifesto, this Pugwash movement was kicked off two years later; third, in 1995, or ten years ago, Pugwash and Sir Joseph Rotblat were jointly awarded the Nobel Peace Prize for “their efforts to diminish the part played by nuclear

arms in international politics and in the longer run to eliminate such arms.”

Looking at the time to come, the prospect for future may have become worse or darker since ten years ago. When Pugwash held the 45th Annual Conference in Hiroshima in 1995, we conceived rather an optimistic view on the feasibility of a nuclear-weapon-free world. In contrast, the present international situation around nuclear weapons is severe and even terrifying: the failure of the recent NPT Review Conference; the plan for development of a new type of small size nuclear weapons or so-called “usable nuclear weapons”; and, accelerated nuclear proliferation.

Today, after a ten-year gap, we gathered again here in Hiroshima to discuss how we can overcome such a horrible situation and realize a just and peaceful world. I am sorry that this 55th Conference is the first one without the presence of Jo Rotblat. As you know, Jo has attended all of the last 54 conferences. However, he is not able to participate in this Conference due to his ill health. Jo frequently quotes the famous words in

the Russell-Einstein Manifesto: Remember your humanity, and forget the rest.

This place is undoubtedly one of the most suitable places to remember your humanity and forget the rest. When you stand here on ground zero in Hiroshima, you must naturally and strongly feel that all the victims of the indiscriminate bombing were our fellow creatures. Similarly, the possible victims who could occur as a result of the use of “usable nuclear weapons” against a “rogue country” would be human beings. Millions of people who are today suffering from civil wars, political repression, hunger, poverty and environmental destruction are equally human beings as well.

Dear fellows! Let us develop our discussion fully and deeply in this most advantageous site. Let us talk with the local citizens who have been consistently the most conscious of and active towards the abolishment of nuclear weapons. And, at the end of this Conference, let us put forth something encouraging and cogent towards a just and peaceful global society, again, as human beings to human beings.

.....
Dr. M.S. Swaminathan
President, Pugwash Conferences
.....

Your Excellency, Mr. Yuzan Fujita, Governor of Prefecture of Hiroshima, Prof. Hitoshi Ohnishi, Chair, the Organizing Committee, Prof. Michiji Konuma and Member of the Organizing Committee, Prof. Taizo Muta and Member of Hiroshima Committee, Ms. Sarara Maeda and Members of the Helping Staff, Members of the Student and Young Pugwash, Prof. Paolo Cotta Ramsino, Prof. Marie Muller and Members of the Pugwash Council, Pugwash Participants from different parts of the world, and members of the media.

Ladies and Gentlemen, we are meeting here at a critical time in human history. Ten years ago (1995), the Pugwash Conference was held here on the occasion of the 50th Anniversary of the nuclear destruction of Hiroshima and Nagasaki and the 40th Anniversary of the Russell-Einstein Manifesto which urged us to remember our humanity and forget the rest. On that occasion, the Pugwash Council observed, "The era of the Cold War, and the beginning of deep reduction in the huge nuclear arsenals that the war spawned, have provided an unprecedented opportunity for the abolition of nuclear weapons as well as the abolition of war."

Ladies and Gentlemen, the expectation of 1995 and the hope and enthusiasm for peace generated by the Pugwash movement and Sir Joseph Rotblat being awarded the 1995 Noble Peace Prize have unfortunately been beheld. The Norwegian

Nobel Committee had made a special reference of the message of hope given in the Hiroshima Conference of 1995. Recent events including the collapse of the Non-Proliferation Treaty (NPT) negotiations and this growing violence in the human heart as evident from the expansion of global terrorism indicate that a nuclear-peril free world is an idea whose time is yet to come. This is why this Conference being held on the occasion of the 60th Anniversary of the nuclear holocaust here and in Nagasaki, and the 50th Anniversary of the Russell-Einstein Manifesto assumes great significance. I would like to express our gratitude to the governor of the Hiroshima Prefecture, Mr. Yuzan Fujita, and the Mayor of Hiroshima Mr. Tadatoshi Akiba, who will be addressing us tomorrow, for their generosity in hosting this Conference in this historic city, which I regard as the conscience-keeper of the world.

I cannot find words to give adequate expression to our indebtedness to Prof. Hitoshi Ohnishi, Prof. Michiji Konuma and the other members of the Japan Pugwash Organizing Committee for their tireless efforts to make this Conference possible. Our sincere thanks also go to Prof. Taizo Muta and the office Members of the Hiroshima Committee and to the wonderful team of helping staff led by Sarara Maeda.

The ten years since we met here last have proved to be wasted years in a period when the uncommon opportunities appeared by the end of the Cold War and the break-up of the Berlin Wall for lasting peace and harmony in our planet were frittered away. What we witness instead is the proliferation of nuclear weapons and the rise of hatred and terrorism. The prospects for nuclear terrorism and adventurism have become real. The voice of sanity of the survival of the 1945 nuclear annihilations in



**Panel Session on Prospects on the Elimination of Nuclear Weapons:
Masao Tomonaga, Pervez Hoodbhoy, Francesco Calogero, Ye Ru'an, Lynn Eden.**

Hiroshima and Nagasaki is yet to be heard. This is unfortunate since they only know what hell on earth means.

At the same time, the unique opportunities opened up by the explosive progress in science and technology for achieving the UN Millennium Development Goals of food, water, health, education and work for all as well as of clean air and energy and a healthy environment, are yet to receive the political attention and investment decisions they also urgently and richly deserve. The extensive coexistence of unacceptable poverty and unsustainable lifestyle is not conducive to the creation of a climate for peace and harmony. What we urgently need is a shift in emphasis from military to world leadership.

Sir Joseph Rotblat

I am glad of this opportunity to welcome you, albeit from a distance, to this, the 55th Pugwash International Conference. It has a very special significance for a number of reasons. It marks the 60th anniversary of the explosion of the first nuclear weapon on this city and, a few days later, the attack on Nagasaki. It is also 50 years since the signing of the Russell-Einstein Manifesto, of which I am the last remaining signatory, and the tenth anniversary of the award of the Nobel Peace Prize for our contributions to world peace. As you can imagine, for these reasons alone I am deeply sorry that I am not able to be with you. It is the first International Conference that I have missed.

At the same time, we in the scientific community should always keep in mind the advice given to us by Albert Einstein, whose discovery of his theory of relativity 100 years ago is being commemorated this year in the form of an "International Year of Physics."

"Concern for Man himself and his fall must always form the chief interest of all technical endeavors in order that the creation of our mind shall be a blessing and not a curse."

If political leaders, the public who elect them to positions of power, scientists and technologists, and the mass media function like Members of a Symphony for Peace and Human Security, we can still enter a nuclear peril and terrorism free world. Time

But there is another reason why this conference is of special significance, a reason that dwarfs the others. Earlier this year, the NPT Review Conference ended in virtual failure. This disaster, for such it is, must spur us on to even greater efforts. Ultimately, its failure was due to the refusal of nation-states to relinquish even one iota of their national sovereignty. The original nuclear weapon states hold on to their nuclear status, and even seek to augment their nuclear armoury. One of them even seeks to retain its military capability so that it can impose its will on the rest of the world. Other states seek to acquire nuclear weapons to deter an attack from others that possess them. Carried to its logical conclusion, this would mean that every nation acquires its own nuclear weapons.

is, however, running out, since the culture of peace is being eclipsed by a climate of violence. I would therefore like to end by quoting what Mahatma Gandhi said in January 1945, a few days before he was arrested.

"Forget the Past, Remember everyday dawns to us from the moment we wake up. Let us all, every one, wake up now."

This Conference is a wake-up call to all of us, particularly to the political leaders of the world who are in a position to save us from the brink of nuclear disaster, and take us to an era of sustainable human security and happiness, as enshrined in the UN Millennium Development Goals.

This is no way to run the world. Imagine a world governed forever by mutual fear. Surely, that is not a world that any of us would want to live in, yet it is the way the politicians are taking us. One reason for their ability to do so is spelled out in the Russell-Einstein manifesto.

"People scarcely realise in imagination that the danger is to themselves and to their children and their grandchildren, and not only to a dimly apprehended humanity. They can scarcely bring themselves to grasp that they, individually, and those whom they love are in imminent danger of perishing agonisingly."

Hitherto, Pugwash has owed its success to maintaining impeccable scientific respectability and thereby earning the respect of politicians. It is

because of this reputation that I am able to congratulate the present Secretary-General on his initial success in facilitating meetings between the two sides in one of the world's main trouble spots. But I am coming to believe that the time has come for Pugwash, while not for a moment relinquishing its scientific integrity, to lay the facts before the public. The end of the Cold War has led to public complacency, but in fact the dangers

of a nuclear conflict are about as high as they have ever been. In the UK we have been running a campaign, in collaboration with other organizations, to make the public aware of the danger. I hope that Pugwash Groups in other countries will follow and improve upon our efforts.

I believe that we must go beyond that, and seek to abolish war itself. This aim, intrinsic to the Russell-Einstein manifesto, will take us on a long

hard road. It does not necessarily mean pacifism as that is generally understood, but it means choosing to seek a world with "continual progress in happiness and wisdom", a world in which morality, law and mutual respect govern the relations between nations, and no nation uses military power to impose its will on others.

Yuzan Fujita

Governor, Prefecture of Hiroshima

To the Pugwash Conferences President, Mr. Monkmbu (Sambasivan) Swaminathan, organization committee chair Hitoshi Ohnishi, and all of the participants here today, as a representative of the citizens of Hiroshima Prefecture, together with heartfelt words of welcome, I would like to express our deepest respects for the significant effort and enthusiasm you have poured into your activities.

Sixty years ago, Hiroshima and its people were brought to ruin by the dropping of the Atomic Bomb. However, their desire for peace never wavering, thanks to both strong will as well as heartfelt aid from overseas, Hiroshima was rebuilt into a city overflowing with greenery and vitality.

As such, the opening of the 55th Pugwash Conference here in Hiroshima is an exceptional honor.

Issues such as ethnicity, religion, and poverty; into these deeply intertwined challenges new regional conflicts and terrorism have been borne; international affairs has presented us

with a formidable set of obstacles.

Within this context, Hiroshima Prefecture finds itself not just demanding the abolition of nuclear arms, but based on the theory of "peace building", peeling away the various threats to harmony, continuing to stabilize still unstable conflicts and conflict regions, and continuing to advance policies contributing to truly lasting peace.

As one of those steps, we are currently engaged in providing aid aimed at revitalizing the fields of education and health care in Cambodia. In addition, in collaboration with JICA (Japan International Cooperation Agency), human resource development projects are currently occurring at the Hiroshima International Center.

Furthermore, at the United Nations Institute for Training and Research (UNITAR), an institution established at the request of the Prefecture, programs such as "Training and Human Capacity Building in Post Conflict Countries" are being carried out, targeting leaders and scholars throughout the Asian and Pacific regions.

We, along with international agencies, the central government, non-governmental organizations, as well as local governments, believe we can serve an important role in these new peace-building structures.

Via this reconstruction aid as well as the activities of the Hiroshima UNITAR office, we henceforth plan to play an important role in international society, particularly in the stabilization of peace and harmony in Asian and Pacific regions.

The discussions and debates that will occur in the upcoming conference are thus deeply meaningful for our Prefecture. We are happily anticipating progress towards peace, a progress made expressly without the use of military force.

To the participants here today, it would, in addition, be my great honor if you all took this opportunity to experience the history, culture, and industry here in Hiroshima.

In conclusion, for both conference participants as well as international society as a whole, I would like to pray for a productive and fruitful meeting. Thank you all very much.

Yohei Kono

*Speaker, House of Representatives,
Japan*

I respectfully extend my welcome to you, distinguished scientists of the world, who have gathered this day in Hiroshima once again to discuss the topic, "60 Years after Hiroshima and Nagasaki."

Ten years ago, as Minister of Foreign Affairs, I sent a welcome message to your annual conference, also held in Hiroshima, which had the theme "Towards a Nuclear Weapon-Free World." In that memorable year 1995, the Pugwash Conferences received the Nobel Peace Prize together with Sir Joseph Rotblat, for its strenuous efforts towards the elimination of nuclear weapons.

Then we saw a series of positive developments, such as the publication of the advisory opinion of the International Court of Justice, the adoption of the Comprehensive Test Ban Treaty, and the agreement at the NPT Review Conference in 2000 on the so-called "13 plus 2" practical steps towards nuclear disarmament. At the turn of the century, however, the United States began to oppose the CTBT. More recently, North Korea declared its withdrawal from the NPT. The outcome of the 2005 NPT Review Conference, as we all know, was extremely disappointing.



Model of Hiroshima with famed Industrial Exhibition Building.

But we must be aware that the wishes of the people remain unchanged, namely the elimination of nuclear weapons and attainment of a world without war. In light of the grave situation concerning the prospects of nuclear disarmament that we face today, your activities have become all the more important to the peoples of the world.

Sixty years ago, literally standing in the midst of the rubble of destruction, we Japanese could not but painfully reflect upon the war that

inflicted horrendous damage to other nations, leaving over three million compatriot deaths.

We solemnly adopted the New Constitution of Japan, which forever renounces war. We take much pride in the fact that the spirit of our Constitution embodies the wisdom of the Russell-Einstein Manifesto, launched exactly 50 years ago, which pointed out the necessity to abolish war.

I wholeheartedly send my best wishes for the success of the 55th Pugwash Conference.

.....
Nobutaka Machimura
Minister of Foreign Affairs, Japan
.....

It is my great pleasure to extend greetings to the 55th Pugwash Conference, being held in Hiroshima. The Government of Japan heartily welcomes all the participants from across the world.

Although the fear of nuclear confrontation between the Superpowers is over after the end of the Cold War, the nuclear threat still hangs over the world today in different forms, such as the development and acquisition of weapons of mass destruction by countries of concern and terrorists.

To deal with these emerging threats, the world community has devised new tools, such as the Additional Protocol to the IAEA Safeguards Agreement and United Nations Security Council Resolution 1540. These specific measures are most effective when they are underpinned by the norm that nuclear proliferation should be banned, and when such a norm is deeply installed in, and strongly confirmed by, the international community. It is therefore truly regrettable that the State Parties could not reach consensus on any substantive issues at the NPT Review Conference this year. It is all the more important that we renew and affirm our commitment to the cause of nuclear disarmament and non-proliferation on every occasion.

The Pugwash Conference in Hiroshima offers one of the most suitable occasions for the eminent persons of the world to issue such a message. I sincerely hope that your ardent discussions will make a significant contribution to this aim.

.....
Kofi A. Annan
Secretary General
United Nations
.....

As we observe this sixtieth anniversary after Hiroshima and Nagasaki, we are all *Hibakusha*. Let us mourn; let us recall our commitments; let us resolve for the future.

We must all mourn that, on 6 August and 9 August 1945, more than 100,000 men, women and children were killed instantly when the atom was split over Hiroshima and Nagasaki. More than 200,000 more men, women and children were condemned to horrific and lethal sickness. Untold destruction and human suffering were unleashed on innocent civilians.

As we look back, we must all recognize that in August 1945, global politics were transformed forever. We entered a new and terrifying era, in which the complete annihilation of humankind could happen in a matter of minutes. Our mutual vulnerability became inescapable. And yet — that same interdependence also ushered in the hope of the United Nations. The link between the horrors of Hiroshima and Nagasaki and the founding aspirations of the UN was quickly manifest: The UN General Assembly, in its very first resolution, declared that our common goal must be the elimination of all weapons “adaptable to mass destruction”.

The first resolve for us, as it was for the founders of the United Nations, is to pass on to our children a brighter inheritance than that bequeathed to us. We can, and we must, build a future as envisioned in



Tadatashi Akiba, Mayor of Hiroshima.

the UN Charter — a future “in larger freedom”. We can, and we must, continue to work toward a world free of nuclear dangers, and ultimately, of nuclear weapons. All States must do everything in their power to ensure that the horrors of Hiroshima and Nagasaki are not visited on any peoples, anywhere, ever again. The obligation to advance disarmament and non-proliferation is not just legal, moral or wise: it is existential. This September, world leaders will convene at the United Nations for what is expected to be the largest gathering of Heads of State and Government the world has seen. I appeal to them: let us not forget the past; let us know our obligations; let us have the courage to fulfil them, for the sake of succeeding generations.

Conference Schedule

Wednesday 20 July Arrival of Pugwash Council (PC) & Int'l Student/Young Pugwash (ISYP)
14:00-17:00 Pugwash Executive Committee Meeting

Thursday 21 July PC Meeting and 3rd ISYP Conference

Friday 22 July

All day Arrival and Registration of Conference participants
 PC Meeting and 3rd ISYP Conference
18:00 Informal reception
20:00-21:00 Meeting of Conveners and Rapporteurs (after dinner) if necessary.

Saturday 23 July

09:00-9:45 **OPENING PLENARY SESSION** [*Open*]
 Welcome by **Hitoshi Ohnishi**, Chair, the Organizing Committee
 Welcome by **Yuzan Fujita**, Governor of Prefecture of Hiroshima
 Response by **M.S. Swaminathan**, Pugwash President
 Paolo Cotta Ramusino, Pugwash Secretary General
10:15-10:45 Visits to Hiroshima Peace Memorial Park & group photo
11:00-12:30 **EXTRA PLENARY SESSION** [*Open*]
 Movie and an account of a victim's experience of the Atomic Bombing
 Lunch
14:00-15:30 **PLENARY SESSION I: Keynote Speech** [*Open*]
 John Holdren (USA)
16:00-17:00 **PLENARY SESSION II: Secretary General's Report** [*Closed*]
17:15-18:45 **Working Groups meet in parallel sessions**
19:30 Dinner
After dinner Meeting of PC with National Pugwash Groups

Sunday 24 July

09:00-10:30 **Working Groups meet in parallel sessions**
11:00-12:30 **Working Groups meet in parallel sessions**
 Lunch
14:00-18:20 **PLENARY SESSION III** [*Open, with translation*]
14:00-14:20 Speech by **Tadatoshi Akiba**, Mayor of Hiroshima
14:20-16:20 Panel Discussion:
 60 years after Hiroshima and Nagasaki and Prospects on the Elimination of Nuclear Weapons
 Masao Tomonaga (Japan), **Pervez Hoodbhoy** (Pakistan), **Ye Ru'an** (China), **Lynn Eden** (US)

Conference Schedule *continued*

16:50-18:20 Dialogue with Citizens
19:30- Dinner
After dinner Meeting of PC with ISYP participants

Monday 25 July

09:00-10:30 *Working Groups meet in parallel sessions*
11:00-12:30 *Working Groups meet in parallel sessions*
Lunch
14:00-16:30 **PLENARY SESSION IV: [Open]**
Panel Discussion: *Security and Disarmament in the Middle East*
Sami Al-Mudhaffar (Iraq), Mohamed Shaker (Egypt), Saideh Lotfian (Iran),
Galia Golan (Israel)
17:00 Cruise excursion with dinner

Tuesday 26 July

10:00-12:00 **PLENARY SESSION V: [Open]**
Panel Discussion: *Regional Security in East Asia*
Kiichi Fujiwara (Japan), Hwang Dong Joon (Korea S.)
Yang Chengxu (China) Ralph Cossa (USA)
Lunch
14:00-16:00 **PLENARY SESSION VI: [Open]**
Panel Discussion: *The Future of Disarmament and Non-Proliferation*
Nobuyasu Abe (Japan), A.A. Soltanieh (Iran), Steve Miller (USA)
16:30-18:00 *Dorothy Hodgkin Memorial Lecture [Open]*
Dr. C.G. Weeramantry
19:00 Banquet

Wednesday 27 July

09:00-11:00 **PLENARY SESSION VII: *Reports from WGs and ISYP* [Closed]**
11:30-12:30 **PLENARY SESSION VIII: *Presidential Address* [Open]**
12:30-12:45 **CLOSING SESSION [Open]**
Lunch
Afternoon Press Conference / Departure of participants
14:00- PC Meeting

Thursday 28 July

Morning Departure of remaining participants and PC

Report of the Pugwash Secretary General Paolo Cotta-Ramusino

Hiroshima, Japan, 23 July 2006

The Pugwash movement has devoted a large part of its activities in the last 48 years to the risks associated with nuclear weapons and other weapons of mass destruction, and to the steps necessary to get rid of these dangerous weapons. The founder of Pugwash, Jo Rotblat, who is not present among us for the first time in 48 years, has been active in support of nuclear disarmament all his life, and the Pugwash movement is fully committed to pursue the same goal for the time to come.

Drawing from our experience of the last 48 years, in particular from the experience we had in promoting dialogue between scientists, political & military leaders and experts from nuclear rivals, Pugwash has in the last period developed an agenda focusing on three main points:

1. Promote nuclear disarmament and non-proliferation; support the elimination of chemical and biological weapons, and promote other forms of disarmament.

2. Work on “conflict resolution”, especially in regions where Weapons of Mass Destruction are or may be present, and help in preventing the incentives and the opportunities for states

or non-state actors to acquire nuclear weapons or WMDs.

3. Keep addressing the issues pertaining to the social responsibility of scientists.

The year 2005 saw the five-year Review Conference of the Non-Proliferation Treaty. As is well known, the Conference ended with no final document. Even the result of the 2000 Review Conference (including the so called 13 steps) were hardly mentioned during the 2005 conference, and certainly were not remembered in any type of conclusive document.

So the Conference ended without recalling the importance of the entry into force of the Comprehensive Test Ban Treaty, the definition of a Fissile Material Cutoff Treaty, the elimination of Tactical Nuclear Weapons,

the unequivocal commitment to nuclear disarmament, and other important steps.

The very modest outcome of the NPT Review Conference showed in a clear way the present crisis of nuclear disarmament.

Support for nuclear disarmament inside the Nuclear Power States (and de-facto Nuclear Power States) is at a very minimum. On one side the rhetoric associated with the so called “war on terror” does not generate support for any form of disarmament (nuclear or otherwise), and on the other side there are calls for initiatives aimed at forcefully dismantling military or nuclear capabilities in states with suspected clandestine nuclear or WMD activities, irrespective of the soundness of these suspicions. One should add that if the so

called “critical states” feel the pressure of much more powerful states, they must undoubtedly realize that if they possess nuclear weapons or WMDs, they would have a better chance of resisting those pressures.

In this respect the comparison of Iraq and North Korea is very enlightening. We are witnessing the growth of incentives for poten-



Paolo Cotta-Ramusino and Pope Benedict XVI, St. Peter's Square, November 2005.

tial proliferators. This adds to the traditional incentive given by the “prestige” which is associated with the possession of nuclear weapons by official Nuclear Power States - which are still the only permanent members of the UN Security Council.

A closer look at the internal dynamics of the NPT review Conference shows that key states prioritized political gains (outside the NPT Review Conference) as opposed to a collective strengthening of the NPT regime. The pressures of some states and the NGO community to bring the NPT Review Conference to a more constructive conclusion, yielded to the will of the strongest powers who decided to downplay the role of collective multilateral action and instead stress the role of unilateral initiatives, or initiatives supported by few, in the fight against proliferation. Altogether, one of the very few (if not the only) official occasion to discuss nuclear disarmament has been lost.

During the NPT Review Conference in May 2005 Pugwash joined efforts with other NGOs to organize two meetings in New York with delegates of the Conference and to support a more positive outcome of the Conference. Immediately before the NPT Review Conference,

Pugwash also participated in a meeting of member states of Nuclear Weapon-Free Zones promoted by Mexico. Pugwash is wholly supportive of this initiative aimed specifically at consolidating a group of states committed to promoting the agenda of nuclear disarmament on a global level.

While the modest results of the NPT conference present a setback, it will not immediately undermine the

validity of the NPT treaty, which survives as a fundamental instrument of peace and stability. The call for nuclear disarmament will not end in 2005; other opportunities will arise and Pugwash is on the frontline of this battle.

A traditional Pugwash activity in the field of disarmament, namely the series of workshops on chemical and biological weapons, continued in 2004-2005 with two workshops, in Geneva (4-5 December 2004) and Oegstgeest, The Netherlands (16-17 April 2005). This series of workshops constantly monitors the evolution of this delicate field and is a key reference point for all the people working in this area.

On point two of the Pugwash agenda, namely “conflict resolution” in critical areas of the world where WMD are either present or may be present in the forthcoming future, significant work has been done.

The method we follow in this activity is to call together, when possible, the main actors in a regional critical situation and facilitate direct dialogue and understanding. Here ‘direct’ means that the dialogue is not necessarily organized through the “hub” of western countries or main power States.

Together with the WMD Commission, chaired by Hans Blix, and the Egyptian Council of Foreign Affairs we organized a meeting in Cairo on Nuclear Weapons and WMD in the Middle East (28-31 January 2005). This meeting saw the participation of representatives from various countries in the Middle East (including Iran, Syria, Egypt, Jordan and Israel) that normally do not participate together

in meetings. Pugwash is fully committed to the development of dialogue and communication on such important issues as WMD in the Middle East, among all the Middle Eastern Countries with no limitations. The result of bringing together people from antagonistic nations is in itself a significant step forward.

We also organized a series of small informal meetings in Washington, DC (April 2005) between Syrian and US experts in order to discuss the tension that exists between western countries and Syria, and to have a frank discussion on the positive steps that could be undertaken.

Finally, several members of Pugwash participated in the International Conference on Nuclear Technology and International Development that was held in Tehran on March 5-6, 2005, which meeting included a trip to the Esfahan Nuclear Research Center on March 7.

Another critical area where Pugwash has a deeply rooted activity is the Indian subcontinent, particularly the relations between India and Pakistan. Together with the general problems in the relationship of these two countries and the aspects related to nuclear stability, in 2004-2005 Pugwash developed a large initiative on the Kashmir issue. We invited representatives from the two halves of “Jammu and Kashmir” (the former under Pakistani and the latter under Indian administration) to meet together for the first time in decades in Kathmandu, Nepal. The Indian, Pakistani and Nepalese governments helped this process which has been a real turning point in intra-Kashmiri relations.

At this meeting, there was unanimous support for a resolution claiming that violence is not an acceptable method to yield any result. For a full discussion of the Jammu and Kashmir Kathmandu meeting, please see the December 2004 issue of the *Pugwash Newsletter*.

Subsequently we organized smaller meetings in Islamabad (Pakistan) and Srinagar (Indian State of Jammu and Kashmir), respectively on March 9, 2005 and April 23, 2005 in order to discuss plans for future actions on the Kashmiri issue.

In the general area of non-military threats to security, we organized a series of workshops with the support of the South Africa Pugwash group on the spread of the HIV/AIDS virus, the need to curb this spread, the social responsibility of workers in the area of prevention of infectious diseases, and the security consequences that will result if such spread proceeds unimpeded. A report on the

third such HIV/AIDS workshop, held outside Cape Town, South Africa from April 29-May 1, 2005, is in the June 2005 issue of the *Pugwash Newsletter*.

With the help of the French Pugwash group, the 2nd Pugwash Workshop on Science, Ethics and Society was held in Ajaccio, Corsica from 10-12 September 2004 (also covered in the June 2005 issue of the *Pugwash Newsletter*).

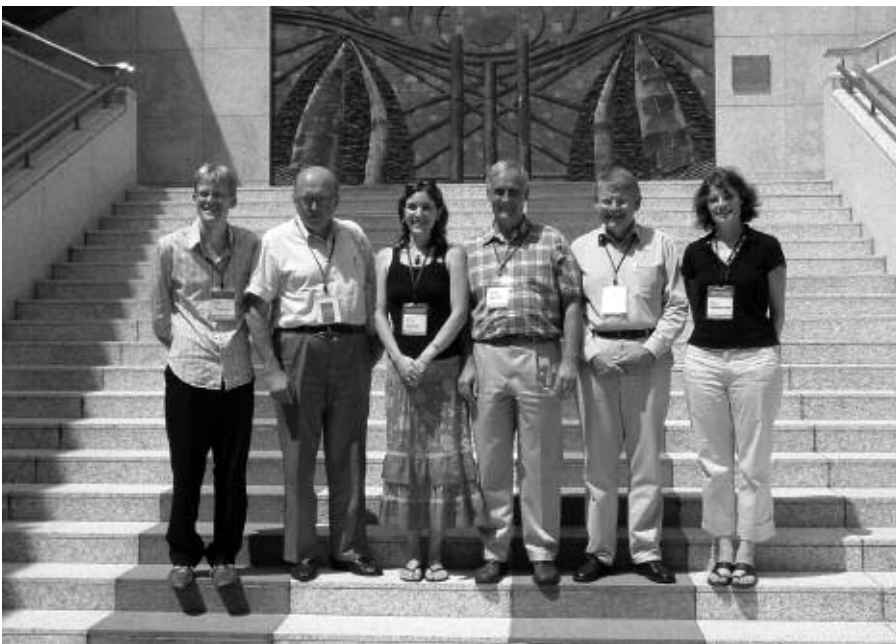
In carrying out these diverse activities, Pugwash relies on an international coordinating structure that, although very slim in terms of central structures, is very rich in terms of worldwide diffusion and the number and relevance of Pugwash national groups. We have now very small offices in Rome, Washington DC, London, and Geneva, with only 3 to 4 full time staff, while our national groups are growing in size and numbers (now totaling nearly 50).

This establishes Pugwash as a truly international organization. In fact, Pugwash is one of the few non-governmental international organizations in the field of security and non-proliferation.

Pugwash National Groups have a very significant role in promoting initiatives worldwide. In fact, I have omitted, for reasons of space, all of the various initiatives organized specifically by single, national groups.

We are fully committed to expanding the Pugwash community worldwide. New national Groups have been created in Pakistan and Iran, and we have strengthened our groups in the Middle East and in North East Asia. In short we are particularly keen in developing and expanding the presence of Pugwash in the critical areas where WMDs and nuclear weapons are a particularly significant problem and the risk of nuclear use and proliferation is high.

A final remark concerns our publications. We have a periodic newsletter, in 2005 we published an issue brief on "Eliminating Excessive Stocks of Highly Enriched Uranium," and a collection of papers addressing the legacy of the Russell-Einstein Manifesto is in preparation. In addition, the Pugwash website maintains current overviews of all Pugwash activities, and a new form of email alerts and communications among the international Pugwash community, *Pugwashforum*, has recently been initiated.



Will Marshall, Sergei Batsanov, Jessy Cowan, Detlev Wolter, Goetz Neuneck, Moira Goodfellow.

27 July 2005, Hiroshima, Japan

Remember your Humanity: The Lesson of Hiroshima and Nagasaki

Presidential Address

M S Swaminathan

*President, Pugwash Conferences
on Science and World Affairs*

On August 6, 1945, the most dreadful among the weapons of mass destruction—the atom bomb—was dropped in the civilian area of Hiroshima. Three days later, another atom bomb was dropped in Nagasaki. In 1955, Bertrand Russell and Albert Einstein issued their famous manifesto seeking the abolition of nuclear weapons and appealing to all inhabitants of Planet earth, “Remember your humanity and forget the rest. If you can do so, the way is open to a new paradise; if you cannot, there is before you the risk of universal death”.

In 1957, the Russell—Einstein Manifesto led to the birth of the Pugwash Conferences on Science and World Affairs, an organization devoted to the causes of ending the nuclear peril and reminding scientists of their ethical responsibility for the consequences of their discoveries, particularly in the area of nuclear threat to human survival.

The Pugwash conference held in 1995 at Hiroshima on the occasion of the 50th anniversary of the advent of atomic weapons, concluded, “the

end of the cold war, and the beginning of deep reduction in the huge nuclear arsenals that the war spawned, have provided an unprecedented opportunity for the abolition of nuclear weapons as well as the abolition of war”. Meeting again in Hiroshima in July 2005, the Pugwash Council observed,

The decade since 1995, when Pugwash last met in Hiroshima, has been one of missed opportunities and a marked deterioration in global security, not least regarding the nuclear threat. In that time, additional States have acquired nuclear weapons, there has been little tangible progress in nuclear disarmament, new nuclear weapons are being proposed, and military doctrines are being revised that place a greater reliance on the potential use of such weapons.

The prospects for nuclear terrorism and adventurism have now become real. The voice of sanity of the survivors of the 1945 nuclear annihilation in Hiroshima and Nagasaki is yet to be heard. This is unfortunate since only they know what hell on earth means.

Members of the Pugwash Council, meeting just steps away from

Hiroshima’s ground zero, have hence appealed to fellow scientists and citizens to confront the threat of nuclear weapon use that could materialize at any time, without warning, in any part of the world. To political and government leaders, our message is simple, but stark; as long as nuclear weapons exist, they will one day be used.

The Seventh Review Conference of the Nuclear Non-Proliferation Treaty (NPT), held in the spring of 2005 in New York, ended in a deadlock. The five original nuclear-weapons states (US, Russia, UK, France and China) showed themselves unwilling to take decisive action to implement their obligations under Article VI of the NPT to move decisively toward the irreversible elimination of their nuclear arsenals. All states must share the blame for missing a solid opportunity at the Review Conference to resolve problems such as equitable access to civilian nuclear technologies, as allowed under Article IV, while at the same time tightening protections to ensure that such materials are not diverted to military use.

The broad framework of nuclear weapons disarmament is in danger of collapsing. The Comprehensive Test Ban Treaty (CTBT) has not entered into force, the US and Russia need to accelerate and enlarge the reductions

called for by the Moscow Treaty, and negotiations have yet to begin on a Fissile Material Cut-off Treaty (FMCT) to eliminate production of weapons-grade Highly Enriched Uranium (HEU) and plutonium. Far more needs to be done to control and dispose of existing stockpiles of HEU that run the risk of falling into the hands of terrorist groups. Large numbers of tactical nuclear weapons continue to be deployed in Europe and elsewhere, having no military rationale whatsoever, while pressures mount from certain quarters for developing and deploying space weapons.

Next month, a UN Summit will be held at New York to review the progress made in achieving the UN Millennium Development Goals in the areas of food, water, health, education and clean environment for all. The explosive progress in science and technology witnessed in recent decades has provided uncommon opportunities for realizing these goals. Yet, most developing countries, including India, are falling behind the targets set. The extensive co-existence of unacceptable poverty and unsustainable lifestyles is not conducive to the creation of a climate for peace and harmony. What we urgently need is a shift in emphasis among militarily and economically powerful countries from military to moral leadership. At the same time, Einstein's advice to fellow scientists, "concern for Man himself and his fate must always form the chief interest of all technical endeavours in order that the creation of our minds shall be a blessing and not a curse," should be the guiding motto



The Hiroshima Peace Arch Memorial.

in scientific laboratories everywhere in the world.

It will be useful to recall the role Jawaharlal Nehru played in mobilizing scientific opinion against nuclear weapons. Early in 1954, he called "for the setting up of a Committee of scientists to explain to the world the effect a nuclear war would have on humanity". This idea was taken up by Joseph Rotblat, who along with Pugwash was awarded the Nobel Peace Prize in 1995, and Eugene Rabinowitch, resulting in the organisation of the Pugwash Conferences on Science and World Affairs. The name of the organisation comes from the Pugwash Village in Novoscotia, Canada where the first conference was held in 1957. Jawaharlal Nehru was also the first foreign Prime Minister to visit Hiroshima. In 1957, he praised the atom bomb survivors for their determination to spread around the globe information on the enormous harm that radiation can cause

to both the present population and to the generations yet to be born. Even now, harmful mutations are being observed in children in Hiroshima and Nagasaki. Thus, the genetic harm is as serious as the immediate harm. Jawaharlal Nehru played a major part in getting the first UN Conference on the Peaceful Uses of Atomic Energy organized in Geneva in 1955. This conference was chaired by the late Dr Homi Bhabha, the then Chairman of the Atomic Energy Commission who outlined in his Presidential Address a strategy for harnessing the multiple contributions that nuclear tools can make to strengthen food, health and energy security in the world.

In my Presidential Address delivered at the Pugwash Conference held in Hiroshima on 27 July 2005, I outlined the following six steps to achieve the goal of a nuclear peril free world.



Plenary session with Steven Miller and A.A. Soltanieh.

1. All nations with nuclear weapons should adopt during 2005 a legally mandatory policy of “no first use of nuclear weapons” as homage to the survivors of the nuclear tragedy of 1945

2. Respect commitments to the nuclear non-proliferation treaty (NPT), ratify Comprehensive Test Ban Treaty (CTBT), conclude a Fissile Material Cut Off Treaty, and ban all research relating to the development of new nuclear weapons

3. Conclude a Nuclear Weapons Convention outlining a road map for getting to Zero by 2020.

4. Avoid prospects for nuclear terrorism and adventurism by eliminating all unsecured nuclear fissile material and by implementing the concrete steps proposed by Pugwash for the elimination of highly enriched uranium; otherwise there is risk of nuclear power groups and individuals emerging, in addition to nuclear power states.

5. Because of the multi-dimensional threats posed to human security by climate change, and the consequent need for reducing green house gas emissions, interest and investment in nuclear power plants are growing. The civilian uses of atomic energy are likely to grow. Hence, the

UN may convene an International Conference on the Civilian Uses of Atomic Energy to develop a Code of Conduct to ensure that the non-military use of nuclear fuels does not get abused and to further strengthen safe-

guards and the inspection role and monitoring capacity of IAEA.

6. Democratic systems of governance are fast spreading in the world, which involve the holding of free and fair elections periodically. It would be useful to develop a Hiroshima—Nagasaki 60th Anniversary Appeal which calls upon all political parties in every country to include in their next election manifesto, a firm commitment to work for speedy nuclear disarmament with a view to rid the world of the nuclear-peril as soon as technically feasible. Without global political commitment, this goal cannot be achieved. At the same time, it

would be useful to introduce in all school curricula information relating to the consequences of the use of nuclear weapons in Hiroshima and Nagasaki in August 1945, so as to bring home the immediate and long term disastrous impact of a nuclear war. Without public and political education, the climate for peace and nuclear disarmament will not exist.

Looking at the brighter side, nuclear weapons have existed for 60 years but have fortunately not been used. This is a tribute to the work of Pugwash and numerous civil society organizations. Unfortunately the growing number of suicide bombing incidents indicate that we are now entering an uncharted territory in human conflicts and retribution. At least to prevent the potential non-state use of nuclear weapons, Nuclear Weapon States should not lose even a day in working towards the goal of zero in the existence of such weapons.



MS Swaminathan, President, Pugwash Conferences

P L E N A R Y S E S S I O N S

27 July 2005, Hiroshima, Japan

50 Years after the Manifesto, How can Scientists make a difference?

Dorothy Hodgkin Memorial Lecture

Judge C. G. Weeramantry

Mr. President, Mr. Secretary General,
Your Excellencies and Members of
Pugwash.

It is indeed a privilege to deliver
this lecture in honour of Dorothy
Hodgkin and her life and work.

Dorothy Hodgkin was an out-
standing scientist of her time. She was
deeply concerned with the humanitar-
ian urge to make science an instru-
ment of service to the entire global
population. As Senator Roche said at
the last session, the existence of
34,000 Nuclear Weapons in our midst
is like a volcano. This is the reality we
live in. Yet, at the same time the
majority of the world's people do not
want nuclear weapons and we have
lots of things going for us, including,
as was mentioned, the "Advisory
Opinion" of the International Court
of Justice. So how do we marshal all
these various strands of opinion and
the various intellectual tools we have
for the purpose of achieving a nuclear
free world, especially in the year of the
50th Anniversary of the Russell Ein-
stein Manifesto and 60th Anniversary
of Hiroshima and Nagasaki?

It is indeed time for reflection. It
is time for the scientists to take stock

of their position in this order of
things and to consider what best they
can do to avoid the terrible fate that
otherwise hangs over humanity like
the sword of Damocles.

The life and work of Dorothy
Hodgkin are replete with guidance
and instructions to the academic and
the professional in relation to what
they can do to mould world opinion
towards a successful achievement of
the abolition of Nuclear Weapons.
The special knowledge and influence
of the academic and the professional
must be directed towards the amelio-
ration of the condition of humanity
as a whole and particularly so in the
precarious times in which we live.

This applies not merely to scien-
tists but to all who have specialized
knowledge in various fields. I make
particular mention of lawyers as well
because, if scientists have been drag-
ging their feet on this matter, so have
lawyers, and these are two very influ-
ential branches of public opinion have
leadership potential which has not
been used to the full in this cause on
which the very survival of humanity
depends. So there is a danger here that
in this age of specialization we have
become so deeply involved in our par-
ticular area of specialization that we
do not see the wood for the trees.

Scientific knowledge has multi-
plied, maybe a hundredfold in the

past few decades and this is the time
therefore, to reflect on the question
"What does the scientist do to get
more deeply involved?"

In the fascinating world of scien-
tific knowledge there are penetrating
insights that can be gained into the
nature of the universe and into the
nature of matter. We have a better
knowledge of the ultimate particles
of which the universe is built and this
opens up an area of intensive study of
the infinitesimal. This is fascinating
but we have to avoid the danger of
only seeing what we see through the
barrel of the microscope of each dis-
cipline, for increasing specialisation is
required in our various specific fields
and there is a strong temptation to
investigate this deeper and deeper to
the exclusion of a macroscopic vision
of our discipline and its position in
the overall panorama of human
knowledge. This observation applies
to the lawyers as well for they tend to
get too deeply involved in the vast
ramifications of new legal knowledge
and only see what is relevant to the
case in hand, to the exclusion of the
larger picture. Where is the time to
stop and think?

We can all be inspired by Dorothy
Hodgkin's example. In the minute
world of Crystallography, she proba-
bly had no equal. She was pushing
back the frontiers of science and

knowledge as few of her generation did. It was the world of infinitesimal crystal structure and molecular patterns, betalactin and thiazolidine rings, the molecular structure of Insulin, Penicillin and Vitamin B-12.

What could be a more minute, more specialized and more enthralling field of research? Yet, she was able to project her vision from the microscopic to the panoramic, from the universe of atoms and molecules and thiazolidine rings to the universe of human wants and human needs, and to global problems and global cooperation. Her range of vision encompassed the betterment of the human condition across all frontiers of nationality and ideology. She gave us all an object lesson in being able to move from topics like the 3D structure of Rombo Heat to the peace issues involved in the Vietnam war, Her life was also replete with inspirational examples in regard to many principles, of special importance in this age of burgeoning dangers to the human condition. So there is much we can derive from her by way of inspiration, which is deeply relevant to the problems we face today, when we are so deeply involved in our day-to-day activities, whether of science or law or whatever and have no time for the larger picture.

Her life was a trailblazer to scientists in a number of ways. One principle she stood for was that whatever be one's discipline, one has to do all one can to further it through thoroughness of research. She spent 10 laborious years in exploring the structures of the crystals of Vitamin B 12 and she did that to perfection. At the same time she showed how concentration on such

thoroughness in the world of the infinitesimal should not obscure the imperative need to turn scientific knowledge to the advancement of the human condition. Her research on the structure of Insulin, Vitamin B 12, Penicillin were all inspired no doubt by this desire to be of service to humanity. Here was a second great principle that emerged from her life's work. A third principle was that scientists need to ensure that their research and knowledge cut across all national, and regional boundaries and she did this par excellence. She maintained scientific contact with scientists in China and the USSR. When there was a great political debate, whether Pugwash should hold its conference in Poland, despite all the opposition she insisted on Poland as a venue. She had her way and the conference was held in Poland.

A fourth principle was to look at the ethical perspectives of one's discipline and to discharge one's role as a scientist with due respect to the high ethical principles underlying all scientific research. These range all the way from fidelity to scientific truth to a consideration of how one's work impinges on the human problem. A fifth important principle highlighted by her work was the importance of bonding with fellow scientists, for no field of scientific research is an island unto itself.

She was a member of 16 British and International Societies and President of the British Association for the Advancement of Science. Yet another principle her life's work illustrated was the necessity for a linkage between science and humanitarian causes. Her commitment to humanitarian causes was illustrated by her

membership of the Medical Aid Committee for Vietnam and the Pugwash Movement. She made it a point to attend all Pugwash workshops. A further principle that was illustrated by her work was the leadership role which scientists can play in society. She took an interest in the world around her in a very special way using her scientific knowledge to provide leadership. This became specially important having regard to such facts as the estimate in the 1980s that half the scientific manpower of the world was engaged in the armaments industry. Scientists who should be providing the leadership role in leading us towards a world of peace betray that role when they are leaders in the race towards death and destruction.

When I wrote a book in 1987 on the responsibilities in International Law of scientists who make nuclear weapons, I pointed to the statistic that while half the scientific manpower of the world was engaged in the armaments industry, less than 2% was engaged in solving the problems of the disadvantaged and impoverished. I doubt very much whether the figures have changed since then.

People like Dorothy Hodgkin make an enormous difference to our world by exemplifying all these principles through their life's work.

So much for Dorothy Hodgkin and the sterling example she offered to all scientists.

I pass now to matters more closely related to nuclear weapons – the underlying concern of the Russell/Einstein manifesto.

War has long been looked upon as a natural part of the human condi-

tion, There are even philosophers like Clausewitz, who propagated the view that “war is a natural extension of diplomacy”. Many believe that this still holds true although he wrote around 200 years ago. Most of the people in power in the world today still proceed, though they do not say so, on the Clausewitzian philosophy that war is the ultimate means of resolving their disputes. It does not appear to trouble them that this is the most barbaric means of doing so.

I pass now to another point. Presidents and Prime Ministers and Generals not only look upon war as a means of solving disputes, some of them are even prepared to use nuclear weapons to do so. But what is strange is that all the Presidents and Prime Ministers and Generals of the world put together cannot make one hundredth of one nuclear bomb. Who does it for them? It is the scientist who do it, and why are the scientists doing it for them? The scientists are doing it because I suppose, various rewards are offered to them. Power, and position, prestige and wealth come their way through their participation in this ignoble enterprise. It is vitally important that scientists should realize that when they participate in the enterprise of making a nuclear weapon they are directly parties to a crime against humanity.

Each one of them individually becomes guilty of participation in this crime. This can be demonstrated from International Law and I believe we need to carry this message to them. A computer scientist engaged in some part of the process of manufacturing will be working in the privacy of his room but it is important

that he should make it his business to inquire and ascertain the ultimate end of his work. And if the ultimate end of that work is, that it is part of a great overall plan to make a nuclear bomb, then that scientist is guilty of complicity in the criminal act involved. After all the same building expertise that constructs a torture chamber constructs a church, and if the constructional engineer says “I am only concerned with my scientific work and with my engineering expertise. I do not consider what the ultimate end product of my work is” he is shutting his eyes to the fact that he is party to a criminal enterprise. The same building rules and engineering expertise may apply, but making a torture chamber is far different from making a church. I believe that, based on the example of Dorothy Hodgkin, we should carry on a campaign to bring to the scientific community an awareness of their participation in this criminal enterprise, without which all the Prime Ministers and Presidents and Generals of the world cannot talk so glibly as they do of the use of nuclear weapons.

While science is at the cutting edge of human progress, at the same time every scientific endeavour has also its negative aspects, whether it be Nuclear Reactors or Cloning or Information Technology or Genetic Engineering. All of these are all advances in scientific knowledge, but at the same time they all undermine human rights, and lawyers have been sleeping on their watch, not examining to what extent the law should protect the public against unchecked scientific erosions of their basic human rights.

Many years ago, in the 1980s, I wrote a book on this. I called it *The Slumbering Sentinels*. It was published by Penguin and the Slumbering Sentinels I referred to were the Law and Human Rights. What I was saying was that science was forging ahead and was getting completely out of the control of lawyers and judges and legal systems and the judges were sleeping on their watch. The Penguin artist very cleverly drew a picture of a judge in full traditional regalia fast asleep on the bench. That was on the cover of the book. Now that is a good illustration of the way in which lawyers have been sleeping on their watch. Likewise, those who should guide the scientific community have probably also been sleeping on their watch because they have been permitting science to get out of hand and to destroy our liberties and not only merely our liberties but to threaten the very extinction of our civilization. If that is done by any group of people, then that group of people as well as their leaders have much to answer for.

So, that is what Dorothy Hodgkin’s work was about and that is what we are about at this Pugwash meeting. Pugwash is one of the most distinguished groups of scientists who have exhibited a social consciousness and it was led by two of the greatest intellects we have known in recent times. Pugwash has the best credentials, it has worked actively, it has achieved results in certain areas but it has to press forward very much harder in this wonderful task it has before it of helping the world to rid itself of the greatest scourge that has ever hung over humanity since the evolution of our race.

That is what the nuclear bomb is. The scientists are making that bomb. The scientists should be preventing that bomb. They should be leaving the arms establishment in droves, if, they are called upon to make these weapons. But they are not doing so and I believe we need to stir up their conscience on this matter. This applies not merely to the scientists but the lawyers also. The lawyers have to help the scientist to show every individual scientist the extent to which he or she is committing a total transgression of every basic principle of morality when he or she helps to make a nuclear bomb.

Sadly, the scientist has become a vital part of the military industrial complex of which President Eisenhower so eloquently warned us. It is now a military industrial technological complex and the scientist is an important part of that complex, which is one of the determining factors shaping the direction in which the world is moving. We have to alter that and Pugwash can play a leadership role in doing so.

Now the nuclear weapon is as I said the product of the scientists, but it dominates a world over which politicians, by and large, preside. They have little moral leadership. I say this with much respect, but nevertheless the moral leadership of the world is not in our political leaders. They exercise very little moral authority though they are skilled in making morally high-sounding pronouncements. They are nice forms of words but often they are not sincerely meant. There is a great deal of double talk in political language. Scientists are a much more respected group,

they are a much more influential group, they command much more attention from the general public, who are looking for people they can depend on and people whose words they can trust. Paradoxically however, it is the scientists who give to the world's political leadership, which is so lacking in moral authority, the most powerful weapon with which to reinforce their physical authority. In other words the scientist has strangely become an agency through which weak morality is

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The moral leadership of the world is not in our political leaders.

They exercise very little moral authority though they are skilled in making morally high-sounding pronouncements.

.....

entrenched in the highest places. Pugwash can provide the leadership in detaching them from this curious role and Dorothy Hodgkin was one of those who showed how this can be done.

So Pugwash is uniquely positioned for this leadership role. What greater endorsement can it have than the names of Einstein and Bertrand Russell and the example of people like Dorothy Hodgkin, and just as scientists have a leadership role among people Pugwash has a leadership role among scientists. So the responsibility that devolves on the shoulders of Pugwash is enormous, particularly at this critical time in world history. As I said the world of realpolitik and the world

of the arms establishments will offer scientists employment, wealth, influence, recognition, honours, and distinctions. These blandishments must be resisted and Pugwash must show them how to do so.

Now it strikes me, that if you look at world history and at the history of civilization, you see that from the very commencement of recorded history, indeed from the very commencement of human society, there have been the thinkers, the philosophers, the idealists, the visionaries. They have done all they could, they have spoken out as much as they could in their respective times. But, on the other hand, there is the world of the statesman, the general, the coloniser, the dictator, the emperor. That is another world altogether. That is the world of realpolitik and if you look at the whole of recorded history for the last 3000 or 4000 years and if you look even further beyond that, you will see these two groups, the world of the visionary and idealist and the world of realpolitik as existing separately, They lead two totally different existences, and the bridges between them have been very, very few.

Occasionally there have been great figures in history who have built bridges between them but that has not been lasting and the world of realpolitik carries on in its endeavours and in its work with little regard for the world of the philosopher. Now this is where we can bridge the gap. The world of realpolitik has always triumphed. They have had their way and not the philosophers. And why have they triumphed? Because so many people are prepared

to follow them. There is the arms establishment that will support them through thick and thin. There are the people who receive wealth, people who receive power and position. All sorts of things are in the gift of realpolitik. And many people succumb to that influence.

Why must the scientist? Should not the scientist be the one group that should tell the world of realpolitik where they stand? The world of realpolitik is supported by all these influences - the arms manufacturers, the media, the multinational corporations and, sadly, even the scientists. These groups are all giving them power and with that power they can override the world of philosophy and idealism.

If the scientist were only to shift from the one camp to the other the whole history of the world will change, because the world of realpolitik cannot do its nefarious business without the help of the scientists and if the scientists put the weight of their knowledge and influence on the side of the world of philosophy and the world of idealism, the world would be a different place. That is what I would exhort Pugwash to try to do. Try to tell the world of science of which you are leaders, try to tell them how they can tilt the balance and how world history can be altered by what the scientists can do in shifting their allegiance from the world of realpolitik to the work of philosophy and idealism. That is precisely what Dorothy Hodgkin stood for.

So we have this fact that the world of realpolitik smiles a rather cynical smile at the world of the philosopher. Yes, they are good peo-

ple but they are day dreamers, utopians, they are not realists, they don't have their feet on the ground, What do they know of how nations should be governed? We are the people who know that. We in the corridors of power are the people who know how to govern nations. That is their philosophy and they have got away with it for 30 centuries. It is time that their bluff was called and you are a group that can call that bluff. So here is the great enigma of history that the world has been rich - enormously rich - in philosophy but that philosophy has never been harnessed or has not been adequately harnessed to the cause of world progress.

All the most powerful forces in society cast in their lot with the world of realpolitik and we have got to change that. Those who control our destinies, order our affairs and lead us into wars. They think very little of the high moral principles on which all civilizations were built. They are concerned with temporal power, military power, economic power, political power, colonial power. That is what they want. They are dazzled by it. They see nothing else and scientists who see so much more, whose knowledge is so divorced theoretically from the pursuit of wealth and power and position, can make this important difference

How can they make this difference? There is a common fallacy that the law by itself can commit us to a moral code of conduct. The law is totally unable by itself to achieve moral conduct on the part of the citizens of any country. The law can only tell you what you are prohibited from doing and impose sanctions for devi-

ation from the strictly legal rules of conduct. But the area of conduct which even simple requirements of morality require us to follow is policed by the law only to a very minute extent. Illegal conduct is only a tiny fraction of immoral conduct. The vast area which legal regulations and prohibitions do not reach is the area wherein most of the conduct damaging to society and the human future tends to occur. Nearly every profession and every sphere of activity needs to work out codes of ethics to cover areas which the law by itself is simply unable to reach.

Let me give you a good illustration. We recently had the terrible tsunami calamity. Hundreds of thousands of people were affected in so many countries. Now, if you are a citizen of one of those tsunami affected countries, you do not offend the law if you do not spend one cent or one moment of your time on helping the tsunami victims. You are perfectly within the law. The law does not cast a moral duty upon you. Your moral code may do so, your religion may do so but the law does not.

The law can thus be totally unable by itself to impose duties upon you to do what is obviously so necessary from a moral point of view. Likewise, in the world of the scientist. The scientist has to be governed not merely by what the law permits him to do but he must have an ethical code. There must be an ethical code governing scientists and the scientific endeavour. Now it is for bodies of scientists to work out ethical codes for their respective disciplines. Every group of scientists should have a very carefully worked out Hippocratic

oath. Something on those lines carefully tailored to the needs of the particular discipline of science which that person is following, is surely needed in every department of science – chemistry, engineering, medicine, biology, pharmacology and, of course, nuclear physics.

In the book I wrote several years ago on the duties of scientists in relation to nuclear weapons *Nuclear Weapons and Scientific Responsibility*, Longwood Academic, 1987, I worked out a code of ethics for nuclear scientists and in that code of ethics for scientists,¹ I pointed out that the making of a nuclear weapon is a transgression of the basic principles not only of morality but also of international law as we understand it. The basic principles of individual responsibility worked out in the Nuremberg trials apply also to a scientist who is party to this enterprise of making nuclear weapons.

The general public is not sufficiently aware of the huge gulf between that which is legally prohibited and the much wider area of conduct which is morally unacceptable. Sensitising scientists to this gulf which often passes largely unperceived is one of the activities which is particularly within the province of Pugwash.

Let me offer another example: Under the common law if a person is passing by a little baby drowning in a puddle of water and he just passes by, he commits no offence under the law. That is because the common law by itself does not lay down such a duty of going to the assistance of someone in distress. But our traditional moral systems, our traditional ethical systems, our traditional religious sys-

tems laid down the duty of performing your moral obligation in such a situation. It was too obvious even to need formulation. Modern law has tended to distance itself from the obvious dictates of morality, and there is a tendency to restrict oneself to the minimum standard of conduct which the law requires. We have to build those bridges once more between legal and ethical standards.

As I said the area of legal prohibition will be only a small part of the area of moral prohibition. The area of legal detection will be only be a small part of the area of legal prohibition and the area of legal prosecution will be only a small part of the area of legal detection. Yet again the area of legal conviction will be a smaller part still. In consequence the area of legal conviction will be just a dot in the totality of that area of moral prohibition. So, we cannot rely upon the law to give us the indications of how we should or should not behave.

Since the gap between legal and moral obligation has to be bridged through ethical codes, there is a heavy responsibility lying on organisations like Pugwash to work out ethical codes for scientists in all disciplines and particularly in the area of international responsibility for the making of nuclear weapons.

Now let me say a word about International Law. I think scientists should be given a little more understanding of International Law than they currently have. International Law is the result of human aspirations towards a better world. It is based upon the thinking of philosophers down the ages. It is based upon

the natural law philosophy that was built up in particular in the Renaissance period and shortly thereafter, when there was a careful examination of the duties of people according to that higher law that overrides national law. This is a law which binds everybody irrespective of their nationality or national allegiance. For over 3000 years this concept of a higher law has been the subject of discussion. Failure to respect it has resulted in hundreds of wars and it has meant the sacrifice of millions of lives. Ultimately the concept of the higher law received at least some degree of state attention. For example, the Congress of Westphalia 1648 which occurred after the Thirty Years War which was one of the most devastating wars Europe had faced, accorded some recognition to the need for a higher law. So also the Congress of Vienna in 1815, after the fall of Napoleon, Versailles 1919, after World War I, San Francisco 1946 after World War II, each gave it some limited recognition and paid lip service to it. Yet each time we repeated the mistakes of the past. A very significant advance was achieved after World War II, namely, the Charter of the United Nations. That was the first time in a known world history of 3000/4000 years when the nations of the world got together to form an organisation of the nations of the world. That Charter, achieved after so much sacrifice and the loss of so many millions of lives, should be respected. It has given us much help in the shaping of the world order of the future. So there is an obligation on us to respect it. If we do not, we are doing away with the sacrifice of

so many millions of lives, which would have been sacrificed to no cause - if we flout the Charter of the United Nations.

Likewise, for the first time in human history in 1948, we had the Universal Declaration of Human Rights, which collected together basic human rights as understood by all the cultures and traditions of the world. When Mrs. Roosevelt was chairing that committee, the pundits of the time were predicting that it would be impossible to reach an agreement. They said the differences between cultures could not be straddled, but through the perseverance of her Committee this was achieved. For the first time in all our millennia of history we had a document embodying the agreed views of the entire world on basic human rights.

So these are prized achievements of humanity through all the ages but our statesman and politicians do not see this. They do not see what they are trampling underfoot when they declare wars or commit violations of human rights. In doing so they are just acting as though they had never occurred, the sacrifices of these untold millions of people and the centuries of human suffering. It is only through these that we have achieved even so much and we do need to wait for World War III to put our house in order. We cannot wait for World War III. Everybody knows that World War III would destroy all civilization as we know it.

Just to give you an historical overview, shortly before the commencement of the 20th century in 1898-1899, everyone was speculating on how best we could make the

future century a century of peace. After all, the 19th Century had seen the Napoleonic wars, and had been the bloodiest century up to their time. They did not want a repeat of this and the Tsar of Russia, Nicholas II sent out a message in 1898 to all the nations of the world. It said in effect "Let's have a Peace Conference and try to avoid wars in the future. A brand new century is dawning and let us make it a century of peace." As a result the great Peace Conference of 1899 took place at The Hague, planning for this wonderful new century of peace and they made some good resolutions. But still they did not achieve all they wanted to and I remember reading for example some discussions about it where people were saying "at last a bridge has been thrown between the world of power represented by the Tsar and the world of philosophy and aspirations. Let's make use of the bridge and build a better world order for the future".

What happened? We botched that century as no century has ever been botched before. We made it the bloodiest century in the history of human affairs. We cannot undo history. We have made that mistake. It was a century of lost opportunity. We have now started another century and we all had the most wonderful hopes of a century of peace. Sadly, it has not gone along that track and has opened on a note of war. But, unlike the 20th century which was a century of lost opportunity, where we could botch it and yet have another chance, if we botch the 21st century, we shall have no other chance. So, it is not a century of *lost* opportunity. It is our century of *last* opportunity. It is the

first century that has dawned with mankind having the power to destroy itself. If we mess up this century, we shall have no further chance. People such as scientists and lawyers can make a difference to the way the world handles this century.

The principles we should act on are transparently clear. I was telling you about the origins of International Law. May I just give you a few examples of bedrock principles of international law, which nobody could deny, which are transgressed every time one builds a nuclear weapon. There are, for example, the prohibitions against cruel and unnecessary suffering. Now all civilization, all religions, all traditions agree that there should be no imposition even in war of cruel and unnecessary suffering. I'll give you a good example. In the 19th century there was invented a bullet which was known as the "dum dum bullet". The dum dum bullet is a bullet which when it enters the body of its victims explodes and causes unnecessary suffering. After all, you only want to kill that person, you don't want to cause him too much suffering. That was the thinking of the time and all the nations got together in more than one International Humanitarian Conference, where they solemnly declared "that they the civilized nations" as they called themselves, "would not countenance the use of dum dum bullets in warfare".

Why? Because they go beyond the purposes of war and they inflict cruel and unnecessary suffering, So all the civilized nations agreed and that agreement still stands. It is still valid law that you cannot use a dum dum

bullet. But, the same civilized nations tell us that it is valid law that you can use a nuclear weapon, which can kill a hundred thousand if not a million people in one instant and which can cause damage to posterity for untold generations and damage to the environment which is irreparable. That is all right! Civilized nations can use that but they cannot use dum dum bullets. The absurdity of this will strike any school child. A visitor from outer space visiting our planet would think "What's gone wrong with these people, Is there some ailment that has afflicted their mental capacity?" But, nevertheless, there are people in the highest positions in the world today who tell you solemnly that they can use a nuclear weapon, that it is lawful to use a nuclear weapon, and indeed they will use a nuclear weapon if the situation arises where their national interest require it. Isn't it beyond any words to describe the absurdity of this?

I'll tell you what a school child of ten once said in a school essay, "Everybody says they do not want nuclear weapons, and they do not like nuclear weapons, but, they still have nuclear weapons, Somebody, somewhere is lying". A school child can see that, but our statesmen, presidents, prime ministers cannot. The prohibition against cruel and unnecessary suffering is just one rule. Everyone agrees of course that it is a cruel thing to impose cruel and unnecessary suffering, but we are not prepared to take the necessary steps to prevent that, when it come to the most massive cruelty of all – the nuclear weapon. Moreover it offends the principles against genocide which

is the mass killing of whole sections of populations. Yet that does not deter the nuclear lobby.

What does the nuclear bomb do but genocide? So, Whoever is party to the construction of a nuclear bomb or who threatens to use it or who stores it up with an intent to use it, is guilty of genocide.

Humanitarian Law has always drawn a distinction between the killing of combatants and the killing or wounding of innocent civilians. Therefore it has worked out the principle of discrimination. A weapon is not lawful which does not discriminate between combatants and civilians. What is a nuclear weapon, but a weapon of indiscriminate killing? Combatants are only a minuscule portion of the totality of the population that is killed by any nuclear weapon. 99.99% of the people killed will be civilians. They will be old men, old women, children, nursing mothers and so forth, and that is what we are prepared to do in our modern civilized age.

Then we have the general rules about protection of civilians, and that irreversible environmental damage should never be caused. We tend to forget that we are not the owners of the land space or the sea space that we use. We are only trustees. Modern international law thinks that it has worked this out as a result of modern legal skills, but it is a very old principle. It is there in the ancient books – 2000 and 3000 years ago.

I'll tell you a story. I come from Sri Lanka and in Sri Lankan history and in Indian history there is this great episode of the war between Rama of India and Ravana of Sri Lanka. Now

Rama was fighting a righteous cause and he was fighting Ravana and at one stage his generals told him that there was a hyper destruction weapon that would be available to him, a weapon which would presumably kill thousands of the enemy and ravage the country-side. We do not know what the weapon was, but that is how it was described and Rama was told "Here is a weapon which is available to you, but of course you can't use it without consulting the sages of the law." So he had to consult the sages of the law and the sages of the law told him "You cannot use that weapon in warfare." Why? "Because it goes beyond the purposes of war. What are the purposes of war? To subjugate your enemy and live in peace with him thereafter – not to destroy thousands of his citizens and ravage his countryside." And so it was prohibited and he did not use it and he could not use it. In my dissenting opinion in the International Court of Justice, I referred to this as an example from the numerous traditions of the world showing how we have a responsibility not to use this sort of weapon.

I will also tell you another story from Sri Lankan history to illustrate this: the great emperor Asoka of India was converted to Buddhism and his son Mahinda became a Buddhist monk. Mahinda came to Sri Lanka and preached a sermon to the king when he was out on a hunting trip. The king was out with a large number of his followers hunting deer in the royal forest. The monk accosted the king and said "What is this that you are doing? Causing harm to these innocent creatures"

and said “ Oh king, you may be the king of this land, but you are not the owner of this land, you are only the trustee. You hold it for the benefit of those who are to use it, both now and in the years to come.” That again is an embodiment in ancient tradition of a principle which we think we have discovered, namely the trusteeship of the land and our environmental duties.

Let me tell you also of an African tradition – African tradition says this “That if you take any important decision about humanity, you have to consider the threefold nature of humanity - those who went before us, those who alive here now and those who are yet to come. If it is a major decision you are taking, you have to consider all those three aspects of humanity.” We think only of ourselves and of us who are living here and now. And we do not spare one thought for the generations yet to come. What right have we to pollute the planet which is their birth right just as much as it is ours? And what does the nuclear bomb do but that? Intergenerational damage is prohibited by such ancient traditions in the light of the proven evidence that this nuclear weapon causes genetic damage to generations yet to come. What sort of civilisation is this, which permits the infliction of such damage? How many generations we do not know. The mutations caused are horrendous. Yet we seek to justify it, to help in this enterprise and to support its perpetrators.

In the Nuclear Advisory Opinion, we had a lady who came before us from the Marshall Islands and she was giving us a description of the hor-

rendous health damage caused by the nuclear testing in her part of the world. One thing she said was that the women were giving birth to deformed children, to children with all sorts of terrible birth defects. There was one woman who gave birth to a child with two heads, and another to a child with four toes and so forth but the worst of all are the jellyfish babies, who have translucent skin and through this translucent skin one can see the heart palpitating. Such a child was not treated as a human being, but as just an object and they had to dispose of it. Now that is the result of nuclear testing as deposed before the International Court of Justice by a lady from the Marshall Islands who said, “I have come all the way to tell you judges about the very sad situation in my country. This information is not published, the world does not know it, but this is the reality of the suffering that the nuclear bomb has caused us.”

Then again there is the rule against noxious gases. There are solemn treaties that say that the weapons that emit noxious gases and fumes are not permitted. What about radiation? There is always a very learned argument as to whether radiation is a noxious gas or something analogous to it. Then again international law is quite clear that if nation A and nation B have a quarrel and A wants to attack B, nations C, D, E, F and G and so on right down to Z cannot be affected. A and B must see to it that no third states, no neutral states are affected. But with a nuclear weapon everybody knows that all neighbouring states are affected and what right have the two combatant

states to impose that kind of damage on third states?

Then again there is inevitable damage to the cultural heritage. When a bomb is dropped on a historic place, all the history of maybe 5000 years or more is lost. We see that happening even in the current Iraq war, where one of the homes of ancient civilization going back to 8000 years has been under attack. So many of its artefacts, a priceless heritage of the whole human family, have been destroyed. Imagine what must happen with a nuclear bomb. That applies also to other special places like places of worship and hospitals.

Then again, the purpose of war is to return to peace eventually. The nuclear weapon nullifies the return to peace because it destroys one antagonist. Then there is the principle of proportionality. What is your grievance? Your weapon must be proportionate to your grievance. Is this proportional to any grievance that any human being or nation can have against any other? Then of course one must not damage the food chain and this is precisely what the nuclear weapon does.

We also need to counter the folklore of the nuclear age. “Look at Hiroshima, look at Nagasaki” we are told. They suffered a nuclear attack but see how they have risen from the ashes and what wonderfully prosperous places they are. That is the sort of myth that the nuclear establishment likes to propagate, but everybody knows that Hiroshima and Nagasaki were two sitting ducks for the nuclear weapon because they could not respond with a nuclear weapon. Everybody knows that today if a

nuclear weapon is used, there will be a nuclear response and an escalation going all the way up to annihilation of a large portion of life on the planet. In that context we must remember also what the scientists have told us about the nuclear winter.

A multiple exchange of nuclear weapons produces a cloud of dust in the atmosphere which obstructs the sunlight from reaching the crops on earth. All earth crops will fail or they will fail over a large segment of the globe and there will be global famine.

So that again is a natural consequence of a nuclear weapon used in this day and age. Do our Presidents and Prime Ministers who talk of it give a thought to that possibility and to their responsibility before posterity, for having initiated such a devastation of all that humanity stands for? So all these are basic principles, I would say bedrock principles of international law, which everybody should know, but I am afraid and I am very sorry about this that populations across the world are unaware that these are hard won basic bedrock principles of international law. They need to be instructed about this from the school level upwards. I have tried to do this in a small way myself. We must take this topic into schools and tell the schoolchildren that these are the basic principles of international law.

International lawyers have tried to preserve an element of mystique about international law, making it a sort of arcane mystery known only to themselves. There is no mystery about it. Any school child can understand these basic principles. I have gone to schools in Australia, America

and Sri Lanka and spoken to 12 and 13 year olds about these principles and you should see how their eyes light up to know that there are principles like this recognized by the world community which are ingrained in a system called international law. Their idealism responds to that and if we do that on a massive scale, I think we will have more populations protesting to their rulers against the possibility of the use of nuclear weapons.

But now we have vast populations in the so called advanced countries who do not know these principles, who do not know with what difficulty these principles were won and when their Presidents and Prime Ministers talk about war they just remain mute. And they sometimes even vote for them. Now, this is because I believe, they do not know these basic principles and it is one of the tasks of scientists and even more of lawyers to carry this sort of message to the general public.

I should also refer to the fact that today the situation is much worse, much more dangerous than it was in the time of Hiroshima and Nagasaki because the danger from of a nuclear incident somewhere in the world is growing almost by the month. There is a little booklet that I have made available to those who are interested. I meant it to be a sort of pocket book, which people could read in the bus or a train as they travel. There I have given more than 15 reasons why the danger of a nuclear event somewhere in the world is growing by the day.

I'll give you a few of the reasons. First of all, we have an increase in the number of nuclear states. It was first

one, then it grew to five, then to seven then to eight and now we don't know where we stand in that regard. So there is an increase in the number of fingers on the nuclear button.

Secondly, there are a whole lot of non state actors who would love to have a nuclear weapon and with enormous funds at their disposal they would try to get the nuclear know how, if not a nuclear weapon, into their hands.

There are scientists in the market, I am sad to say, who were formerly employed by nuclear establishments and they may sell their expertise to anyone prepared to pay them the necessary price.

Then there is the proliferation of knowledge. We live in the age of internet and computers and the way in which a nuclear weapon can be put together, which was formerly the secret knowledge of the military establishments, is now much more widely known. That small group of nuclear scientists is no longer so secret and it can even spread. A competent student using a computer might be able to find out how a nuclear weapon could be put together.

I once said this at a meeting in London and after the meeting, there was a professor of physics there who spoke to me and I asked him "Did I over paint the picture?" He said "Not at all. If I had a PhD student in Physics who would not be able, after some months of research, to put together the know-how as to how a crude nuclear weapon is made, I would not think him as worthy of a PhD."

So, that knowledge is proliferating and when that knowledge proliferates

erates, it is anybody's guess as to when some unauthorized person will get it. Then there is the storage of these thirty odd thousand bombs. They are not all carefully stored. They can spring leaks. They can be stolen. We do not know what the policing facilities are in the different arsenals in which they are kept. There is the possibility of nuclear accident. There have been 30 to 40 recorded instances of such incidents and there is also the possibility of accidental nuclear war.

Another common myth that is propagated by the nuclear establishment is that any use of the bomb requires the specific approval of the highest personage in the state, The President or Prime Minister must specifically order a nuclear weapon to be used. That is a total myth. A submarine commander may have to make a decision. There is what you call a LOWC (Launch on Warning Capability) where there are machines with a hair trigger mechanism that can go off if a suspicious intruding object is detected coming into the airspace of a country, and there have been recorded instances where these LOWC devices have nearly gone off. They are set to go off some time after 5 or 10 minutes. The President or Prime Minister may be fast asleep at that time. The machine takes the decision but fortunately on a few occasions the machines have been stopped, when the machine was about to give the order to fire.

So there is the ever-present possibility of accidental nuclear war. Another danger is that at the present moment we have 30 or 40 little wars raging all over the world. They may

be tribal wars, they may well be local conflicts, but behind every little war there may be a bigger party and behind that bigger party there may be a yet bigger party. That party may see some strategic value in the area where these people are contending for power and one of those parties could have a nuclear weapon. That could be a nuclear power and that could lead to the possibility of a nuclear weapon being used.

Then of course, there is the growth in terrorism. Everybody speaks about it today but those who seem to speak most about it in high places don't seem to see that the way that they are handling the nuclear weapon problem is giving to the terrorist the possibility that sooner or later either in a car or even in a knapsack a terrorist will be able to carry some sort of nuclear device. Despite all the prohibitions in the NPT and elsewhere, research is progressing on how to improve and refine the nuclear weapon and make it ever smaller and more particularly directed towards specific objects.

So in consequence of all that is happening, we are playing into the hands of the terrorists and once a terrorist has such a weapon, nobody could predict what the end would be. The carriage of nuclear weapons and nuclear materials, is taking place all the time. Even on the roads of England there are nuclear materials being carried without the general public knowing this. We had a session in London a few months ago, where this was brought out in some detail.

Then there is the growth in the number of nuclear reactors. All over the world everybody is pressing to

have nuclear reactors. However, the material discharged from the nuclear reactors and the fissile material that is available is not the subject of any proper inventory and the more nuclear reactors there are the more uninventorized stocks of fissile material there will be and there again is another source of danger.

The deployment of weapons in space was spoken about today. I am delighted to know that a book is coming out about the deployment of weapons in space which poses another whole heap of dampers. There is also the possibility of fissile material being deployed in space.

Then another very serious danger is this – If everybody respects International Law you can have some restraints. Take the members of a club. They have their set of rules and everybody respects the rules. Then the rule will tend to be obeyed, but the moment the powerful members of the club act as if they are above the rules, then that is a license for everybody else to do likewise. Imagine a small club where that happens and the President of the club says “Well these rules apply to everybody else but not to me.” Who is going to respect those rules thereafter? But that is precisely what is happening on the world scene today and is precisely the position that the nuclear powers are putting to everybody else. “It is perfectly lawful for me to have nuclear weapons, but, you are a rogue state, if you have it we will see to it even by the use of nuclear weapons that you do not acquire these weapons because you are not fit to have them.” By their own judgment they alone are fit to have them

and they lay down the law. One law for the others and one law for themselves. What respect can that law command? And that is the basic reason behind the failure of the NPT negotiations.

Then we also have the fact that the NPT was a bargain between the nuclears and non-nuclears. Now it is an elementary rule of contract which every first year law student knows, that if you have a contract, both parties must keep to their parts of the bargain, if they are to expect performance by the other. But the nuclear powers expect performance by the non-nuclears of their part of the bargain which is “don’t acquire nuclear weapons.” But they themselves do not keep to their part of the bargain, which is to take serious steps to dismantle their arsenals with a view to total abolition. That is where the opinion of the World Court comes in. All the judges of the World Court unanimously said that “responsibility existed on the nuclear powers, to take meaningful steps forthwith, with a view to the elimination of their nuclear arsenals”

Have they done that and is there any indication to the rest of the world that they are complying even with that World Court opinion? Now that I am on that World Court Opinion, may I just say that the World Court Opinion was a tremendous step forward in the statement of the law relating to nuclear weapons, because there was a unanimous condemnation of the nuclear weapons by all the judges. The only problem about the judgment was that there was a little aperture left open by the majority of the Court.

That is in regard to the situation where a nation is under attack and its very survival is at stake. They did not want to express an opinion whether a nuclear weapon could then be used. That in my view was an important defect in the judgment, and for that reason I wrote an Opinion in which I said very categorically that the nuclear weapon cannot be used in any circumstances whatsoever. I would welcome scientists as well reading that Opinion because it spells out all the arguments that I have been putting before you and I am glad to see that that Opinion is gaining recognition. For example, there was a trial in Scotland some time ago when nuclear protestors protesting against the “Trident Submarine” stormed the premises where it was being manufactured and did some damage to its instruments. And when they were charged they said, “What is being done here is a crime against humanity. We are protesting as concerned citizens against this crime against humanity. If we do not protest who will? We are perfectly within our rights in protesting.” I was extremely pleased to hear that the defence they cited was my Dissenting Opinion. The sheriff read it, and having read it directed the jury to acquit all the accused, and all the accused were acquitted.

So that was a tremendous victory for this principled position that nuclear weapons violate every fundamental norm of International Law and that there is a duty on the citizenry of the world to protest against their manufacture and most of all of course not to help in their construction.

These are various dramatic developments that are taking place in the world of nuclear weaponry and I would earnestly plead that there be a greater emphasis of this by scientists throughout the world, given the leadership of Pugwash.

The Russell-Einstein Manifesto was never more important than it is now and there are of course all the world traditions and human survival perspectives that operate against the use of nuclear weapons. I could go on at quite some length. If you look at any world tradition you will find in it something that is against the use of nuclear weapons. For example, take Islamic tradition – you will find that even a poisoned arrow is forbidden as a weapon and was declared not permissible in warfare because it causes more suffering than necessary. The Lateran Council of the Church in the 13th century said that the cross bow and the siege engine were unlawful and could not be used in warfare among Christian nations because they impose unnecessary suffering.

So we are now at a vital stage of human history, where the fate of humanity hangs in the balance. Everybody who can make a contribution is under a duty to do so especially those in privileged positions like scientists and lawyers. Pugwash is in an extremely privileged position and I am so delighted to see the leadership it is giving in this field. As we heard today, it has been doing active work in South and North Korea, in relation to this, and its voice has been heard. Here is an unmatched opportunity for the scientists to express their views, and the lawyers also to

join, in throwing in their weight on the side of humanity and a better world of the future. In doing so they should have resort to the principles of international law involved and the sacrifice of millions of lives involved in achieving such international law as we have. The Nuremberg Principles also show that you cannot shelter behind superior orders or lack of awareness in committing crimes against humanity. If scientists distance themselves from the nuclear weapons enterprise we will go very far towards achieving the objectives that Russell and Einstein set before themselves and before the scientists of the world. We shall have a century of last opportunity being used to avert the catastrophic damage that would otherwise be the fate of humanity. So scientists have a cardinal role to play in this and I congratulate Pugwash on its initiative in trying to achieve this and I wish all of you a very successful and fruitful continued mission to convince fellow scientists, as well as the world in general, of the total indefensibility of the nuclear weapon under any principle of law or morality.

Thank you.

¹ This ethical code for nuclear scientists has since been reproduced in *The Encyclopaedia for Social Inventions: Over 500 of the best ideas from around the world – new and imaginative non-technological visions, systems, services and projects for teaching social problems, and improving the quality of life*, Nicholas Albery and Valerie Yule (eds.), Institute of Social Inventions, London, 1989, pp.194-196.

Reflections on Nuclear Weapons: Testimony of an A-Bomb Survivor

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Akihiro Takahashi
Former Director of Hiroshima
Peace Memorial Museum
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Out of about 60 classmates of mine at the time, only 14 are still alive. I am one of the few survivors. Nearly 50 of my classmates including Yamamoto and Hatta were cruelly killed by the atomic bomb.

Ever since the war, I have lived thus far pledging that I should never waste their deaths. I have lived with the conviction that it is the duty and responsibility of those who survived to convey the unheard voices and will of the tremendous number of dead. I live and work on behalf of my dead friends.

Even under the harshest of circumstances, we must never forget to open our hearts to others. We survivors have discussed this among ourselves and have lived since the war with this lesson etched in our minds.

I believe it is clear that the atomic bomb was dropped for experimental purposes. There are three reasons that support my view. First, the United States manufactured two different types of atomic bombs and wanted to compare them in terms of destructive capability. One was the 'little boy'-the uranium type which was dropped on Hiroshima. The other one is 'fat man' or plutonium type which was dropped on Nagasaki. These two atomic bombs are different models and have different nuclear substances.

Secondly, the industrial area and the center of the city where houses were clustered were targeted by the bomb. In order to overthrow militarism, the killing of a great number of Japanese citizens was necessary. Thirdly, they selected cities that had been hardly damaged by incendiary bombs from air raids, since the air raids on such cities were banned. These are the three reasons to prove that the atomic bomb was used to experiment with its power and destructive energy.

The US takes the view that dropping the atomic bomb was the right thing because it saved 1 million US officers and men and the Japanese citizens. But I'd like to call to the United States to stop and think. This 1 million lives is only an assumption. The atomic bombs dropped on Hiroshima and Nagasaki killed well over 300,000 people. How does the US regard this number of lost lives? Don't we always say that the life of a single person weighs more than the earth?

Nuclear weapons are an absolute evil- we victims of A-bombs object to all war and appeal to the world for the prompt and total abolition of nuclear weapons while overcoming all the grief and hatred we feel as A-bomb victims. Currently, it is said that there are as many as 16,000 nuclear warheads on earth. Of those, 90% are in the US or Russia. It is only the US and Russia that maintain huge arsenals of nuclear weapons. The five nuclear-weapon states, the US, Russia, the UK, France and China, are

protected by the Nuclear Non-Proliferation Treaty (NPT). This contradiction has been allowed by the international community. We, the A-bomb survivors, cannot help but feel strong resentment to such an obviously irrational and unjust situation.

As I expected, the NPT Review Conference in May closed without any concrete result due to the egoism of the five nuclear powers setting priority to national interests, among other, the unilateralism of the United States.

Nevertheless, no matter how many times we are knocked down, we, the A-bomb survivors, rise again. We will tenaciously continue to appeal and act against wars and work towards the abolition of nuclear weapons up until our last breath.

I urge the five official nuclear-weapon states, especially the United States, not to cling to their national interests, and rather to think seriously about the interests of humankind and to lose no time in meeting their responsibility to international society.

Dear leaders of nuclear-weapon states! If you still insist on maintaining nuclear weapons, you should experience the same suffering we, the A-bomb survivors, were forced to suffer through. Perhaps only after you have experience first-hand the atrociousness of heat rays and blast, only after you become familiar with the horror of radiation aftereffects, will you understand our honest and desperate plea. Yet, it is our primary desire to prevent another single human being from experiencing such horrors as we did, firsthand. Perhaps it would be enough if you were to

merely walk a mile in our shoes, so they say, and honestly attempt to understand the unacceptability of nuclear weapons.

In 2004, “the Nuclear Black Market,” which had been established by Dr. Kahn and other scientists who played a central role in nuclear development in Pakistan, was revealed. It turned out to be that nuclear proliferation was accelerating much faster than expected. It was a terrible blow to us, the A-bomb survivors, and we are extremely perplexed in how to react to this fact. It obstructs our work towards the elimination and proliferation of nuclear weapons, and we cannot forgive such a dangerous act.

Scientists have a major responsibility for the emergence of nuclear weapons. I sincerely ask for the distinguished scientists to continue to speak and work more actively than ever towards the abolition of nuclear weapons.

Unless we all have respect for international law and order, the world will never know peace. As we have seen in the war in Iraq, no true

victory, and certainly no peace, can come from power controlling power. We must value the frameworks built so painstakingly by the nation of the world and be determined to live in peaceful coexistence with other peoples, other religions, and other cultures. I firmly believe that only on that foundation can we build a world of security prosperity.

The human family is struggling with the negative legacy of the 20th century, including wars, nuclear weapons, terrorism, global warming, famine, refugees, violence, and violations of human rights. If people living in the 21st century fail to deal properly with this negative legacy, the present century may become the last with humans on this Earth. I, myself, now strengthen my determination to live my remaining days in full awareness of my responsibility as a crew member on ‘Spaceship Earth.’ I would like you to convey my view and wishes to all citizens in all parts of the world.

Thank you very much for your very kind attention. Thank you.



Mustafa Kibaroglu, Jeffrey Boutwell, Goetz Neuneck, Steve Miller

60 Years after Hiroshima and Nagasaki and Prospects for the Elimination of Nuclear Weapons

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Lynn Eden

*Co-chair, U.S. Pugwash and
member of Pugwash Council*
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Today I am going to begin with time and place. The time is now, 60 years after the atomic destruction of Hiroshima and Nagasaki. And the place is here, in Hiroshima, the first site of this destruction, very near where the bomb was detonated.

Today, I will not give the talk I had thought that I would: a policy-oriented talk on the prospects for the elimination of nuclear weapons. Instead, I want to honor the place where we are now, this site of destruction and unspeakable pain, this site of reconstruction and knowledge.

How can Hiroshima, how can history, or more precisely, the representation and study of history, help us to build a more peaceful world?

One way that the history of Hiroshima can help us to build a world without nuclear weapons is precisely the way that citizens and mayors of Hiroshima have done and continue to do—use the name and place and meaning of Hiroshima to exhort, to declare, to protest, to pressure, to insist that what happened here must not happen again. We in Pugwash meet in Hiroshima for the same reason: to use the name and place and meaning to insist that what happened here must not happen again.

Another way that the history of Hiroshima can help us to build a

world without nuclear weapons is through the *experience* of this museum: the world would be safer if every time a state leader considered developing or using nuclear weapons, he or she would have to spend hours in the Hiroshima Peace Memorial Museum, in the Peace Park, at the “A-Bomb Dome”—that is, the bombed-out remains of the Hiroshima Prefectural Industry Promotion Hall, and in the neighborhoods nearby. And the world will be safer the more that citizens of every nuclear and potential nuclear state can see for themselves the horrific consequences of using nuclear weapons.

Yet, I found myself asking, after spending two intense days in the museum and the nearby area, what, really, have I learned being here? I had already studied and written about the bomb damage to Hiroshima. I had read John Hersey’s book, *Hiroshima*. I had read fiction about the bombing. I had studied the detailed and voluminous technical reports on the destruction of the city. I had spent many hours on the Peace Memorial Museum’s excellent website. I had spent many hours talking with physicists who had done careful work on the intensity and magnitude of atomic damage at Hiroshima. I understood what most Americans still do not (but all in Hiroshima do): that the atomic detonation not only released an extraordinary blast wave, but released vast amounts of thermal energy—heat—that caused many

fatalities and severe injury and, within minutes, the beginning of a gigantic and engulfing firestorm.

And yet, despite my concentrated research, being here, in this superb museum and on this site, and in the neighborhood, brought me—and brings us all—to a different vantage point: not outside and far away looking in, but here, surrounded by photographic panoramas of hell, of a city “reduced to a plain of burned rubble,”¹ close to the world of tornadoes of flying glass, of heat and fire of volcanic intensity that melted steel and glass, and inflicted injury to human beings, to human bodies, that is simply insupportable, almost unbearable to see in photographic representation.

To see this, and more—the many artifacts that help us witness the destruction, the maps and photographs, and placards outside, that show the dense neighborhoods and ways of life that were extinguished in an instant—to see this is to take into one’s mind and body knowledge at a scale of human nightmare. This knowledge leaves us with a far deeper understanding—and an immense sadness.

The knowledge gained here renews our commitment, first, to doing the hard work of further understanding context and history—and I commend to you the just published history of the surrender of Japan in World War II, a critically important international history called *Racing the Enemy*, by Tsuyoshi Hasegawa, which draws on Japanese, Russian, and English language sources.²

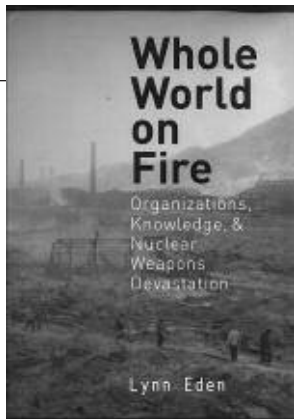
And, being here renews our commitment to a future without nuclear weapons. In Pope John Paul’s words

here, almost 25 years ago: “To remember Hiroshima is to abhor nuclear war. To remember Hiroshima is to commit oneself to peace.”

To understand Hiroshima—or, I should say, to *try* to understand what happened here at Hiroshima—*does* deepen our commitment to a world without nuclear weapons, to a world of peace, and in so doing, it increases the prospect of being able to achieve such a world.

¹ Caption from exhibit at Hiroshima Peace Memorial Museum.

² Tsuyoshi Hasegawa, *Racing the Enemy: Stalin, Truman, and the Surrender of Japan* (Cambridge: Harvard University Press, 2005).



Whole World on Fire:
Organizations, Knowledge, and
Nuclear Weapons Devastation
by Lynn Eden

Published by Cornell Studies in
Security Affairs

Whole World on Fire focuses on a technical riddle wrapped in an organizational mystery: How and why, for more than half a century, did the U.S. government fail to predict nuclear fire damage as it drew up plans to fight strategic nuclear war?

Late Medical Effects of Atomic Bombs Still Persisting Over Sixty Years

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Masao Tomonaga, M.D. Ph.D.
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60 years ago, on August 6th and 9th 1945, two atomic bombs with similar physical powers were used to destroy the military-involved cities of Hiroshima and Nagasaki. The physical effects of the bombs were enormous, destroying two moderate-size cities in Japan. About 120,000 and 75,000 persons - including many civilians and children - died instantaneously or died of acute effects such as severe flash burn, bowel destruction and bone marrow damage. Almost the same number of people survived the acute effects but eventually faced the fear of late appearing effects of atomic bomb irradiation such as leukemia and cancers. This paper reports the most recent summary of the late effects of the atomic bombs. The most outstanding finding is the persistence of cancer and leukemia risks among proximally-exposed persons over sixty years. I also try to speculate about the mechanisms of long-lasting effects of radiation on the human body.

What kinds of cancer were induced?

Induction of cancer among proximally irradiated persons began to appear as early as three years after bombing. The first cancer was that of blood cells, namely leukemia. The incidence rate of leukemia quickly elevated within five years and reached the peak around 1950-55.

There were three major types of leukemia, acute myeloid leukemia (AML), acute lymphoid leukemia (ALL) and chronic myeloid leukemia (CML). AML and CML were most prevalent among adults and ALL among children.

Compared with the incidence rates of these leukemias among non-exposed persons (the effective dose of radiation did not reach more than two kilometers from the hypocenter), the incidence rates among proximally-exposed persons (within two kilometers from the hypocenter) were dramatically high. Especially among children the rate was almost fifty-fold elevated. The most recent summary results of statistics suggest that the leukemia risk begins to elevate upwards at approximately 200 mSv exposure dose as a linear quadratic curve. This dose response curve is the direct evidence that the atomic bomb irradiation actually induced human leukemia.

The elevated leukemia incidences declined rapidly for ALL and CML after 1955-1960 and gradually for AML over 1970-1980. However, recent epidemiological investigation suggests an elevated incidence of myelodysplastic syndromes (MDS) among the proximally-exposed persons during 1980-2004. MDS is a disease closely related to leukemia that was previously called pre-leukemia. Anemia is the main symptom of MDS patients and about 25% of them later develop acute leukemia.

This finding is being observed both in Hiroshima and Nagasaki.

Solid tumors such as cancer of thyroid, breasts, stomach, lungs, colon, ovaries, skin and brain began to increase in incidence after 1960-65 following the decline of leukemia incidences. The most recent statistical summary suggests that the elevated incidences of solid cancers are still persisting in 1980-2004. A statistical estimation was recently reported from Radiation Effects Research Foundation (RERF) for the number of future cancer occurrences based on an assumption that cancer and MDS risk will never cease and persist over the entire lives of the proximally-exposed survivors; about one third of solid cancers have been developed from the proximally-exposed population during the 1965-2004 period and two thirds of solid cancers are expected to develop during 2005-2020.

Evidence of long lasting effects of the atomic bomb irradiation on blood cells of proximally exposed survivors

The easiest study is to analyze chromosomes of blood cells circulating in proximally- exposed persons who are otherwise healthy. In 1995 we conducted such a study on 60 persons with moderate (1Gy) to high (4Gy) exposure doses. We found 5 to 20 % of blood cells carried chromosome abnormalities. The percentage increased proportionately to exposure dose. This is good evidence that the atomic bomb irradiation actually induced chromosome abnormalities.

Such blood cells were analyzed separately for lymphocytes that are immune cells and red blood cells. In several persons chromosome abnor-

malities were identical between lymphocytes and red blood cells, strongly suggesting that blood forming stem (mother) cells were target cells of atomic bomb irradiation damage to chromosomes and probably to their content, namely DNA. It is well known that our bone marrow contains a low number of stem cells that produces every day a tremendous amount of all types of blood cells including red blood cells, white blood cells and platelets. Lymphocytes are one of the white blood cells. It is also known widely that only stem cells can continue to live long enough to maintain blood formation over the whole life of a person. We hematologists routinely transplant normal stem cells (containing bone marrow) to save the lives of leukemia patients. The stem cells regenerate the bone marrow and provide a cure for leukemia patients after eradication of cancers from the diseased bone marrow. Thus, it could be a reasonable hypothesis that the stem cells were irradiated and damage was done to chromosomes and eventually DNA by the atomic bomb irradiation in 1945, which still persists a half century later.

Stem cell theory as cancer cell origin

What kind of cells do become cancer cells and develop clinical tumors? Recent development of sophisticated technology including molecular biology and stem cell purification began to make it clear that stem cells in each organ are the right target cells for cancer development. Genetic damage to chromosomes and DNA of stem cells elevate a probability of

transformation to cancer stem cells by inducing genetic instability. These cancer stem cells produce huge amounts of descendant cancer cells. A cancer tumor is therefore a kind of hierarchy with stem cells in the top minority and their descendant cells in lower majority.

When we incorporate the above mentioned stem cell theory for general understanding of human cancer development, risks of solid cancers and leukemia/MDS may persist over the whole lives of atomic bomb survivors because the atomic bomb irradiation triggered such stem cell damage at DNA level. Further studies are now being conducted to prove stem cell damages in other organs from where various solid cancers develop.

Nuclear weapons are more dangerous than we have thought previously

Our study on atomic bomb survivors conducted by joint teams of Nagasaki University, Hiroshima University and the Radiation Effect Research Foundation thus clearly indicate that the atomic bomb irradiation-induced genetic damage persists over half a century and probably over the entire lives of the survivors. This finding provides discrete evidence that all nuclear weapons are dangerous because of emitting radiation and should be abandoned immediately.

Scientists and physicians must cooperate to eradicate nuclear weapons

In the 1980s, physicists and physicians collaborated to establish a theory of Nuclear Winter. This study clearly showed that the simulation of

a nuclear war between East and West over the Northern Hemisphere could produce enough climate destruction - called Nuclear Winter - such that human beings could not even survive in the Southern Hemisphere. Our doctors' anti-nuke organization IPPNW joined this project.

Moreover, radiation exposure other than the two atomic bombs, such as the Chernobyl nuclear power station accident in the former Soviet Union and the radio-contaminated, former Soviet nuclear testing site of Semipalatinsk in Kazakhstan, produced a large number of radiation victims. The JCO accident in Japan also was a serious exposure to neutrons. In these instances the most important subject to study is how low a dose of radiation is dangerous for cancer development. Such studies must be urgently undertaken to establish radiation protection policy on global scale. Our efforts must be focused at banning nuclear weapons as well as rescuing radiation-exposed victims.

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Masao Tomanaga is Director, Atomic Bomb Disease Institute, Graduate School of Biomedical Sciences, Nagasaki University, Nagasaki City, Japan, and a board member of International Physicians for the Prevention of Nuclear Weapons, Boston, U.S.A.
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WORKING GROUP 1

The Legacy of the Russell-Einstein Manifesto

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Conveners:

Karen Hallberg and Alexander Nikitin

Rapporteur:

Juan Pablo Pardo-Guerra
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Fifty years after its creation, and in a time when global instability threatens mankind, it is fitting to revisit the Russell-Einstein Manifesto, a core reference within the Pugwash movement and arguably one of most important documents of the last century.

During the 55th Pugwash Conference on Science and World Affairs held in Hiroshima, Japan, Working Group 1 convened to explore the meaning and current importance of the Russell Einstein Manifesto. Given its connections to a variety of issues ranging from nuclear weapons and international security to the social responsibility of scientists, the discussion was divided into four main themes. We dealt with the legacy of the Russell-Einstein Manifesto, the history of the nuclear era, the state of and trends in disarmament and non proliferation, and the role and effectiveness of nuclear awareness and education.

The Russell Einstein Manifesto was the product of an overwhelming concern about the emergence of a new technology - the atomic and hydrogen

bombs - which embodied the possibility to annihilate the human race. This innovation, which was not only limited to the creation of a new weapon but was in fact part of a broader reconfiguration of the nature of war, led eminent members of the scientific community to react. Their reaction was, however, not one dimensional. The manifesto they produced is a multilayered vision that transects several pressing issues, in particular, the rejection of war as an instrument for conflict resolution, the peril posed by nuclear weapons and the consequent necessity of their abolition, the need to learn to think in new ways, and the need for scientists to become involved in the construction of a better world. These four issues shape the structure of this report.

The Manifesto and War: a Call for Comprehensive Conflict Resolution

“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?”

Long after the signatories of the Manifesto called for mankind to forever renounce war, we are still haunted by countless hostilities around the world - be it on a smaller scale than in the first half of the 20th century. Furthermore, the emergence

of new global threats, all of which contribute to endanger civilization, compel us to reconsider the nature of the Russell Einstein Manifesto and the reading that it should have within the Pugwash Community.

In particular, participants raised the question of whether emerging problems – such as ecological collapse, the existence of “undemocratic” pockets throughout the world, and the rise of irrational national pride – parallel in one way or another the nuclear peril presented by the Manifesto. Emerging threats such as these must be interpreted as important elements in the constitution of an unsustainable environment which becomes fertile ground for the emergence of conflict. Many of the questions put forth in the past were simply forgotten; but the challenges continue to be the same; that most of the new threats are the result of old ones which were not dealt with in due time.

In this sense, the Manifesto should be interpreted as presenting a civilizational crossroad: we stand at a point in history where we have some resources that enable us to focus our efforts on preventing conflicts before they occur. This requires understanding the interconnectedness of the problems as well as the role that we as scientists and members of society play in the world. We have to think how we can work together and what we can do to cope with the current state of affairs. This is precisely the task of the Pugwash Movement.

Some participants stressed that our views of peace and history play an important role in the construction of a secure and equitable world. Peace should be interpreted in a

broader sense, including items such as the elimination of conflict and the resolution of the global inequities.

In this respect, it is imperative for peace to become a key element in the foundation of future legal systems. Article 9 of the Japanese constitution – which renounces war as an instrument of policy – serves as a useful example which should be taken into consideration during the formation of a common European Constitution.

Education was identified as an important instrument for setting the foundations for peace. Keeping alive the memory of tragic events such as the bombing of Hiroshima and Nagasaki in 1945 should become a means to convey the danger of nuclear weapons and war in general. If we are not careful the memory of what happened will fade. Nevertheless, these actions should be conducted within a historically aware framework and in the context of the quest for long-lasting reconciliation. This requires understanding the dynamics of how societies cope with the past. In this area, Pugwash should support more interaction between national groups with the purpose of developing strategies for promoting reconciliation.

Nuclear awareness was recognized as an important area in which Pugwash could have significant impact. This would require, nevertheless, adopting a broader understanding of nuclear weapons and linking the issue of disarmament with other topics – such as environmental problems and the threats of terrorism – in order to increase public support for the cause of nuclear abolition. Additionally, Pugwash could contribute in

a more fundamental way by encouraging research on the true consequences of war and, specifically, on the devastating aftereffects of nuclear weapons.

Overall, participants felt that the appeal of the Russell Einstein Manifesto “to remember our humanity” should be insisted upon. However, there were some interesting questionings as to the universality of the concept “humanity;” perhaps the concept needs to be reviewed in order to harmonize it with the multicultural context of the 21st century.

The Manifesto, Disarmament, and Non-Proliferation

“The general public, and even many men in position of authority, have not realized what would be involved in a war with nuclear bombs. Whatever agreements not to use H-bombs had been reached in time of peace, they would no longer be considered binding in time of war”

Interpreting the manifesto as a reaction from a specific group within the scientific community requires framing its conception in the broader context of the bipolar world congealed after the Second World War. In this respect, some participants within the working group raised the question of whether the manifesto retained its original strength: in today’s global scenario, the possibility of complete annihilation is not as manifest as it was at the height of the Cold War, nor are current juxtapositions (as those between the West and the Islamic world) comparable to the situation which prevailed fifty years ago between the United States and the USSR.

The argument was also made that the dominating approach to disarmament focuses too much on the confrontation between the United States and Russia. Even though it was acknowledged that the United States has extensive influence on the status of international nuclear diplomacy, it was also mentioned that efforts toward disarmament should not focus solely on US policies. With the reconfiguration of American nuclear strategic policies, the international community should work on parallel initiatives which do not directly involve the United States. Some agreements on disarmament and non proliferation could be negotiated regionally, on the margins of the US-Russia dialogue. Likewise, relying on the leverage of other nations (such as Japan and some select countries) could be instrumental in reactivating the global discussion on disarmament. The current interlude in the disarmament process should thus be used for generating constructive actions in countries interested in the ultimate abolition of nuclear weapons. We should not stall our efforts until there is a tragic event that shifts the minds of our leaders. Pugwash should therefore identify the existing diplomatic niches and exploit them accordingly.

Our ultimate goal – shared with the Russell-Einstein Manifesto – is for the complete abolition of nuclear weapons. Nevertheless, such abolition must be based upon a sound political, legal, and diplomatic foundation which requires encouraging nuclear weapon states to stop nuclear sharing under any kind of arrangement, and seeking to reduce and/or

secure nuclear weapons and fissile materials to prevent their use in terrorist activities. Furthermore, abolition requires concerted international actions to stop both horizontal and vertical proliferation, along with the developing and testing of new generations of nuclear weapons. Nuclear weapon states must also come to respect existing commitments pending the conclusion of multilateral legally binding assurances. Finally, the expansion of Nuclear Weapons Free Zones should be considered as an important instrument in the fight against nuclear weapons.

Participants in the group suggested that Pugwash focus on several agenda items for their discussion in coming years: for example, the quicker implementation of the Moscow Treaty, incorporating the debate on the control of non-strategic weapons in the current negotiations and in further treaties, promote de-alerting existing arsenals, preventing the development of new kinds of nuclear weapons, the negotiation of a fissile material cut-off treaty, making the adherence to the IAEA's additional protocols standard, finding ways to make the CTBT enter into force, identifying mechanisms to implement 13 steps recommended by the 2000 NPT Review Conference, and reconsidering the many dimensions of the nuclear fuel cycle aiming to develop a comprehensive control system of fissile and related materials. Also, a strong argument was made for Pugwash to establish collaborative links with other organizations, in particular, with the Middle Powers Initiative.

In sum, we ought not to waste time getting frustrated, but rather set the foundations for a nuclear weapons free world. Pugwash's expertise could be instrumental in setting up a properly organized study group that would focus on identifying the practical mechanisms for reaching this point.

Thinking in New Ways: Involving Scientists in the Construction of a Better World

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

The point was raised that nuclear weapons cannot be seen as isolated artifacts but should be instead interpreted as elements of the fabric of the military industrial complex. Therefore, disarmament requires a deeper consideration of the technological path taken by humankind. To some extent disarmament implies altering fundamentally the prevailing paradigm which connects our notions of science, progress, technology, development, and cooperation. Without such reconsideration, the institutional structure which supports warfare – and the nuclear establishment – will remain embedded within the fabric of society, and peace will be more difficult to achieve. It was noted, however, that it is not necessary to tackle the entire military industrial complex to achieve nuclear disarmament. The impossibility to uninvent nuclear weapons should not be a setback for their abolition.

Any efforts to change the paradigm must take into consideration other problems. For instance, while it must be aware of the connections between peaceful and military

nuclear technologies, it must also consider the need to reduce global emissions and therefore the possibility of a great expansion in civil nuclear energy facilities in coming years. This crossroad requires us to think in new ways, and to implement new approaches which do not have the same asymmetric characteristics as the first generation of nuclear institutions (for instance, the Non Proliferation Treaty). For example, in order to close some technical loopholes, we should push for a global agreement on the multilateral control of the fuel cycle. Pugwash should push in this direction since it would eliminate current ambiguities in nuclear diplomacy (any facility that does not fall into a multilateral control mechanism would immediately be classified as a nuclear weapons facility.) To some extent this would be a start to a proliferation-proof technological path.

Finally, scientists and technologists hold a great responsibility to inform the general public about existing and emerging threats, for they are, in some areas, more capacitated to understand the impact of specific developments. On the basis of science, we should discuss how to realize a peaceful culture and society, and therefore give continuation to the spirit of the Russell-Einstein Manifesto. Equally, we have an obligation to seek to influence political spheres in order to secure the world for future generations. In the case of Pugwash – traditionally scientific community – this could be done in coordination with other organizations, in order to increase our political leverage.

WORKING GROUP 2

Non-proliferation, Arms Control and Disarmament: Multilateral Initiatives

Co-Conveners:

Gotz Neuneck, Sergey Batsanov

Rapporteur:

Abdul Hameed Toor

The working group discussed the Nuclear Proliferation Treaty (NPT) 2005 Review Conference and its consequences on the future of the treaty, challenges faced by the treaty and possible ways to move forward, regional problems of nuclear proliferation, risks of nuclear terrorism, the need for further progress in nuclear disarmament, outer space security issues, and the situation regarding chemical and biological weapons conventions. The working group was composed of 33 members with background in science and diplomacy from nineteen different countries. Below is brief description of the points discussed.

NPT 2005 Review Conference

There was a deep and widely shared concern about the failure of the NPT 2005 Review Conference to achieve results in strengthening the implementation of compliance with the treaty. Although the views about the specific causes and measures to be taken were some what different. Many participants felt that the five nuclear weapon states parties fall short of fulfilling their commitments to nuclear disarmament and arms control as expressed by the final doc-

ument of 2000 Revcon (13 steps). At the same time there was a general feeling that the upcoming September UN summit in New York offered an opportunity for the world leaders to address explicitly the issues of nuclear disarmament and non-proliferation.

Future Course of Action to Strengthen the NPT

Several proposals were presented by the members regarding the priority steps in this area, such as,

- Reaffirmation of the commitment for nuclear disarmament under Article VI of the NPT and concrete steps in that direction
- Upholding moratorium on nuclear test explosion (pending the entry into force of the Comprehensive Nuclear-test-Ban Treaty)
- Negotiation on a Fissile Material Cut-off Treaty
- Model Additional Protocol as the standard for verifying compliance with Article III of the NPT

Other proposals were to reach an agreement on the no-first use of nuclear weapons, address the problem of tactical nuclear weapons, to prohibit the development of new nuclear weapons, the examination, for example, by like minded states, of the legal, political and technical requirements for negotiations leading to a nuclear weapons free world. It was further proposed that the intro-

duction of legal dispute settlement body to address issues of compliance with Article VI of the NPT would help in breaking the deadlock on the issue of disarmament.

Article IV and Peaceful Use of Nuclear Technology

The group also discussed issues related to Article-IV (peaceful uses of nuclear technology). The importance of exploring multilateral options for improved control over sensitive parts of the nuclear fuel cycle was stressed, along with the need to ensure the right of NPT state parties to develop nuclear technology for peaceful purposes and to have guaranteed supply of nuclear fuel.

Based on the argument that it is not possible to eliminate the possibility of nuclear proliferation from a nuclear energy fuel cycle, it was suggested that the use of nuclear energy should be banned in a phased manner. Renewable energy sources were suggested as an alternative which are cheap and environmentally friendly. There was strong reservation from some members on the proposal to ban the use of nuclear energy. However, it was decided that alternative sources of energy should be explored.

Regional Nuclear Situations

In 1998 there was a major setback to the NPT regime when both India and Pakistan conducted nuclear weapon tests; it was proposed to study ways and means to bring them into the nonproliferation regime.

Regarding other regions there was widely shared hope that the ongoing efforts to resolve the disputes around the Iranian nuclear pro-

gram as well as six party talks on North Korea would bring speedy positive results.

In general the need to achieve the universality of the NPT was strongly emphasized.

Nuclear Terrorism

In the context of discussion on nuclear terrorism it was emphasized that there is urgent need to secure the existing stockpiles of the nuclear material and to eliminate such material as soon as possible. It was suggested that technically it is possible for a terrorist group having access to sufficient quantity of Highly Enriched Uranium (HEU) to manufacture a primitive nuclear explosive device to destroy a large part of a city, killing many people. It is important to note that this primitive nuclear explosive device is much easier to manufacture compared to a nuclear weapon developed by nuclear states for military use. Some steps have been taken to improve the accounting and physical security of the nuclear material through cooperative arrangements. Another important development in this regard is the 1993 "HEU deal" between US and Russia to down-blend the surplus stockpiles of HEU of Russia to Low Enriched Uranium (LEU) to sell it to the United States Enrichment Corporation (USEC), but the progress in this is too slow.

Outer Space Security

It was pointed out that there is no justification for deployment of weapons and weapon systems in space as it would lead to arms race in space. Keeping in view the existing

efforts to develop space-based weapons, including the readiness of deployment of a "test bed" system by the United States, following steps were recommended:

Pugwash should support efforts to urgently negotiate a prohibition on space-based weapons and the adoption of a system of common security in outer space, a legal mechanism which deals comprehensively with the various problems of space security.

A working group/workshop of Pugwash should be setup to look into the space security issues.

Chemical and Biological Weapons Conventions

The group received a detailed report on the status of the implementation of the conventions prohibiting respectively chemical and biological weapons. It was emphasized that efforts to achieve universality of the two conventions and to improve situation regarding their respective national implementation measures should be intensified.

WORKING GROUP 3

Terrorism, Human Rights and
International Security**Co-Convenors:**

*Mohammed Kadry Said,
Gothom Arya*

Rapporteur:

Adele Buckley

Terrorism Overview

Terrorism of the present covers a wide geographic scope, and uses both simple and sophisticated means of destruction. As a result, there is an unprecedented threat to personal safety, security of states and the world economy. Terrorism has yet to be defined under international law. The international criminal court has not designated terrorism as a war crime, even though it may occur in war as in peace. Kofi Annan's High Level Panel has proposed a definition involving any actions intended to cause harm to civilians or non-combatants. The roots of terrorism are many, and are frequently site-specific. In addition to historic conflict, poverty and under-development are factors. Deprivation and insults to human dignity make entire social groups feel oppressed. Political incapacity is a most significant factor, not only in failed and fragile states, as expected, but in the United States, where the response to terrorism and the threat of terrorism has been misconceived.

Many, but not all, terrorist acts have roots in extreme interpretations of Islam, backed by the apparent reli-

gious authority of fighting "for the name of God", with violence. The impact is operational and ideological, and has a global reach. It can be very efficient, on both the macro and individual level. For example, anti-West radical Islamic ideas have prevailed in Egypt, in less than 15 years. The organization is not hierarchical; its networks are increasing in number, are difficult to detect, to predict and to arrest.

Terrorists try to divide society, and do not want democracy. Acts of terrorism, it is believed by some, could be better handled as a complex criminal and sociological problem, with a global scope. It is not hard to understand that we all identify with people who think like ourselves. In an environment where Western ways and ideals are the norm, outsiders experience alienation, arising from the feeling that the group is under attack. Oversimplifying this phenomenon as an "us" and "them" situation demonizes the other side. Instead, the idea was expressed that we must win hearts and minds, and to "remember your humanity", we have to humanize even the terrorist, while protesting to the utmost our opposition to their acts.

Role of the United States

In this Working Group, many expressed an aversion to the Bush administration terminology "war on terror". Because of their violent and military response to terrorism, there

has been the creation of more enemies than the "war" has destroyed. This, in turn, is thought to have increased the number of active participants in terrorist activity, and, in parallel, increased the number of supporting non-participants. Many persons feel that the actions of the United States in its "war on terror" may have created a self-fulfilling prophecy. The U.S. policy on terrorism was formed under the Clinton administration, who were well aware of al Qaeda as a potentially deadly enemy, set-up a counter-terrorism group, and made many attempts to thwart it. The Bush administration perceives that the threat is from militant Islam, labelling it the "global radical Islamist threat", which is understood to be most dangerous when backed by resources of a state. Because the threat is intolerable, with no end in sight, all means are seen to be justified.

Regional Security

Many states, and whole regions, have faced terrorism and continue to be challenged. The intent of the terrorist is to create instability, and their acts are planned to rivet the attention of all, so that the political impact will be maximized. Fear and panic are their tools; destruction of civilian's lives is intentional. These are common factors, but each has its own particular circumstances, and should be addressed individually. The interpretation of religious extremism does not fit all, and also often disguises an essentially economic protest. Extremists who claim association with religion have, in some twisted way, a goal of publicity (which should be denied where possible).

The most frequent occurrences of terrorist activity are local or regional, rather than global. Specific situations in the Middle East, Africa, Iraq/Iran, Egypt and Thailand are reviewed here as *examples* (there are, unfortunately, many regions that have experienced terrorism). It is almost universally true that there is a historical antecedent to every struggle, and the terrorist act is seen after a long buildup, with rationale rooted in old conflict.

The Palestine problem is said to exist as a result of collective acts of injustice in its formation. Both sides of the conflict have inflicted grave harm on civilians who are non-combatants. Israel has occupied Palestinian territory, and has used measures that one would classify as state-led terrorism. Palestinian terrorism has taken the form of suicide bombings in Israel. Recently, Israel decided that its best recourse to protect its citizens against suicide bombing was to build a wall. The wall goes beyond protection and has become a new instrument for repression, separating neighbours from each other, holding up normal flow at checkpoints, and causing economic stress and humiliation to citizens on a daily basis. The entire Palestinian population is affected, but continues to hope that Israel can abide by the International Court of Justice advisory ruling to the UN. Israel hopes for normal access to the neighbouring Arab world. In the present situation of escalating instability, not only are both sides disadvantaged, but the security of the entire region is threatened.

Egypt, Thailand and others have indigenous terrorists, some of whom espouse religious views. However,

their motivation is not believed to be religious in nature; instead these individuals and groups are actually seeking influence and local importance. In the ethnic conflict in the South of Thailand, violence on the part of security forces begets more violence. Egypt has had the experience of bringing a terrorist group under control, but has now seen it rise again, this time with more fanaticism and the probable external high-level influence of al Qaeda.

It was thought that Saddam Hussein might align himself with hostile Islam, and this is the background of the American obsession with Iraq and the parallel obsession with Iran, an Islamic state. The opinion was expressed that terrorist activity in Iraq is not the result of U. S. occupation, but instead it is a type of military action against the eventual establishment of a stable democratic government, where militants cannot thrive. It may be that the Bush administration is mis-using the argument that its presence is required for security in Iraq to establish its global dominance. Democratizing the Middle East, including Syria, is part of the overall American plan.

External influence is widely accepted to be behind the terror attacks in Iraq. Old-regime personnel are also involved in Iraq's ongoing terrorism. The host of unemployed men, most of whom have no motivation except to collect their pay, makes it easy to execute a car bombing. Reconstruction and the resulting improvement in employment prospects is thought to be able to bring with it relief from the bulk of the terrorism. The present situation

of Iraq is caused by the current war and occupation, as expected, but a component of it would be greatly relieved if the economy was not in a shambles. **It is strongly recommended that reconstruction be supported and begin immediately.**

The memories of the Iraq-Iran war of the 90s are still very clear, and although post-Saddam Iraq will certainly be different, it will be hard for Iraq to enter into a different relationship with Iran. Iran, it is proposed, should now get markets, and influence in Iraq, and could seek a new level of relationship. One reason advanced is that it should be recognized that the majority in both countries are Shiite Muslims, constituting a natural alliance. Iraq is, however, wary of interference from Iran in Iraq politics, while Iran is afraid of the U.S. presence there. Over the long term, the two countries will work out a new balance of power.

In Africa, long standing ethnic conflicts are at work, with not much evidence of religious motivation, even though different religious factions are in conflict. Colonial wrongs in Burundi, Rwanda and Uganda, and in the Congo were at the root of the conflicts in the 90s. Here again is an example of insecurity that is regional. In 1972 there was killing and terrorism carried out by Tutsis against the Hutus. In Rwanda's bordering country Burundi, the first Hutu president was installed— he was assassinated by the Tutsi minority. Rwanda felt the pressure of lack of land for its agriculturally based economy. Many sources of conflict existed and the Rwandan crisis need not have been a surprise for the international community.

Although the UK had previously experienced the IRA bombings, a “regional” insecurity only occurred with recent terrorist attacks, in London and Madrid. Here the “region” was the countries of the EU. The 9/11 terrorists attacks in New York have caused a regional insecurity in North America. To report on the status of terrorism in 2005, it must be stated that terrorism now has a broad spectrum of causes and a global scope.

Nuclear terrorism

Because terrorism arising from extreme interpretations of Islam aims at mass killing, panic, and major political impact, the preferred choice could be a nuclear bomb. Possibilities for nuclear terrorism are not only a nuclear bomb in a city, but also occupation of a nuclear power station, or a nuclear missile site.

The nuclear weapons materials in the nuclear weapons states are not fully secured against access by terrorists. The sheer quantity of the large nuclear arsenals of the US and Russia increases the chance of a breach of security; international black markets do exist. Research reactors used for development of new weapons are not well secured. The hawkish stance of the US spurs proliferation, and produces more potential access points to the terrorist groups. Security of weapons grade material in new nuclear weapons states is likely to be unsatisfactory as a barrier to terrorist access. In addition energy is a necessity for all nations and to satisfy this need, many nuclear power plants will be built, thus generating more access points for weapons materials. These factors combine to increase the prob-

ability of success in nuclear terrorism.

The international community must come together and cooperate on preventing nuclear terrorism. This would enable a network of information to be established, better success at cutoff of money flow, analysis of why terrorist attacks are increasing, and thus should provide a better chance of a workable global strategy. Through the UN, the international community should move forward on disarmament, and local and regional Nuclear Weapons Free zones could cover a much wider geography.

Plans are needed for protection of cities, and large cities particularly. Use of civilian rather than military means offers major benefits, because protection can be achieved without destruction. An extensive development of sensors technology (now at the prototype stage) has been proposed for both biological and nuclear materials detection. To install a complete system for such devices, for example, at all US ports would take \$10 billion annually, but such “insurance” is not more expensive than a single failure to protect by military-type methodology. It was proposed that this means of protection should be installed until a period when denial of access to nuclear material is assured.

The true protection against nuclear terrorism is through denial of the key component – the fissile material. Plutonium could be used, but the technical implementation is complex. Highly Enriched Uranium (HEU) can be assembled into a nuclear bomb with materials and complete specifications that are readily available.

Therefore, control of HEU would reduce the probability of constructing a bomb to practically zero. (A remaining threat is that a terrorist group could access under-secured, incomplete bombs in Russia.)

An agreement between the US and Russia, with a small contributions from the UK and others, has set up a system for de-enriching HEU, for subsequent use as nuclear fuel. However, a serious strategic error on the part of the U.S. has allowed the entire scheme to be privatized. Commercial constraints mean that Russia’s HEU will take 20 years to be de-enriched. Meanwhile, this huge Russian stockpile is vulnerable, as it would, for example, only take corruption of a few workers to enable transfer to terrorist hands. Many in the WG expressed astonishment that the U.S. could be so short sighted in this matter, while at the same time issuing statements that WMD terrorism is the greatest threat faced by the United States.

Some Pugwash members have met with American leaders to explain this very dangerous situation but it has fallen on deaf ears – **this WG would encourage extreme persistence by Pugwash on the HEU issue until there is action.** Relatively, the cost is bearable, and the alternative to inaction could well be a city destroyed by an in-situ nuclear bomb.

The question was asked regarding how the NPT commitment that every country has a right to the peaceful use of nuclear energy would be kept. The plan put forward by the IAEA¹ is that, for all countries newly installing a nuclear power plant, HEU would be produced at a central secure loca-

tion and a supply of nuclear fuel would be *guaranteed*. This would go a long way toward resolving the crisis in Iran, but would imply some loss of sovereignty, so achieving take-up of this plan would not be straightforward

It was pointed out that agreement to take on the protections of the NPT was achieved over many years and at first only a few signed. Over the years, however, it has been signed by all but three nations. A similar pattern may be possible with the Nuclear Fuel Cycle program, and so nuclear material from power generation could be secured and made inaccessible to terrorists. One of the participants suggested that new nuclear energy use should be delayed until we know how to properly safeguard it.

The Effects of Globalization

With globalization, the Multinational Enterprises (MNEs) have increased their influence and power, but generally are non-participants in global security matters. Since all of society is affected by terrorism, all must participate in alleviating it, including MNEs. Over the years, the Corporate Social Responsibility (CSR) movement has taken hold, because it is in the interest of corporate shareholders. Now is the time for MNEs to recognize that their self interest lies in augmenting their famous triple bottom line, so that it becomes the quadruple bottom line – Economic, Environment, Social and Security.

MNEs can have a positive effect on the local social and economic environment for a relatively small expenditure, and thus decrease local impoverishment. That then decreases

the probability of a silent support base for acts of terrorism in that place and possibly against the MNE's property. In Palestine, one large MNE is a source of scholarships, environmental and social benefits. When MNE operations do not benefit the people, there is no relief from motivation for terrorism. Revenues paid to the government for mining operations must be seen to benefit the people. Tourism revenues must benefit not only the MNE/operator but must be seen to spread through the local economy. In Egypt, for example, terrorism led to closure of chain restaurants, loss of jobs – a visible lesson to local terrorist sympathizers. Would these MNEs have been spared if they sponsored social programs?

Multilateral dialogue can easily deteriorate to fixed “national interest” positions. One route to open a dialogue that leads to improved human security would be a people-to-people approach because they see issues in relation to their own interests. If true dialogue is facilitated between persons of different cultures and religions, there is a belief that differences can be accepted and respected. This would be a gradual process, a path to improved human security, and a means of setting an example. Such efforts could be valuable in the developing world where globalization tends to dilute or even destroy local cultures. As people of many cultures migrate to the developed world, a multicultural society is seen to exist. Too often, these separate but accepted cultures become isolated, and espouse radical ideas. There is a belief that such disconnection of people from both their cul-

tural roots and the mainstream culture was a factor in the recent London bombings. As well as a positive role, dialogue may have a negative effect as a distraction from ongoing oppressive actions occurring in parallel to the dialogue between the conflicting parties.

On an international level, the economic destruction that would result from nuclear terrorism should be of immediate concern to the multinational enterprises. They should work through and enlarge organizational means such as the UN Global Compact to strengthen the global treaty system, fully support the IAEA and secure nuclear power plants, ports and border checkpoints.

On a global scale, the UN is the obvious facilitator of monitoring, and of dialogue. Soft power in the hands of the UN, for comprehensive verification as well as monitoring, would add to security. The UN system has produced some relative failures at the local level, because of corruption. In the Congo, for example, the people are said to hate the UN mission, some of whose members violate the rights of local people. In the Great Lakes region of Africa, it was said that the UN mission had data on movement of people, access to information on water and, generally had means of intervening at a stage before conflict became serious. **Greater analysis of UN information and use of UN facilitation is recommended.**

Hope for the Future

It was generally agreed that the only true way out of terrorism is through the law. No country or group must

be above the law. Replacing injustice with justice is essential, and over time, injustice will ease.

There is already religious tolerance amongst Christians, Muslims and Jews. It is counterproductive and inflammatory to use terms like “Islamic terrorist”, and it is strongly recommended that this be avoided

Where there is mistrust, we need more transparency, and where there is cultural separateness to the degree that there is widespread misinformation, we need integration of communities, not separate cultures under the apparently tolerant umbrella of multiculturalism.

To have hope for the future, it is essential that we believe that terrorism is temporary, working within each region, case by case to understand the problem and apply an appropriate remedy.

SUMMARY

Terrorism, as practised in 2005, has a broad spectrum of causes and a global scope. Prevention of nuclear terrorism is a priority, and a co-operative international effort would improve the chances of success. Immediate, rather than gradual, de-enrichment of HEU is a priority, so that the chain of supply of potential bomb material can be broken. The so-called “war on terror” has been misconceived, and over-reaction of the U.S. has created new enemies and more terrorist supporters. The terminology “Islamic terrorist” is an inflammatory and counter-productive terminology because it labels a diverse community of 1.5 billion Muslims. More resources should be supplied to alleviate the impoverish-

ment and insults to human dignity that characterize terrorism in failed or fragile states. Justice must replace injustice. All sources of influence and power, including states, NGOs, multinational enterprises and individuals have a responsibility to participate in these efforts. Since terrorists in developed countries have been displaced from their cultural roots and not integrated into society’s mainstream, their mistrust must be

replaced by understanding through integration of multicultural communities. To have hope for the future, it is essential to believe that terrorism is temporary, working case by case to understand the problem and apply an appropriate remedy.

¹ IAEA – International Atomic Energy Agency. IAEA has proposed a methodology known as the Nuclear Fuel Cycle.

WORKING GROUP 4

The Islamic World and Relations with the West

.....
Convener:

Talat Masood

Rapporteur:

Siddiq Wahid
.....

This constitutes the proceedings of Working Group 4 of the 55th Pugwash Conference on Science and World Affairs. Our brief was to discuss “The Islamic World and its Relations with the West”.

Our Group met for all six sessions, with an average attendance of twenty-three participants. Twenty-seven individuals had signed up for participation in it. There were participants from Afghanistan, Bangladesh, Canada, Egypt, France, India, Iran, Iraq, Israel, Italy, Japan, Jordan, Pakistan, Palestine, Russia and the United States. We had in our midst individuals who were academics, politicians, businessmen and technical professionals. Fourteen of the dis-

cussants were Muslims. Our discussions were vigorous and well-informed.

We operated on two basic assumptions. First, that the relationship between the world of Islam and the West today are abysmal. Second, that neither the West nor Islam is a monolithic entity. These assumptions should be kept in mind when going over the recommendations of the Group.

Given the free-flow format of the discussion and the breadth of its scope, it was decided at the start that the *rapporteur* should focus on three central questions during the discussions. These were: (i) what are the root causes of the negative relationship between Islam and the West? (ii) Given that the symptoms of this condition were antagonism and violence on the part of both sides, how do we bridge the divide between them? And (iii) what can/should Pugwash do to address the situation?

The Root Causes

Broadly speaking, the Group identified two broad causes for the problematic of the relationship between the West and Islam. These were issues that are, *equally* it must be emphasized, internal and external to Islam today.

Causes internal to Islam:

First in this category was mention of differences in the interpretation of Islamic canons and extra-canonical commentaries. In other words, as in other religions, there are several levels at which the Islamic scriptures can be interpreted. However, vested interests adopt one or another stance, as it favors political opportunity. It was repeatedly emphasized that although this phenomenon was not unique to Islam, it was aggravated in the case of Islam because of its large population, the diffusion of this population and the diversity of its social, ethnic, national and political make up.

It was also pointed out that contested interpretations were not unique to Islam in modern times. Exegetical debate and intellectual dissent has existed in Islam from the earliest times. Mutazilite rationalism of the 9th century, ibn Taymiyya's puritanism a few centuries later and other movements were mentioned to illustrate this point. Yet it was accepted that the present-day dissent has led to socio-political actions that are radical and, increasingly, violent in nature.

Another view within the Group pointed out that the challenges of modernity (roughly meaning the post-industrial revolution period in this case) were such that they have

resulted in psycho-social problems for all societies. The post-colonial Muslim world, deprived of either instruction or debate¹ in this arena, had led to economic and social insecurity on a larger scale.

Next, it was recognized that during the late colonial age and after, there has been a growing rift between the Western-schooled Muslim (often co-terminus with liberal Muslims) and the overwhelming majority who are not literate in Western languages or often even in the vernacular. This condition has resulted in the mis-education of *both* "liberal" and "conservative" Muslims as to a future direction for the adherents of the religion.

The participants of our Group also recognized the difficulty presented by the problem of determining who would speak for the Muslims. Muslim-majority lands are scattered between Morocco and Indonesia; and increasingly Europe and America are home to significant numbers who profess the religion. The lack of any provision, within the theological and political framework of the religion, which locates a single "leader" or even "spokesperson" for this diffuse population, adds to the complexity.

Finally, we also had enlightening "case study" presentations of some Muslim majority countries which illustrated the problems not only on a global scale, but locally as well. Egypt and Iran have had significantly rich traditions of liberal academic and social discourse, but the problems of political liberty and freedom of expression persist. Jordan today remains a monarchy, is considered "moderate" and finds favor with the West; yet it has difficult structural

problems that, it was suggested, can be addressed only by radical changes in its constitution. Pakistan, although founded by a secularist in an argument over political power sharing, has shown alarming tendencies towards Islamist ideology. And many Iraqis, struggling to survive as a nation and a state, are caught between the paradox of having to endorse Western (chiefly American) intervention and simultaneously bear the burden of "proof" that this is not at the cost of its own sovereignty.

To summarize the discussion on the possible internal causes of the problems in the Islamic world: it is a religion at a theological cross-road in its journey through history and it is a group of almost a hundred Muslim-majority countries at a turning point in their political evolution. The West can either join it in its philosophical debate and participate in its political institution building, or aggravate the situation by manipulating ignorance to create prejudice and bigotry.

Some causes external to Islam

The framing of my last sentence has been deliberate. Several members of the Group expressed the importance of avoiding the temptation of facilely placing the blame for the Islamic world's current woes solely on the Western doorstep. Yet, there was decided consensus that there are historical causes initiated by the West that have aggravated the Islamic condition today and threaten to prolong and deepen it. It was these that were chiefly discussed in the context of the external causes to the problems facing the Islamic world.

To begin with, the participants

mooted the post-16th century development of Western political dominance on the world stage. It has seemingly been cultivated into a categorical imperative to domination that has persisted well into the twentieth century. It manifested itself through colonialism.

In the first half of the 20th century, the West's recognition of the criticality of harnessing energy resources coincided with the dismantling of the Ottoman legacy. As is well known, these resources lay in Muslim lands, resulting in the argument to Western hegemony as well, a process that was begun by the principal empire of the day.

The process of decolonization in the mid-20th century resulted in the newly independent Muslim majority countries having to adopt, and adapt to, modern political institutions on the one hand and, on the other hand, address the social and economic inequities that a century or more of Western colonialism had left behind. This was not unrelated to the tacit alliances that were formed between Western educated Muslim rulers (as mentioned earlier) and Western powers, creating a gap within populations in Muslim countries.

This gap, it was perceptively pointed out by some members of the Group, was often filled by a "lumpen intelligentsia",² who either half-understood radical critiques of western dominance by Muslim intellectuals or were manipulated by charismatic political leaders to seize political power. They used the idiom of religion in political discourse. In any event, it created a new class of leadership amongst those who sought

to gain power through ballot-box politics.

Finally, time and again, participants used the reference point of the mid-1970s, as directly responsible for the current low in the relations between Islam and the West. This, it will be remembered, was when aggressive U.S. policies sought to control the energy resources in the Middle East and elsewhere. It was a move that dramatically alienated the Muslims of those regions from the West. At the same time, given the palpable exclusion of the common man in democratic processes by their own rulers, and Western support for the latter, the alienation of the Muslim masses resulted in political mobilization on the basis of religion.

To summarize this part of the discussion, the general trend of the argument seemed to be that the West in general over the past half millennium, and the United States in particular over the last half a century, has become habituated to political dominance. It is loathed to countenance any substantive challenge to it. At the same time, the lack of political freedom in many if not most of the Muslim majority countries has resulted in the alienation of the ruling elite from the ruled. These two alienations, of the Islamic world from the West and Muslim citizens from their rulers, have converged to form a powerful anti-Western sentiment. It is this cycle of reinforcement that needs breaking.

Before concluding this section of the discussions on the "root causes" of the problems between Islam and the West I would be remiss in not reporting a seminal juxtaposition that was posed by some members of

the Group with regard to the problem within Islam. The crux of this problem might be stated in the following manner:

"Is the concept of an Islamic shariah state compatible with that of a democratic secular state?"

There were those amongst us, Muslim and non-Muslim, who felt that the two ideas were indeed compatible. These individuals held that although the "democracy" thus born would not necessarily be modeled along Western lines, it nevertheless would be a democracy. At the same time there were others amongst us, Muslim and non-Muslim, who argued that the two concepts (Islamic shariah state and democratic secular state) were incompatible and that what was needed was for Muslim majority countries to transform themselves into secular democratic states, without prejudice to minority religions in particular and all its citizens in general.

Needless to say, this was not an easy question to address. And I also wish to report that we did not find a solution to it in the half hour of discussion that was left to us! But at the same time, the Pugwash Council might consider it as the central question to address and debate in the subsequent meetings of this very critical Group in the Pugwash initiatives on world affairs.

Bridging the divide between Islam and the West

As I said at the start, this was an informed discussion. The Group members recognized the futility of suggesting ways and means to over-

come the difficulties in the divide between Islam and the West, two diverse mosaics, in vague generalities. However, it was still felt that some general and directional suggestions could be made as an initial step.

These were as follows:

To begin with, there was consensus on the need for the West and for Islam to reach out to each other. Given the history of the divide and, perhaps, its length, this could not be done without conscious effort and strong political will. Both must be garnered.

We had a thought provoking presentation which sought to argue that there is a need to think in terms of a paradigm of “pluralistic universalism” rather than politics and economics. That is, an understanding of each other by the world’s societies based on civilizational analogy, empathy, legitimacy and acceptance; something that would make room for rewarding civilizational dialogue rather than civilizational clashes. During this discussion we were presented with an intriguing set of parallels between Islam and Buddhism, two religions that are popularly considered to be poles apart, and shown how the two could work in an alliance of civilizations towards global order.

Several Muslim members of the Group pointed out that there was an increasing need for the moderate-liberal Muslim, on the one hand, to educate the West on the positive aspects of Islam and, on the other hand, for this same group to speak out against misinterpreted and aberrant forms of Islam.

There was some discussion as to whether some of the difficult political problems that exist in the Muslim world, led by the Palestine – Israel one, had their genesis in religious rivalry or political power play. There were some who argued that it was indeed a religious problem, and others who argued that it was a political one entangled in a religious idiom. Predictably, we did not reach a consensus on this question!

It was felt by many in the Group that regardless of the genesis of the problem, the resolution of the Palestine – Israel conflict and the balancing of the United State’s unqualified support of Israel would go a long way in convincing the Muslim world of the now-official Washington position that the United States is not anti-Muslim.

What can Pugwash do?

Again, the Group did not have enough time to discuss this practical and important question at any length. However, members of the Group did mention some points to the *rapporteur*, which I list here.

- Pugwash must continue its initiative in sponsoring this dialogue as an important part of its deliberations. It is much needed, and will bear fruit in time.

- It was proposed that the ISYP members could take the lead in a practical sense by using the potent mediums of media and tourism to bond the youth of communities in adversarial positions. The Middle Eastern case was mentioned explicitly, but could hold true in other regions of the Muslim world as well. The Pugwash forum could be used to kick-start these ideas.

- Pugwash could ask its national chapters to identify Muslim scientists, writers and others who had contributed positively to the world’s knowledge wealth. Once identified, it could find ways to publicize them and talk about their positive influence in their specific societies or in the world at large.

¹ I must point out that these analyses must be understood without prejudice to many exceptions to this rule that dot the history of Islam. There were, in other words, many social reformers, but their success was either limited to a small social circle or simply cut short.

² The term ‘lumpen intelligentsia’, first introduced by well-known scholars on political Islam, was not used by anyone during the discussions; however the sense of it, meaning a hazy and shallow understanding of the philosophical, historical and theological underpinnings of Islam, appeared to be what was meant by those who critiqued the role of this segment of Muslims around the world.

WORKING GROUP 5

Regional Security in East Asia

Conveners:

*Yang Chengxu,
Behzad Shahandeh*

Rapporteur:

Masako Ikegami

The group recognizes that the North Korean nuclear crisis poses a serious challenge to the NPT regime and the future regional security. The group had discussions based on our consensus on (1) the nuclear-free Korean Peninsula, (2) peaceful dialogue for opening a window of opportunity, (3) peace & stability of East Asia. The group agrees that any nuclear test would be an unmitigated disaster. The group discussed the following issues.

North Korean Nuclear Crisis and the 4th 6-Party Talks

The group paid much attention to understanding Pyongyang's perception regarding the nuclear crisis. Pyongyang suffers from a severe sense of insecurity and betrayal due to various incidents such as nuclear blackmailing during the Korean War and a potentially offensive posture of the US forces against N. Korea, accession to the NPT upon the Soviet's inducement, and economic crisis. Such severe circumstances and isolation can easily formulate an autistic perception. Thus it is important for the 6-party talks to formulate convincing measures to have North Korea feel easy and safe.

Pyongyang sincerely wishes political recognition of its regime, particu-

larly from the US in the form of security guarantee, and eventually the peace treaty. Since rapprochement with the US and Japan is regarded to be yet remote, the two Koreas would go ahead with mutual recognition of their respective sovereignty, which is to be followed by proactive economic and industrial engagement. The time is ripe for the North-South rapprochement.

Since the early 1990s, the North Korean nuclear crisis has gone through a number of lost opportunities, misjudgement out of distrust, lack of communication, lack of coherent policy and divided decision-making among the governments involved. Geo-politics of the region also complicate the situation.

An enriched uranium issue could make a formidable bottleneck to a peaceful diplomatic solution. Pyongyang is not ready to discuss the issue of the 6-Party talks, because complete denuclearization is synonymous to disarmament in Pyongyang's eyes. Thus, the 6-party talks might put aside the enriched uranium issue. For the US, on the other hand, the North Korean attitude on the uranium issue is a benchmark of Pyongyang's sincerity on denuclearization. Accepting North Korea as a *de facto* nuclear weapon state would be a fatal precedent and damage the NPT regime, which might cause dangerous spill-over effects on other parts of East Asia and elsewhere.

The Japanese abduction issue is a highly sensitive one, triggered by

both Pyongyang's and Tokyo's miscalculation. The historical legacy also affects the issue. Neither Pyongyang nor Tokyo has a clear definition of the issue's resolution. It might well be addressed in a broader context of the human rights and welfare issue.

Sino-Japan Relation and East Asian Security

The group agreed upon the importance of the 'shared future' across national boundaries in dealing with the legacy of history. The historical legacy and Japan's war crime issue have surged frictions with China and Korea with almost regular intervals in the past two decades, such as the Yasukuni Shrine and a history textbook. But recent incidents show that such historical legacy issues are now linked to geo-political issues such as territorial disputes. In Japan, the war legacy used to be an issue of ideological confrontation between the conservative and radical liberals. A particular war memory is to be balanced with relativity. For instance, in the past, the Hiroshima memorial museum had exhibitions of only the atom-bomb victims. Now an exhibition on Japan's past invasions in wars has been added to give a more balanced picture. Urged are intellectual efforts to learn a universal lesson from these particular historical incidents.

Politicization of war memories is a dangerous deed. While war memories tend to stay emotional, governments tend to exploit war memories for their political agenda, which in turn harm their foreign policies and strategy by narrowing their own policy-options. Rather, more efforts are

to be made toward the ‘shared future’.

Sino-Japan relations have been susceptible to partial perceptions affected by the war legacy. History shows that improved mutual-perceptions of objective understanding of historical facts helped solve major diplomatic and territorial issues, as was the case with the US-China relations in the 1970s. Thus, reconciliation between China and Japan is vitally important to achieve a win-win situation on many pending issues between the two countries.

Impacts of the energy issue in East Asian Security

China-Japan competition over energy has intensified. For instance, the two countries are competing over oil in Iran/the Middle East and Russia. China is vigorously approaching the Middle East for energy deals. Japan’s alleged Azadegan oil business with Iran was constrained by the US because of the concern over Iran’s uranium enrichment program. Fossil fuel replacement by other energies is yet remote.

The energy issue affects geo-politics and strategy. In China, the energy issue is related to geo-political issues such as Taiwan and the Malacca Strait. Like Japan in the 1970s, China is expanding its diplomatic scope for securing its energy sources to diversify its oil supply sources into the Middle East, Central Asia and Russia. China-Japan competition over oil of Iran, Saudi Arabia, and Russia is noteworthy.

Surging energy consumption and demands in the region could cause a risk of energy conflicts. There is

already a sign of the risk in the East China Sea, Senkaku/Diaoyu Islands. For oil business with Iran, Beijing has stated its opposition to bringing the issue of Iran’s uranium enrichment program before the UN Security Council. Energy issues can inflict negative impacts on security issues, if not addressed properly.

There is a possibility of regional cooperation on other related issues, such as technological cooperation for liquid natural gas and anti-pollution devices, an area in which Japan is pre-eminent. There has been much discussion, albeit with little concrete actions, on Northeast Asian energy cooperation, connecting by pipelines

Mongolia, Russia, China, the two Koreas and Japan.

Anticipated shortages of oil resources prompt efforts of nuclear energy, which has many side-effects. Nuclear energy technology transfer, as dual-use technology, should be scrutinized carefully.

Finally, the group discussed China’s nuclear weapons policy, regarding a PLA major-general’s recent controversial remarks on China’s no-first-use policy. The Chinese government thereafter reiterated its non-first-use policy, however. De-emphasizing nuclear weapons and improving the security milieu are necessary.

WORKING GROUP 6

Sustainable Development and Non-Military Threats to Security

.....
Co-Conveners:

Marie Muller, M.S. Swaminathan

Rapporteur:

Tom Børsen Hansen
.....

More than 30 persons participated in working group 6 having diverse geographical and disciplinary backgrounds. Over 20 papers and talks on diverse topics were presented during the first four working group sessions, leaving little time for discussions. Recommendations for actions of Pugwash constituencies were discussed in the fifth working group session.

Shaping the Pugwash Agenda

The purpose of the working group was twofold: It served as an incubator for identifying new topics for the Pugwash agenda, but it also addressed the basic principles of Pugwash, which should guide the identification of the new topics.

Three prime criteria were suggested in the working group to facilitate the selection of new topics for further elaboration:

1. The topic should be an emerging issue, i.e. that is largely uncharted in public awareness and still offers scope for remedial action;

2. The topic should comprise a real or potential security challenge, i.e. be a threat to sustainable peace;

3. It should pose analytical and ethical challenges to current conventional wisdoms, and therefore require a way of thinking fitted to the new circumstances.

Second order criteria may also often be used:

1. To a certain level it should be a controversial subject that, if necessary, may require the unmasking or debunking of established political discourses and of 'factoids' (scientific or popular myths or opinions that are repeated so often that they are perceived as facts);

2. It should be an analytical or conceptual challenge amenable to trans-disciplinary academic/scientific analysis and debate;

3. It should not only be relevant at the short term, but especially form a long-term issue as well;

4. The selection should take into consideration Pugwash's particular strengths and areas of core competences. If skills are lacking they should be identified and co-opted.

An argument was delivered for Pugwash to open up its agenda to deal with a framework of human security and human development. It was based on the observation that most present day conflicts show a different constellation of conflict factors than earlier "old conflicts" of the cold war era. Present day conflicts have an intrastate nature and are historical, dynamic and multi-dimensional phenomena that have multiple causes and consequences.

Non-military threats to human security

The first of the UN's development millennium goals is to reduce by half the proportion of people living on less than a dollar a day, and hence to decrease the number of people who suffer from hunger. When promoting food security one must distinguish between three types of hunger: chronic hunger that is caused by poverty, hidden hunger (vitamin and mineral deficiency) and temporal hunger caused by drought, flood and civil/ethnic conflicts. All three types of hunger must be addressed by national strategies aimed at fulfilling the UN millennium goals. Such strategies must ensure that food is available, accessible to people, and that it is absorbed in the body. Meeting the UN goal of reducing the number of people suffering from hunger is closely related with the creation of jobs, and the transformation of unskilled workers into skilled ones. Fulfilling the first UN goal in Africa is related to an increase of agricultural productivity. Such an increase can be created by a rainbow revolution reflecting the agricultural diversity of the African continent.

The background and outcomes of the three Pugwash exploratory workshops on HIV/AIDS viewed as a global security threat were presented. These workshops explored potential Pugwash roles in the enlarged security agenda to address threats with no enemies, of which HIV/AIDS is an example. The purpose of the third workshop was to share the experiences and lessons, both good and bad, learned in the management of the pandemic in South Africa and South-

ern Africa ("first wave countries") with countries that are expected to experience a "second wave" (China and India) in the global spread of the HIV/AIDS pandemic. Factoids regarding HIV / AIDS statistics and the role of military in the spread of HIV/AIDS were unmasked, and the history of political (mis)-management of the AIDS epidemic in South Africa was reviewed, which is of special importance for policy-makers in second wave countries. The proposed fifth workshop in India will therefore be timely.

A working group presentation unravelled publicly held myths related to nutrition and HIV/AIDS. Good nutrition and micronutrient supplementation can largely cure malnutrition, but cannot cure clinical HIV/AIDS. Untreated HIV/AIDS exacerbates malnutrition, and a well-balanced sound nutrition can only prevent and cure malnutrition, and delay the inevitable. Underlying disease needs to be treated. Thus a drug cum nutrition approach needs to be promoted.

The risk of an influenza pandemic for which we have no medical remedy widely and promptly available, was addressed in a presented paper. During the working discussions it was contested whether an influenza pandemic is an emerging new threat to global security. Similarly other potential forms of bio-perils and bio-terrorism will have to be carefully monitored.

The tsunami disaster was discussed in three papers. It was argued that no single country can successfully take-on an early warning system of tsunamis and earthquakes. It was

suggested that UN should take a leading role in setting up such systems, though the process of setting up early warning mechanisms should take into account traditional national security interests.

The impact of the tsunami disaster and the post-tsunami reconstruction in Sri Lanka were addressed. Two examples of what was viewed as inappropriate tsunami restoration in Sri Lanka were mentioned — rejection of rebuilding new housing on the seafront on stilts, and an announced 100 meter seafront safety zone that does not take height above main sea level into account.

Climate change and the Kyoto protocol

Climate change is a serious threat, but how to deal with it is contentious. There are tensions and emerging conflicts due to different views on climate change and particularly the economic impact of the Kyoto protocol for different nations. The Kyoto protocol is only a small step but causes significant problems.

The Kyoto protocol was negotiated based on experience from arms control treaties, which is not always best suited for tackling climate change, and may not give enough incentives to move in the right direction and fast enough. CO₂ emissions are not warheads. This point of view was contrasted by the point of view that not just the overall level of CO₂ reduction is important but also the rate of change. A positive aspect of the Kyoto protocol is that it can slow down the emissions, and hence buy time for finding better solutions.

The role of CO₂ sequestration, and particularly that of wetlands (e.g. the Siberian Tundra), needs to be understood better. Energy issues in the context of climate change were discussed, in particular which role renewable and nuclear energy should/could play. Energy conservation is important too, as might be CO₂ capture and storage in connection with the continued use of fossil fuels. A proposal was made to hold a workshop on comparable advantages of different energy sources.

Science and values

Two contrasting views on the relations between science and values were identified. From one perspective values are seen to be culture specific, and hence no universal standard of ethical behaviour in science as such can be formulated. The opposite viewpoint was put forward that global moral imperatives do exist, such as: *Never shall we put an end to the human race* (cf. the Russell-Einstein Manifesto). Some participants called for promoting ethical codes of conduct.

There are also the emerging differences in perception and policy formulation in respect to new technologies, particularly food and agricultural biotechnology. Pugwash has undertaken studies in the fields analysing risks and benefits in the area of agricultural and food biotechnology. It may be useful to continue this careful analysis further, since there are both potential trade and political conflicts arising from different perceptions on the benefits of biotechnology including nano-biotechnology.

An iconoclastic critique of university science education was posed. One point of criticism was test-based learning that leads to students' memorising facts instead of thinking for themselves. To overcome this problem it would be helpful to review and revise pedagogic methodologies. Students also need time to reflect on what they are doing, and why they are doing it. Knowledge and values are interconnected.

A presented paper argued that we must follow certain values or principles if we are to prevent global threats and hence achieve a sustainable future. Values for sustainable living were identified, and categorised as the minimum common denominator for all cultures and even all individuals. The highest possible degree of – but not total – diversity of values is assumed. In decision-making today pragmatic strategies are often chosen ignoring value-based approaches that hold certain values as un-negotiable. It was suggested to promote more a culture of peace, and harmony with nature.

Towards sustainable development

A possible reconciliation strategy to solve regional conflicts was identified, based on the idea that conflicting parties must realise that the future of the children, affected by conflicts, is stolen from them, and that the adults have failed to solve the conflicts. The seeds of peace must be sowed in the minds of children by pediatricians, nurses, schoolteachers and others working with children affected by conflicts.

Integrated Coastal Zone Management (ICZM) was presented as a way for governments to manage ecological problems in the coastal areas. It acknowledges the interrelationships among – and the potential conflicts between – coastal and ocean uses and users as well as the effects on the environment. ICZM is designed to overcome fragmentation inherent in sector-split management, and is a holistic management technique that requires data on many different phenomena. It was suggested that the trans-disciplinary way of thinking embedded in the ICZM and other fields be studied further.

A project aimed at writing a book series on *Science and Civilisation in Sri Lanka* on the lines of Joseph Needham's famous *Science and civilisation in China* was presented. During discussions it was emphasized that *Do How* does not automatically follow from *Know How*, as technology needs adaptation to the local context.

Two papers addressed urban issues. The first one focused on environmental assessment tools and development of urban infrastructure. The second paper analysed key features from the draft World Charter on "the Right to the City" presented by various NGOs at the World Social Forum, 2005.

Conclusion

One of the purposes of working group 6 was to identify potential new topics for further elaboration by Pugwash. The group's discussions centred round non-military security threats. Working group participants suggested that Pugwash could pursue



Excursion in Hiroshima Bay: Douglas Roche, Claudia Vaughn, Jean Edgerton, Paolo Cotta-Ramusino, and Behzad Shahandeh.

non-military threats to security like bio-perils (e.g. the HIV/AIDS pandemic and potential threats of bioterrorism), climate change and water issues, hunger and poverty, environmental security, and distribution of economic and natural resources.

Time was not available to thoroughly discuss these threats in detail or to prioritise them. The important message from this working group is that Pugwash should remain open to new emerging threats and, therefore, to new agenda items selected in terms of the prime criteria mentioned in the beginning of this report.

It was proposed that Pugwash start a process of internal reflection on how to deal with the challenges of these non-military threats. Pugwash Netherlands is prepared to host a first workshop on this topic to outline those new challenges to human security and sustainable development. The proposed Dutch workshop

could be very useful in that regard.

During the elaboration of topics in these workshops it is essential to reflect on the underlying values, political ramifications and ethical aspects, as these have gradually become an integral part of any responsible scientific approach towards contemporary global/regional/national issues. Similarly, it was suggested that education, dissemination and public advocacy be integral parts of any approach adopted.

The proposed Pugwash workshop series could develop regional overlays of the various potential sources of conflict. These areas of potential environmental insecurity can be superimposed on Pugwash analyses of political and nuclear scenarios to develop composite maps that characterize regions of the world that are particularly at risk from multiple forms of security challenges.

Participants

Dr. Sadek **Abdelaal**, Founder and Chairman, PeaceDiatrics Society, Cairo, **Egypt**; Pediatrician, Cairo University, Children's Hospital

Dr. Mohamed Ezzeldine **Abdel-Moneim**, Professor, International Law & Organization, Suez Canal University, Cairo, **Egypt**; Senior Adviser on Arms Control and Strategic Affairs, The League of Arab States; Member, United Nations Committee on Economic, Social and Cultural Human Rights

Amb. Nobuyasu **Abe**, Under-Secretary-General for Disarmament Affairs, United Nations, New York, NY

Dr. Clark **Abt**, Chairman, Abt Associates Inc., Cambridge, Massachusetts, **USA**; Associate, Belfer Center for Science and International Affairs, Kennedy School of Government, Harvard University

Gen. (ret.) Mansour **Abu Rashid**, Chairman, Amman Center for Peace and Development, Amman, Jordan

Amb. (ret.) Ochieng **Adala**, Member, Pugwash Council; Africa Peace Forum (APFO), Nairobi, **Kenya**

Dr. Abbas **Al-Hussaini**, Senior Lecturer and Researcher, School of Architecture and the Built Environment, University of Westminster, London, UK; Chair of **Iraq** Higher Education Organising Committee, UK

Dr. Athem **Alsabti**, Professor of Physics and Astronomy at the University of London Observatory / University College London; International Relations Officer for the **Iraqi** Academy of Science

Prof. M. Shamsheer **Ali**, President, **Bangladesh** Academy of Sciences, and Vice-Chancellor, Southeast University, Dhaka

Mr. Gothom **Arya**, Director, Mahidol University Research Center on Peace Building, Nakornpathom, **Thailand**

Prof. Motofumi **Asai**, President, Hiroshima Peace Institute, Hiroshima City University, **Japan**

Ms. Nassrine **Azimi**, Director, UN Institute for Training and Research (UNITAR), Hiroshima Office for Asia and the

Pacific (HOAP), Japan, Director, IPS/UNITAR Publication Series in Peacekeeping [formerly: Chief, New York Office, UNITAR]

Prof. Masako **Bando**, Director, Media Information Center, Aichi University, Miyoshi, Aichi, **Japan**

Prof. Gabriel **Baramki**, Consultant to the **Palestinian** Ministry of Higher Education, Ramallah; President, Palestinian Council for Justice and Peace

Mrs. Haifa **Baramki**, Director, Education for Life-**Palestinian** branch; Chairperson of the Board of Directors of PANORAMA: Palestinian Center for the Dissemination of Democracy & Community Development; Member, Executive Council of the Palestinian YWCA

Dr. Kayhan **Barzegar**, Assistant Professor of International Relations, Islamic Azad University (IAU), Science and Research Campus; Editor-in-chief, Journal of Law and Politics; Senior Research Fellow, Center for Scientific Research and Middle East Strategic Studies, Tehran; Associate Editor, Discourse: an Iranian English language Quarterly; Associate Fellow, Center for Strategic Research (CSR), Tehran

Amb. Sergey **Batsanov**, Director, Geneva Office of International Pugwash; Member, Pugwash CBW Steering Committee, former Director, Special Projects, Organization for the Prohibition of Chemical Weapons (OPCW), The Hague, The Netherlands

Prof. Rosina M. **Bierbaum**, Dean and Professor, School of Natural Resources and Environment, University of Michigan, Ann Arbor, MI, **USA**; Board of Directors: American Association for the Advancement of Science

Dr. Jeffrey **Boutwell**, Executive Director, Pugwash Conferences on Science and World Affairs, Washington, DC, **USA**; Member, Pugwash Executive Committee

Dr. Adele **Buckley**, Chair, Canadian Pugwash Group; Vice President, Technology & Research, Ontario Centre for Environmental Technology Advancement (OCETA), Toronto, Ontario, **Canada**

Mrs. Sandra Ionno **Butcher**, Independent consultant, Pugwash History Project, Falls Church, VA, **USA**

Prof. Francesco **Calogero**, Member, Pugwash Council; Professor of Theoretical Physics, University of Rome "La Sapienza", Rome, **Italy**

Col. (ret.) Pierre **Canonne**, Member, Pugwash Council [formerly: Senior Lecturer, Disarmament and Arms Control, Univ. Marne-la-Vallés/Paris, **France**

Ms. **Chen** Huaifan, Director, General Office, Chinese People's Association for Peace and Disarmament (CPAPD), Beijing, **China**

Mr. Ralph **Cossa**, President, Pacific Forum CSIS, Honolulu, Hawaii, **USA**; Executive Director, US Committee, Council for Security Cooperation in the Asia-Pacific (CSCAP)

Prof. Paolo **Cotta-Ramusino**, Secretary-General, Pugwash Conferences on Science and World Affairs; Member, Pugwash Executive Committee; Professor of Mathematical Physics, University of Milan, **Italy**; Director, Program on Disarmament and International Security, Landau Network – Centro Volta, Como, Italy

Dr. Parvin **Dadandish**, University Professor, School of Media Studies, Tehran, **Iran**

Dr. Guido **den Dekker**, Attorney-at-Law, De Brauw Blackstone Westbroek, Amsterdam, **The Netherlands** [formerly : University teacher, Public International Law (until 2002)]

Prof. Nola **Dippenaar**, Professor, Dept. of Physiology, School of Medicine, Faculty of Health Sciences, University of Pretoria, Pretoria, **South Africa**; Vice-Chair, South African Pugwash Group

Prof. Walter **Dorn**, Associate Professor and Co-Chair, Department of Security Studies, **Canadian** Forces College, Toronto, and The Royal Military College of Canada, Kingston, Ontario

Dr. Lynn **Eden**, Member, Pugwash Council; Associate Director for Research/Senior Research Scholar, Center for International Security and Cooperation (CISAC), Stanford Institute for International Studies (SIIS), Stanford University,

Participants continued

Stanford, California; **USA**, Co-Chair U.S. Pugwash Group

Prof. Karl-Erik **Eriksson**, Professor, Department of Engineering Sciences, Karlstad University, Karlstad, **Sweden**

Dr. Eric T. **Ferguson**, Secretary of Pugwash **Netherlands**; Consultant on Energy and Development, MacFergus bv, Zeist, Netherlands

Prof. John **Finney**, Professor of Physics, Dept. of Physics and Astronomy, University College London, **UK**

Prof. Georg **Frerks**, Professor of Conflict Prevention and Conflict Management, Centre for Conflict Studies, Utrecht University, **The Netherlands**; Professor of Disaster Studies, Wageningen University; Chairman, Pugwash Nederland

Prof. Hisakazu **Fujita**, Professor of International Law, Kansai University School of Law, Osaka, **Japan**

Prof. Kiichi **Fujiwara**, Professor of International Politics, Graduate Schools of Law and Politics, University of Tokyo, **Japan**

Dr. Narsi **Ghorban**, Director, International Institute for Caspian Studies, Tehran, **Iran**; Vice Chairman, Azar Energy; Managing Director, Narkangan Gas to Liquid International Company

Prof. Alexander **Ginzburg**, Member, **Russian** Pugwash Committee; Deputy Director, A.M. Oboukhov Institute of Atmospheric Physics, Russian Academy of Sciences; Director, Development and Environment Foundation

Prof. Galia **Golan-Gild PhD**, Professor of Government, Interdisciplinary Center (IDC), Herzliya, **Israel**; Professor Emerita, Department of Political Science, Hebrew University of Jerusalem

Prof. Karen **Hallberg**, Member, Pugwash Council; Professor of Physics, Balseiro Institute, Bariloche, **Argentina**; Research Fellow, National Council of Science and Technology, Centro Atomico Bariloche; Member, Board of the Argentine Physical Association, and of the Bariloche Group for Science and World Affairs

Dr. Tom Børsen **Hansen**, Guest Professor, Centre for the Philosophy of Nature and

Science Studies, University of Copenhagen, **Denmark**;

Mrs. Anissa **Hassouna**, Board Member, Egyptian Council for Foreign Affairs, Cairo, **Egypt**; Assistant General Manager, Misr Iran Development Bank

Prof. Robert **Hinde**, former Royal Society Research Professor (now retired) [also formerly: Master, St. John's College, Cambridge, **UK**; Hon. Director, Medical Research Council (MRC) Unit on the Development & Integration of Behavior]

Prof. John **Holdren**, Teresa & John Heinz Professor of Environmental Policy, Kennedy School of Government, Harvard University, Cambridge, MA, **USA**; Professor of Environmental Science & Policy, Dept. of Earth and Planetary Sciences, Harvard University; Director-Designate, Woods Hole Research Center; Chairman, National Committee on Energy Policy; President-Elect, American Association for the Advancement of Science

Prof. Pervez **Hoodbhoy**, Member, Pugwash Council; Professor of Nuclear Physics, Department of Physics, Quaid-e-Azam University, Islamabad, **Pakistan**; Chairman of Mashal Books; independent documentary filmmaker for popularizing science in Pakistan; activist for peace and social reform

Prof. Mikulá **Huba**, Head, Scientific Committee, Institute of Geography, **Slovak** Academy of Sciences, Bratislava; President, Society for Sustainable Living; EuropeanEcoForum Board Member; Alliance of Northern People for Sustainability-ANPED Board Member

Dr. Masako **Ikegami** (**Sweden/Japan**), Professor and Director, Center for Pacific Asia Studies (CPAS), Stockholm University, Stockholm, Sweden; Guest Lecturer, Faculty of International Studies, Meiji-Gakuin University, Tokyo

Prof. Yuzo **Itagaki**, Professor Emeritus, The University of Tokyo, **Japan** [formerly: Member & Chair of the Humanities Division, Science Council of Japan]

Dr. Venance **Journé**, Researcher, National Scientific Research Council (CNRS), Paris, **France**

Dr. Victor **Kamyshanov**, Vice-Chairman, International Federation for Peace and Conciliation, Moscow, **Russia**;

Dr. Kang **Daeseok**, Assistant Professor, Division of Environmental System Engineering, Pukyong National University, Busan, **So. Korea**

Prof. Katsuko **Kataoka**, Graduate School of Biomedical Sciences, Hiroshima University, **Japan**; Vice President, International Physicians for the Prevention of Nuclear War

Dr. Noriyuki **Kawano**, Research Associate, Research Institute for Radiation Biology & Medicine, Hiroshima University, **Japan**

Dr. Ayman **Khalil**, Center for Research on Arms Control and Security (CRACS), Amman, **Jordan**;

Dr. Mustafa **Kibaroglu**, International Security Program & Project on Managing the Atom, Belfer Center for Science and International Affairs, John F. Kennedy School of Government, Harvard University, Cambridge, MA, **USA**; Associate Professor (non-proliferation, arms control & disarmament matters), Bilkent University, International Relations Department, Bilkent, Ankara, **Turkey**

Prof. Sergey **Kolesnikov**, Member of **Russian** Parliament; Deputy Chairman of the State Duma Committee for Education and Science; Vice-President of "International Physicians for the Prevention of Nuclear War" (Nobel Peace Prize, 1985)

Prof. Michiji **Konuma**, Chair, Executive Committee for Pugwash 2005; Professor Emeritus of Physics, Keio University; Advisor, International Student/Young Pugwash; Visiting Researcher, International Peace Research Institute, Meiji Gakuin University, Tokyo; **Japan**

Prof. Mitsuru **Kurosawa**, Osaka School of International Public Policy, Osaka University, **Japan**

Dr. Peter H. **Langille**, Department of Political Science, Social Science Centre, University of Western Ontario, London, **Canada**;

Participants continued

Prof. Le The Que, Dean, Department of International Studies, University of Social Sciences and Humanities, **Vietnam National University (VNU)**, Hanoi

Prof. Lee Jong Won (**South Korea**), Faculty of Law and Politics, Rikkyo University, Tokyo, Japan

Dr. Francesco Lenci, National Research Council (CNR) Research Director, Pisa, **Italy**; President-Elect (2003-05) and, starting September 2005, President of the European Society for Photobiology

Dr. Wolfgang Liebert, Scientific Director, Interdisciplinary Research Group in Science, Technology and Security (IANUS), Darmstadt University of Technology, Darmstadt, **Germany**

Prof. Saideh Lotfian, Associate Professor of Political Science, and Associate Dean for Research, Faculty of Law and Political Science, University of Tehran, **Iran**

Prof. Alexey Malashenko, Senior Associate, Institute of Europe, **Russian Academy of Science**, Moscow; Professor, Moscow State Institute of International Relations (University) of Ministry for Foreign Affairs of Russia (MGIMO-University)

Dr. Miguel Marin-Bosch, Member, Pugwash Council; Professor of Disarmament and International Security; President of Desarmex, an NGO in **Mexico D.F.** [formerly: Deputy Foreign Minister]

Lt.-Gen. (ret.) Talat Masood, Independent Columnist, Commentator and Analyst, Islamabad, Pakistan, formerly: retired Lt. General; Secretary, Defence Production Division, Ministry of Defence, **Pakistan**

Prof. Jiri Matousek, Professor of Toxicology, Masaryk University Brno, Faculty of Science, EU Research Centre of Excellence for Environmental Chemistry and Ecotoxicology, Brno, **Czech Republic**

Prof. Masatsugu Matsuo, Director, Institute for Peace Science, Hiroshima University, **Japan**

Prof. Alan H. McGowan, Chair, Science, Technology and Society Program, Eugene Lang College, New School University, New York, NY, **USA**; Chair (voluntary

position), Student Pugwash USA; Executive Editor (voluntary position), Environment magazine

Prof. Anne McLaren, Member, Pugwash Council; Group Leader, Wellcome Trust/Cancer Research UK Gurdon Institute of Cell & Developmental Biology; Member, Executive Committee of the British Pugwash Group; Member, European Group on Ethics; former Foreign Secretary, The Royal Society

Mr. Lucius (D.L.O.) Mendis, Advisor, Sri Lanka-Singapore Tsunami Relief Project (Merlion Project); Secretary/Convenor, Sri Lankan Pugwash Group

Acad. Jorma K. Miettinen, Academician and Emeritus Professor of Radiochemistry, University of Helsinki, **Finland**; Emeritus Professor of Military Science, Institute of Military Science; President, Finnish Pugwash Group

Dr. Steven Miller, Director, International Security Program, Center for Science & International Affairs (CSIA), Harvard University, Cambridge, Massachusetts, **USA**; Editor-in-Chief, International Security; Member, Pugwash Council; Co-Chair, U.S. Pugwash Group

Prof. Kazumi Mizumoto, Associate Professor, Hiroshima Peace Institute, Hiroshima City University, **Japan**

Dr. Robert Mtonga, Public Medical Practitioner & Peace Activist, International Physicians for the Prevention of Nuclear War (IPPNW), Lusaka, **Zambia**

Prof. Marie Muller, Chair of the Pugwash Council; Dean, Faculty of Humanities, University of Pretoria, **South Africa**;

Prof. Taizo Muta, President, Hiroshima University; Graduate of Physics Department, Kyushu University, **Japan**

Prof. Giuseppe Nardulli, Professor of Theoretical Physics, University of Bari, **Italy**

Dr. Götz Neuneck, Physicist, and Member, Pugwash Council; Project Leader, "Interdisciplinary Research Group Disarmament, Arms Control and New Technologies", Institute for Peace Research and Security Policy (IFSH), Hamburg, **Germany**

Dr. Norman P. Neureiter, Director, Center for Science, Technology and Security Policy, American Association for the Advancement of Science (AAAS), Washington, DC, **USA**

Mr. Nguyen Song Binh, Fellow Researcher, **Vietnam Peace Committee**, Hanoi

Dr. Alexander Nikitin, Member, Pugwash Council; Director, Center for Political and International Studies (CPIS), Moscow, **Russia**

Mr. Niu Qiang, Secretary General, Chinese People's Association for Peace and Disarmament (CPAPD), Beijing, **China**

Prof. Hitoshi Ohnishi, Member, Pugwash Council; Vice President, and Professor of International Relations in the School of Law, Tohoku University, Sendai, **Japan**

Prof. Ryo Oshiba, Department of Law, Hitotsubashi University, Tokyo, **Japan**

Gen. Pan Zhenqiang, Member, Pugwash Executive Committee; Professor, Institute of Strategic Studies, National Defense University, PLA, Beijing, People's Republic of **China**

Prof. Gwyn Prins, Alliance Research Professor, London School of Economics and Political Science, UK and Columbia University, New York, **UK**

Dr Ra'Ed Qaqish, **Jordanian** Member of Parliament; Assistant Professor, Computer Aided Learning (CAL), Computer Management Learning (CML), Computer Aided Design (CAD), Digital Designs & Education; Member, Jordanian Parliament

Prof. Abdul Ahrar Ramizpoor, Lecturer, Kabul University; Director, National Progressives Council of **Afghanistan** (NPCA); Director, Afghanistan Human Rights Activists Foundation (AHRAF)

Dr. Omar Rashad, Ex-Minister of Science and Technology of **Iran** and former Chairman of Iraqi Nonproliferation Foundation Program; former Director of the Establishment for construction of oil projects, Ministry of Oil, Baghdad

Senator Douglas Roche, O.C., Member, Pugwash Council; Chairman, Middle Powers Initiative; Author, Lecturer; Member of the Senate of **Canada**

Participants continued

Dr. Carsten **Rohr** (Germany/UK), Senior Policy Analyst, Sustainable Energy Policy Division, Department for Environment, Food and Rural Affairs (Defra), UK; Member, British Pugwash Executive Committee

Ms. Christine **Rovner**, Executive Director, Student Pugwash USA, Washington, DC

Acad. Yuri **Ryzhov**, Member, Pugwash Council; President, International Engineering University, Moscow; Chair, Russian Pugwash Group; Academician, Russian Academy of Sciences, **Russia**

Mr. Nasser **Saghafi-Ameri**, Senior Fellow, Foreign Policy and International Relations Department (FPIRD), Center for Strategic Research, Tehran, **Iran**

Maj.-Gen. (ret.) Dr. Mohamed **Kadry Said**, Member, Pugwash Council; Head of Military Studies Unit and Technology Advisor, Al-Ahram Center for Political and Strategic Studies, Al-Ahram Foundation, Cairo, **Egypt**

Prof. Shoji **Sawada**, Emeritus Professor, Department of Physics, Nagoya University, **Japan**; Representative Director of Japan Council against A&H Bombs

Prof. Behzad **Shahandeh**, Professor of East Asian Studies, Faculty of Law and Political Science, Tehran University, Tehran, **Iran**; Advisor to the Managing Director, Kish Free Zone, Kish Island, **Iran**

Amb. Mohamed **Shaker**, Vice Chairman, Egyptian Council for Foreign Affairs (ECFA), Cairo; Chairman, Sawiris Foundation for Social Development; Chairman, Regional Information Technology Institute (RITI)

Dr. Hideaki **Shinoda**, Assistant Professor and Research Fellow, Institute for Peace Science, **Japan**

Prof. Erika **Simpson**, Associate Professor, University of Western Ontario, London, **Canada**; Executive Member and Treasurer, Canadian Pugwash Group

Dr. Dann **Sklarew**, Chief Technical Advisor & Project Director, GEF International Waters: LEARN (project), United Nations Development Program (UNDP)-

Global Environmental Facility (GEF), Tokyo, Japan; Member, Student Pugwash USA Board of Directors

Prof. Ivo **Slaus**, Member, Pugwash Council; Director, World Academy for South-east Europe Division; President, **Croatian** Pugwash; Member, Club of Rome; Fellow, Academia Europea

Ambassador A.A. **Soltanich**, Deputy Director General, International Political Affairs, Ministry of Foreign Affairs, Tehran, **Iran** (since 2002)

Dr. Mark Byung-Moon **Suh** (Germany/South Korea), Member, Pugwash Council; Senior Researcher and Korea Coordinator, Free University of Berlin, Germany; President, Korean Pugwash Group; Chairman, Corea Trust Fund; Visiting Scholar, Institute for Peace Affairs (IPA), Seoul

Dr. Olga **Sukovic**, Freelance Consultant on Security and Disarmament matters [formerly: Consultant, UN Department for Disarmament Affairs, New York; Scientific Adviser, Institute of International Politics and Economics, Belgrade, **Yugoslavia**

Dr. Sun Xiangli, Deputy Director, Arms Control Division, Institute of Applied Physics and Computational Mathematics (IAPCM), Beijing, **China**

Dr. Tatsujiro **Suzuki**, Visiting Professor and Project Professor, University of Tokyo; Senior Research Scientist, Central Research Institute of Electric Power Industry (CRIEPI), Tokyo; Co-Founder, Peace Pledge, **Japan**

Prof. M.S. **Swaminathan**, Chairman, National Commission on Farmers, Govt. of **India**; President, Pugwash Conferences on Science and World Affairs, Chairman, MS Swaminathan Research Foundation, Chennai

Prof. Takao **Takahara**, Professor of International Politics and Peace Research, Faculty of International Studies, Meijigakuin University, Yokohama, **Japan**

Ms. Mariko **Taniuchi**, Journalist, Tokyo, **Japan** [formerly : Secretary General of The Japan 22 Committee for Nuclear Disarmament]

Mr. Luciano **Tanto Clement**, Secretary in charge of the Nuclear Desk, Department of International Security & Nuclear Affairs, Ministry of Foreign Affairs, **Argentina**

Dr. Giancarlo **Tenaglia**, voluntary Staff Member, Pugwash Conferences on Science and World Affairs, Rome, **Italy**; Member, Italian Pugwash Group

Prof. Masao **Tomonaga**, Director, Atomic Bomb Institute, Nagasaki University, **Japan**

Dr. Abdul Hameed **Toor**, Associate Professor, Department of Physics, Quaid-i-Azam University, Islamabad, **Pakistan**

Dr. Mahmoud **Vaezi Jozeh**, Deputy of Foreign Policy and International Relations, Center for Strategic Research, Tehran **Iran**

Prof. Siddiq **Wahid**, Maharaja Gulab Singh Chair Professor, University of Jammu, Jammu, J&K State, **India**

Hon. Christopher Gregory **Weeramantry**, Justice of the Supreme Court of Sri Lanka (1967-1972)

Dr. Detlev **Wolter**, Vice-President of the First Committee of the UN General Assembly; Political Counsellor, German Mission to the UN, New York, NY

Prof. Xia Liping, Director, Department of Strategic Studies, Shanghai Institute for International Studies, **China**

Maj. Xu Qiyu, Researcher, Institute for Strategic Studies, National Defense University, PLA, Beijing, **China**

Amb. Yang Chengxu, Chair, **China** National Committee for Pacific Economic Cooperation (CNCPEC), Beijing

Mr. Ye Ruan, Vice-President, **China** Arms Control and Disarmament Association, Beijing, China; Senior Fellow, China Institute of International Studies

Ms. Yu Xiaoling, Associate Researcher, China Defence Science and Technology Information Center, Beijing, **China**

Mr. Moeed **Yusuf**, Consultant, Economic Policy, Sustainable Development Policy Institute, Islamabad, **Pakistan**; Regular columnist (freelance), The Friday Times

Participants continued

Dr. Aharon Zohar, Senior Consultant on national planning to the National Planning Administration, and Head of the construction of 8 Bedouin new towns; Consultant, Regional and Environmental Planning, Carmei-Yosef, **Israel**

Dr. Bob van der Zwaan, Senior Scientific Researcher, Energy research Center of the **Netherlands** (ECN), Amsterdam, and Harvard University

ISYP

Ms. Rebecca Arkell, PhD Student, University of Cambridge, Fitzwilliam College, **UK**; Chair, Cambridge University Student Pugwash Society

Ms. Victoria Baldwin, Global Youth Project Manager, Monash University, Centre for the Study of Ethics in Medicine and Society, Department of Medicine, Alfred Hospital, Prahran, **Australia**; Global Reconciliation Network Committee member; Research & Events Organiser, Centre for the Study of Ethics in Medicine and Society

Mr. Cameron Bess, Graduate Fellow, The Rockefeller University, New York, NY, **USA**

Dr. Nikolai Bobylev (**Russia**), Japan Society for Promotion of Science - United Nations University Postdoctoral Fellow, Tokyo, **Japan**

Mr. Luca Ciciani (**Italy**), PhD Candidate in Environmental Engineering, Imperial College of Science, Technology and Medicine, London, **UK**; Member of Steering Committee for WMD Awareness Project, Student Young Pugwash UK; National Coordinator Student Pugwash UK; Member of Society for Radiological Protection, **UK**

Ms. Jessy Cowan-Sharp (**Canada**), Researcher, Space Security Index, Space Generation Foundation, Washington, DC

Mr. Brian Engel, PhD Student in Chemistry, Queen's University Ionic Liquid Laboratories (QUILL), Queen's University Belfast (QUB), Northern Ireland, **UK**

Dr. Inas Ezz, Lecturer on Information Systems & Computing, Sadat Academy for Management Sciences, Cairo, **Egypt**; Visiting Research Fellow, Department of

Information Systems & Computing, Brunel University, Uxbridge Middlesex, **UK**

Mr. Mads Fleckner, Student of Political Science, University of Copenhagen, **Denmark**; Press Secretary/Political Adviser; Political Election Campaigns Director

Ms. Moira Goodfellow, Student in Law, Dalhousie University, Halifax, Nova Scotia, **Canada**; Member, International Student/Young Pugwash (ISYP) Board

Jiang Ling, Assistant Research Fellow, Chinese People's Association for Peace & Disarmament (CPAPD), Beijing, **China**

Ms. Frida Komesaroff, Convener, Global Youth, Global Reconciliation Network, Monash Centre for the Study of Ethics in Medicine and Society, Monash Medical School, Prahran, **Australia**

Mr. Masaki Kudo, PhD Candidate, Osaka School of International Public Policy (OSIPP), Osaka University, **Japan**

Mr. Rian Leith, Master's degree candidate in Diplomatic Studies, University of Pretoria, **South Africa**; Lecturer in Contemporary History, Tshwane University of Technology, Pretoria; National Representative, Student Young Pugwash South Africa; ISYP Board Member

Ms. Sarara Maeda, Master's Student, Hiroshima University, Graduate School of International Development & Cooperation, **Japan**; Intern at UNESCO, Social and Human Sciences Sector

Mr. Rens de Man, Researcher, National Environmental Assessment Agency, **The Netherlands**

Dr. William Marshall, Research Fellow, Kennedy School of Government, Harvard University, Cambridge, MA, **USA**; Founder, Oxford UK Student Pugwash; Member, Institute of Physics

Ms. Lian Merckx, Management Trainee, Technical University of Delft, **The Netherlands**

Eng. Karim Mohamed Kadry Said, Application Engineer, Consukorra for Energy and A/C Systems, Cairo, **Egypt**; Head, PANORAMA Theatre Team; Chair, Egyptian Student Young Pugwash

Ms. Wakana Mukai, Graduate Student, Graduate School of Public Policy, University of Tokyo, **Japan**; Co-chair of Student/Young Pugwash Japan

Ms. Yumiko Nogami (**Japan**), Research Student, Department of Peace Studies, Bradford University, **UK**

Mr. Juan Pablo Pardo-Guerra, Researcher, El Colegio de Mexico (PRO-CIENTEC); Chair of the Executive Board, International Student/Young Pugwash

Dr Arthur Petersen, Senior Policy Analyst and Director, Methodology & Modeling Program, Netherlands Environmental Assessment Agency (MNP), Bilthoven, **The Netherlands**; Treasurer, International Student/Young Pugwash; Treasurer, Pugwash Netherlands

Mr. Moritz Riede, PhD Student in Solar Cell Research, Fraunhofer Institute for Solar Energy Systems, Freiburg, **Germany**; Chair, Student/Young Pugwash Germany

Mr. Benjamin Rusek, Research Associate, Committee on International Security and Arms Control (CISAC), National Academy of Sciences, Washington, DC, **USA**

Ms. Natalija Ryznar, PhD student in post-graduate Environmental Management Study, University of Zagreb, **Croatia**

Mr. Robert Sancton (**Canada**), Staff Member for Security and Armed Conflict, Pax Christi International, Brussels, **Belgium**

Mr. Yujiro Tokumitsu, Master's Student, Hiroshima University Graduate School for International Development and Cooperation, Higashi-Hiroshima, **Japan**

Ms. Ulrike Wunderle, PhD student, University of Tübingen, SFB "Kriegserfahrungen", **Germany**

Ms. Jung-ah Yoo, Master's candidate, American Studies Program, Yonsei University, Seoul, **South Korea**

3rd Pugwash Workshop on Science, Ethics and Society

Ethical Dimensions of HIV/AIDS

Ajaccio, Corsica, France, 29 September–2 October 2005

Workshop Report

by Arthur Petersen

The HIV/AIDS pandemic confronts global society with stark, dreadful and inescapable ethical questions. These questions were identified in a series of workshops organised by the Pugwash Conferences on Science and World Affairs under the title 'Threats without Enemies: The Security Aspects of HIV/AIDS' (held in Betty's Bay, near Cape Town, South Africa, 7–9 February 2004; Mabula Lodge, Limpopo, South Africa, 25–28 June 2004; and Villa Via, Gordon's Bay, South Africa, 29 April–1 May 2005). Over the past two years, Pugwash has also convened a series of workshops on 'Science, Ethics and Society' (Paris, France, 27–29 June 2003; and Ajaccio, Corsica, France, 10–12 September 2004). Exploiting the area of overlap between the two workshop series, the decision was made to directly confront the ethical issues related to HIV/AIDS through a workshop 'Ethical Dimensions of HIV/AIDS' that brought together 21 highly qualified participants from all over the world from disciplines including virology, epidemiology, physiology, pathology, neuroscience, psychiatry, bioethics, medical research management, humanitarian

assistance, political science, military and historical studies, geography, conflict and disaster studies, socially responsible business management, and uncertainty assessment.

The workshop was held Ajaccio, Corsica, France, from 29 September–2 October 2005. On 29 September 2005, during a public evening organised at the Palais des Congrès, Khadija Moalla delivered a speech on the 'Role of religion and ethics in the prevention and control of the epidemics' and Gilles Raguin spoke about 'Le Sida en 2005: réalités et enjeux' (AIDS in 2005: Realities and Issues), and this session was followed by a discussion with the public.

The organisation of the workshop was fully supported by the 'Mouvement pour la Corse du 21ème siècle' and benefited from grants from the Swiss Pugwash Group, the Ajaccio Chamber of Commerce and Industry, the Mayor of Ajaccio, the Territorial Organisation of Corsica, the Corsican Tourism Office and the General Council of South Corsica.

Five main topics were discussed: (1) social ethical problems of combating the long wave HIV/AIDS pandemic; (2) ethical issues in HIV/AIDS research in developing countries; (3) ethics and action of multinational companies against HIV/AIDS; (4) ethical implications of treatment ver-

sus prevention-led strategies; (5) role of religion and ethics in the prevention and control of the epidemics.

In this report, the presentations held at the workshop are outlined and the discussions are reflected. Subsequently, the most salient points of the workshop are summarised. Finally, future work for Pugwash is identified.

Introduction

The workshop was held within a month after the death of Sir Joseph Rotblat, co-founder of the Pugwash Conferences. At the opening of the workshop, Professor Marie Muller of the University of Pretoria, Chair of the Pugwash Council, gave a brief tribute to Sir Jo. With Sir Jo—who had dedicated his life to the abolition of nuclear weapons, who had always emphasised the social responsibility of scientists, and who shared the 1995 Nobel Peace Prize with the Pugwash movement—the members of Pugwash had lost a very dear friend. The best way now to pay him tribute is by continuing his lifework. The participants should keep in mind that in this workshop they were in a broad sense busy doing so.

Professor Gwyn Prins of the London School of Economics and Political Science (LSE) and Columbia University provided an introduction to

the workshop. According to him, this is a *Pugwash moment* in science and world affairs. The key message of the Russell-Einstein Manifesto (1955) is that the world community is morally and intellectually challenged to learn to think in a new way. Among the characteristic of the current age are long wave events like HIV/AIDS, which is one of the central ill-understood problems confronting humanity. In our thinking and our action, it is necessary to stay ahead of the wave of the HIV/AIDS pandemic. One of the reasons that Pugwash became involved with the problem of HIV/AIDS is the link with global security. This link was acknowledged by the United Nations at the level of the Security Council with the passing of Resolution 1308 on 17 July 2000. The Security Council is responsible for the maintenance of international peace and security through international peacekeeping operations and HIV/AIDS poses a threat to these operations.

However, the evidence base on which action in the field of HIV/AIDS and security began was totally inadequate—and incorrect. This is understandable, since good scientific work on the social aspects of the epidemic is difficult to do. The problem of HIV/AIDS constitutes a toxic mix of sex, race and power. In the absence of good research, many interested advocacy groups could more easily push their views by commissioning ‘quick and dirty’ studies by consultants. The result was that one or two good facts started being blown up to produce ‘inverted pyramids’. The first ‘factoid’ (that is, a fact which has no existence before

appearing in the media) was that soldiers are seven times more likely than others to be infected. The second factoid was that 45% of peacemakers in Cambodia had sex with the local population. Both these ‘factoids’ were misstatements of real facts. In the first case, for instance, the real fact is that the prevalence of sexually transmitted infections (STIs) in soldiers is generally seven times higher than in the general population. Whether this result also applies to HIV prevalence depends very much on the circumstances.

After it had been decided that there was potential for Pugwash to make a contribution in the area of HIV/AIDS and security, four workshops were convened. The reports and selected materials are available online. In the current workshop, the goal was to tackle the ethical issues directly. These issues broadly fall under four bundles of ethical problems: a) ethics of research (e.g., clinical trials); b) physicians’ problems in somatic treatment (e.g., what is the right thing to do for a patient?); c) ethics and its relation to epidemiology (e.g., how to deal with the development of multiple drug resistance?); and d) the ethics of the politics of action.

Social ethical problems of combating the long wave HIV/AIDS pandemic

In his presentation, Prins proposed five sets of moral and consequent dilemmas that are raised by the HIV/AIDS pandemic with special reference to South Africa. First, he called it ‘bad luck’ that HIV/AIDS had arrived simultaneously with

‘rights overload’ (a consequence of the rise of human rights over the last 60 years). Second, the problem is extremely persistent: HIV is an old type of virus, HIV/AIDS is a long wave social phenomenon (societies should prepare for 130 years of living with HIV/AIDS even assuming that better bio-medical interventions will be developed), and the available medical interventions range from imperfect to potentially dangerous. Third, there were doctors’ dilemmas. Which socio-medical context should be chosen here: the North American model (do all that one can for the sick patient lying before you, regardless of anything else) or battlefield medicine (where triage is practiced and the patient has no choice), for instance? Fourth, in the South African context, the first three dilemmas were compounded by the coincidence of President Mbeki’s Denialist agenda with a forceful constitutional promotion of a rights culture: how can organisations such as the Anglo-American Corporation or the South African National Defence Force manage the crisis if testing can only be done on a voluntary basis? Fifth, Prins claimed that fire-hosing money on Africa without strings attached, or without even setting terms and priorities or expressing preferences, gave rise to unintended consequences: corruption, crime and guns. Only major changes or interventions in behaviour offered any hope of controlling the crisis.

In the brief discussion that followed Prins’s presentation, his claim that human rights were hindering research was confirmed by one of the medical specialists. Other points were

taken up in discussions later in the workshop. One participant later had problems with the triage analogy, for instance, since it supposes that there is only a fixed set of resources. This assumption should not be accepted, given the political prerogative to furnish additional resources if needed. Another participant found triage a dangerous way of going, since the people far away from functioning health systems would probably not receive treatment and care.

Dr. Clive Evian, HIV public health consultant and part-time clinician at the Johannesburg Hospital HIV Clinic, highlighted in his presentation some of the socio-economic determinants of HIV/AIDS in South Africa and shared the results of several pioneering anonymised prevalence studies, with elaborate social and other labelling, done under his supervision in workplaces in the sub-continent. The epidemic is very diverse and there is a close association between HIV infection and social dislocation. His own studies showed consistent patterns of higher HIV prevalence in the lower income categories, contract employees, seasonal workers, as well as economically disempowered women and employees living away from home or in unfavourable living conditions. Evian warned the participants that HIV was not the problem: it was the result of a problem, that of social disorder. The descriptions by Fredrich Engels of the poor of London in the 1840s were still closely appropriate: 'The manner in which the great multitude of the poor is treated by society today is revolting. . . . As a result of this, they are deprived of all enjoy-



ments except that of sexual indulgence and drunkenness.' Socio-cultural transition is a major cause of this social disorder and the basis for the African and possibly Asian epidemics. The epidemiology of HIV is reflective of the social status and stability of communities in South Africa. The HIV transmission from older men to younger women (especially very young girls) may be a critical factor in propagating the epidemic. He concluded that socio-economic uplift and long term community stability were the most likely determinants of control of the HIV epidemic in developing countries. The world should prepare for the fact that the epidemic will be around for many years to come.

The participants were appreciative of the data offered by Evian, which gave a more broadly balanced picture than could be obtained from ante-natal clinic data and enabled the participants to crystallise their discussion. They provided a strong evidence base for the claim that the epidemic is socially produced. It was proposed that leadership and legisla-

tion were needed to prevent HIV transmission from older men to girls. It was asked whether it was sexual violence that made the difference. Evian responded that the problem was larger and a whole package of social disorder should be considered. A participant noted that for leaders in South Africa to discuss black sexuality was just too difficult, since it provides a stark and painful reminder of one of the ways some whites talked about black peoples' sexuality in the days of apartheid.

Dr. Gilles Graguin, Infectious Diseases Specialist, Hôpital Saint-Antoine, University of Paris, provided the workshop with a brief comment on the present status of the health sector reform and its limitations. The cost-effectiveness approach to health-system reform in developing countries that was pushed by the international monetary institutions had resulted in major difficulties. The health sector was not delivering after 10 years of reforms. This was mainly due to the fact that the entire approach is money-driven and focused on privatisation. What was

needed, however, was a value-driven approach to health systems, based on the concept of health equity. Another participant agreed that there were strong reasons to be sceptical of taking a capitalist approach for delivering public goods. It should therefore not come as a surprise that it had not worked. These positions were challenged by a third participant, however. When given the chance, there was no more capitalist place than rural Africa. A new model of capitalism was needed, which was going to look nothing like the late 19th century models. In this line of reasoning, the state was mainly needed to fulfil its 'responsibility to protect' (UN 2005 World Summit): you must have someone from whom to claim your right to be protected. Some participants were confused about what this 'responsibility to protect' precisely entailed. The UN 2005 World Summit refers to the responsibility to protect populations from genocide, war crimes, ethnic cleansing and crimes against humanity. The prime bearer of this responsibility is the state. If states do not fulfil this responsibility, the international community, through the United Nations, may step in to use appropriate diplomatic, humanitarian and other peaceful means. It could be argued that a similar principle should apply to the HIV/AIDS pandemic and the responsibility of states to protect their citizens from this pandemic. Still, the principle could be used in disastrous ways. Will the local community, or their leaders, be asked whether they want to be protected?

Dr. Michael Selgelid, bioethicist at the University of Sydney, pointed out

in his presentation that infectious disease has in general been a neglected topic in the discipline of bioethics. He believed that the subject of infectious disease should be better recognized as a fruitful locus for ethical and philosophical reflection in virtue of the facts that (1) the historical and likely future consequences of infectious diseases are almost unrivalled, (2) infectious diseases raise difficult ethico-philosophical questions about how to weigh individual rights against the good of society, and (3) the issue of justice is raised by the fact that infectious diseases primarily affect the poor. With regard to (2), Selgelid advocated an Aristotelian approach: we should seek to balance the rights of individual rights against the greater good of society rather than always giving priority to one or the other.

In his analysis of the issue of intellectual property right protection and HIV/AIDS drugs, Selgelid concluded that patent protection had not provided sufficient incentive for the pharmaceutical industry to develop technologies (such as an HIV/AIDS vaccine) most needed by the poor. If an alternative scheme would better promote currently lacking R&D and facilitate access to essential medications, then it should be put into place. For the solution of the health care situation in developing countries, political will and a substantial influx of funding from wealthy developed nations were needed. Motivating donor support was claimed to be key to any solution to the health care situation in developing countries. Activists and concerned academics should therefore put more energy

into the generation of political will by emphasising cumulative—including self-interested—reasons for wealthy nations to do more to help improve the health of the poor.

In the discussion, the question was asked where the initiative should come from. According to Selgelid, NGOs, charity organisations, national governments and intergovernmental organisations all had a role to play. Subsequently, the funnelling of international aid to combat HIV/AIDS and build up health systems in developing countries was discussed. First, some participants diagnosed the United Nations as a bureaucratically constipated organisation. Although an initiative such as the Global Fund to combat AIDS, Malaria and TB was currently badly under-subscribed, with the USA being an early donor, it at least gave us one mechanism. The issue had to be attacked in many ways, however. New organisational models, with a large role for the NGO and business sectors, would have to be explored as well. Also the academic community had a responsibility here.

Ethical issues in HIV/AIDS research in developing countries

Dr. Joan Box, clinical research and ethics liaison manager of the UK Medical Research Council, indicated in her presentation that there was a need to build ethics review capacity for biomedical research in Africa. Ethics committees are needed in developing countries, both because it is important that the participants from local communities should understand and be able to consent

(or refuse) to participate in biomedical research undertaken by donor countries and, since international guidelines require ethics approval of proposed research in host developing countries, for researchers to be eligible for international funding. She gave an overview of a project funded by the European Commission which has this purpose. The project, titled 'Networking for Ethics on Biomedical Research in Africa' (NEBRA), involves four African and two European partners, coordinated by the Institut National de la Santé et de la Recherche Médicale (INSERM), and is currently gathering information about the existing ethics review framework and further needs in 15 West and Central African countries.

In the discussion, several participants stressed the importance of diversity in ethics, since ethics must deal with all aspects of culture.

The presentation by Professor Catherine Peckham, Professor of Paediatric Epidemiology of the Institute of Child Health and Deputy Chair of the Nuffield Council on Bioethics, dealt with the ethics of research related to healthcare in developing countries. She presented two publications by the Nuffield Council on this topic. Many developed countries sponsor healthcare-related research involving populations and patients in developing countries. Several of the ethical issues raised by such research tend to be exacerbated when only very limited resources are available, as may be the case in countries where basic healthcare is not widely available and research ethics committees are often underdeveloped or absent. The Council has set out an ethical

framework for assessing the duties and responsibilities of those designing and conducting research and identifies the minimum requirements which must be met in all circumstances. The framework is based on four principles: the duty to (1) alleviate suffering, (2) show respect for persons, (3) be sensitive to cultural differences, and (4) not exploit the vulnerable. Key issues are consent, standards of care, ethical review of research, and what happens once research is over. Peckham referred to the international debate about the standard of care that should be provided to control groups in research. Should it be universal (the best treatment available anywhere in the world) or non-universal (the treatment available in a defined region)? The Council recommended that wherever appropriate, a universal standard of care should be offered to the control group and where this is not appropriate, the minimum that should be provided is the best treatment provided by the national public health system. The circumstances where a universal standard of care may not be appropriate are when it may not be possible to deliver a universal standard or when the use of a universal standard of care may not give research results which are relevant to the population in which the research is to be conducted. Furthermore, Peckham stressed that the question whether research is acceptable if benefits will not be made available to the community where it was undertaken, is complex. This is because the price of treatments may decrease and agreement may be reached to make treatments available

at reduced costs. Existing guidelines are not equivocal on this issue. The Helsinki Declaration, for instance, requires that at the end of a study, 'every patient in the study should be assured of access to the best proven prophylactic, diagnostic and therapeutic methods identified in the study'. Some research institutes claim, however, that the cost of purchasing drugs to continue treatment provided in clinical trials after the trial has finished would severely restrict their research capacity and many research funders do not have the authority to use their funds for treatment rather than for research. A final aspect of the Nuffield Council report that Peckham emphasised was the responsibility of donors to build expertise in developing countries, in both healthcare and research. One should not only focus on trials, but also study the infrastructure needed to deliver. For that reason, she claimed, more research into health systems was needed.

In the ensuing discussion, differing points of view became visible within the group of participants. On the question of standards of care, several participants argued for not giving up the idea of applying a universal standard, which might drive the development of local health systems (often there is nothing of a health system in place). Others observed that insisting on the provision of a Western level of care in studies could deprive some developing communities of research that was applicable to—and could benefit—their people. Another topic on which opinions diverged was the question of who should benefit. Some considered it



Workshop participants.

not fair to do research in communities that do not benefit. Others would be willing to accept that even if there is no local benefit, there could be a benefit at the epidemiological level: it must be acknowledged that there are huge areas of ignorance about AIDS, and it is important to perform as much research as possible to tackle the epidemic. The latter position might require HIV/AIDS to be considered an exceptional case. This in its turn led to the question of whether the interests of science and society would then take precedence over the well-being of the individuals studied, which is in conflict with many guidelines. It was countered, however, that even if you could not immediately provide treatment to the subjects studied, this should not be regarded as sacrificing them for the greater good, provided that the research was not *against* their interests. The fact that currently one cannot speak of crisis control, but rather should speak of damage control gives an argument for extraordinary interven-

tions. Perhaps one should not get too dogmatic: something should be done and science should find out things that are important for society. The equity issue could not be reasoned away, however: if large populations do not have access to the results of the research, for whom is the research done? At the end of the discussion, it was observed that in other scientific domains, such as sociology and conflict studies, guarantees by researchers that a better future can be offered are never given. Apparently, in those domains it is accepted that the benefits accrue at a higher level.

Professor Olga Kubar, Chair of the Forum for Ethics Committees in the Commonwealth of Independent States (CIS) and Head of the Clinical Department at the Saint-Petersburg Pasteur Institute, described ethical aspects of clinical trials. In the CIS, there was no experience yet with inviting patients to be members of ethics committees. Besides legal issues, the ethical expert examination in the field of HIV/AIDS is deter-

mined by the vulnerability of HIV-infected persons and persons with high risk of HIV infection. This requires a strict observance of the ethical principles of confidentiality and fairness (balance between benefits and risk factors) during the organisation and performance of studies. Special attention should be given to the collection, keeping and preventing dissemination of the identifying information about participants in studies and the confidentiality of all information obtained during these studies. Patients participating in studies related to HIV, naturally, worry about confidentiality of the information they may give because when the confidentiality is ignored, this could result in serious negative consequences (loss of job, problems with relatives, and even criminal investigation).

In the discussion, participants commented that there was experience of involvement of consumers and patients in ethics committees which showed its importance and that it could be done successfully.

Ethics and action of multinational companies against HIV/AIDS

Dr. Arthur Petersen, expert in uncertainty assessment of the Netherlands Environmental Assessment Agency, gave a presentation on the Shell-sponsored project 'AIDS in Africa: Three scenarios to 2025' (carried out under the auspices of UNAIDS). The project was an instance of corporate social responsibility. Shell has extensive expertise in scenario building in the energy world and was willing to provide this expertise to UNAIDS.

The key uncertainties about the future of the HIV/AIDS pandemic are: How is the AIDS crisis perceived, and by whom? And: Will there be both the incentive and capacity to deal with it? In the report of the 3rd Pugwash Workshop on Threats Without Enemies (29 April–1 May 2005), it was stated that none of the African representatives supported any of the scenarios and that the project team could not incorporate African experience. To Petersen, who had not been involved in the process but had read the report and an insider's account of the process, these statements seemed too strong. Still, from the experiences gained in the project, some ethical requirements for participatory scenario building could be distilled: the North-South divide should be bridged, all participants should be respected, one should be sensitive to normative agendas and reflexive (e.g., towards the institutional setting of UNAIDS). Even though some particular experiences in this project were negative, multinational corporations had a responsibility to contribute to analysis and solutions, and scientists had a responsibility to help decision-makers deal with uncertainty. The communication about uncertainty with a wider audience should be considered crucial.

In the discussion, one of the participants, who had been involved as an African participant in the scenario building project, pointed out that North Africa in particular was not adequately represented in the outcomes of the project. On the whole, it was judged that the project staff, based in London, was not able to

incorporate into the scenarios the informal economy and Africans finding solutions themselves.

The issue of communication of uncertainty was considered to be a topic of general importance for this workshop. Therefore, Arthur Petersen briefly demonstrated the Guidance for Uncertainty Assessment and Communication that was developed for the Netherlands Environmental Assessment Agency, a web application that could be used as a tool for dealing with uncertainties much more widely than only in environmental assessments. The importance of effectively communicating uncertainty was also stressed in a presentation of the July 2005 Strategic Review of the International Council of Scientific Unions (ICSU) by Dr. Carthage Smith, ICSU's Deputy Executive Director. The Strategic Review, titled 'Science and Society: Rights and Responsibilities', besides addressing risk and uncertainty, also addressed issues of equity, access and universality (changed mobility and global flows of science and scientists); the production of scientific knowledge (emergence of public-private contexts for research, raising concerns about the impartiality of science); accountability and governance of science; and expertise in science and society.

Patrice Lucas, Vice President of Social Policies at Lafarge, the world leader in building materials (Lafarge employs 77,000 people in 75 countries and posted sales of \$14.4 billion in 2004), shared with the participants an 'insider' perspective on the way Lafarge deals with the problem of HIV/AIDS. He described why and

how Lafarge decided to tackle this issue, and argued that the company culture made Lafarge's commitment in the fight against HIV/AIDS possible. Lafarge has HIV/AIDS programmes and is active in the Global Business Coalition on HIV/AIDS. The company works with a set of basic principles: compliance with the national legislation, ban on HIV screening for job applicants, ban on discrimination, total confidentiality and adaptation of working conditions for sick employees. Additional principles in Africa are: education and prevention, anonymous and voluntary screening tests with counselling, treatment and support, and antiretroviral therapies. Lucas made clear how the non-discrimination principle was challenged by the fact that it is known who is receiving treatment. In implementing these policies, Lafarge manages everything as a business issue, the profitability for shareholders being the bottom line. Difficulties arose from the pressures to expand the scope of people who receive treatment: from the employees to their families to their multiple sexual partners to the wider community. Often, Lafarge is the only employer within a radius of 50 to 100 km. For that reason, partnerships with NGOs and governments were sought. All companies had the same questions here: Who should they treat? How long can they provide treatment? What happens when children grow old? What happens if employees leave the company? According to Lucas, Lafarge did not have the answers. In practice, the company decided on a case by case basis.

Olivier Vilaça, a social science researcher who had spent three years with the company, subsequently brought in a wider perspective on Lafarge and its battle against HIV/AIDS, focusing on the global context in which the company evolved. He argued that, in the global context, HIV/AIDS could give sense to the action of global players, such as transnational companies and big NGOs, and legitimise their global presence. The pandemic could be seen as a global public arena in which actions and interactions of global actors could be understood in a political framework. Vilaça characterised Lafarge's commitment as 'ethical'. Although the logic of economics is key for the private sector, not all companies have the same perception of their role within society. Companies typically defend particular models that characterise the way they organise their business, and the way they perceive the governance process. Lafarge could be called a 'liberal' (according to Henry Mintzberg's typology) company with a certain idea of its social role, especially through revenue redistribution, and the belief that corporate governance should be led by executives instead of shareholders, the public sector or the labour force. Companies such as Lafarge had an interest in demonstrating that their model is the right one and, in a wider perspective, that capitalism is able to solve the problems that globalisation seems to cause. What made Lafarge's commitment in the fight against HIV/AIDS possible were, locally, the urgency to treat employees living with HIV/AIDS for moral and economical

reasons, and, globally, the awareness that the company was facing a global challenge, a common threat. By tackling this issue, Lafarge was giving sense to its global presence and legitimising its governance model.

In the discussion, the question was raised of how Lafarge dealt with the principle of compliance with national legislation in countries where the legislation goes against some of the other principles. Lucas responded that while Lafarge must respect local conditions, the company also had some degree of freedom at its own sites. For instance, Lafarge is free to respect the employees and to give them the right to express themselves. In this way, it may be possible to move progressively in the direction of guaranteeing human rights to all employees. Vilaça added that the Global Business Coalition has some leverage over governments. On the question of whether Lafarge's activities were primarily a matter of its public image, providing a positive influence on Lafarge's sales, Lucas answered that the company regarded this as more of a strategic than a marketing issue. The programmes are expected to continue, even in years that business may be going less well. It was proposed that Lafarge and similar companies should not be considered responsible for taking over the healthcare system in their localities of operation. Partnerships with governments and international donor agencies should enable dependents and others (and possibly even the employees themselves) to receive antiretroviral treatment, instead of having companies bear the full burden and having them have to decide

on a case by case basis. Participants were generally impressed by what Lafarge had done; one participant stated that the initiatives taken by the company were valuable, but emphasised that in a general discussion on how to deal with the HIV/AIDS pandemic, these should be positioned in a larger framework of governance (including NGOs and the state). It was responded that strong states, NGOs and companies are all needed and should work together in networks, and that each actor, including companies, had a responsibility to contribute to building the state. One participant argued that it is not possible not to defend the state: although it is not necessary that state institutions deliver all health care, at least states should make sure by way of regulation that everyone has access to health care. Another participant was more sceptical about the role of states: African states could be considered to be patrimonial states, in which elites fight for control over resources. Most of Africa exists in the informal economy and the state is increasingly bypassed by the interventions coming from NGOs and business.

Ethical implications of treatment versus prevention-led strategies

Dr. Lynne Webber, Clinical Virologist and Consultant Pathologist at Lancet Laboratories and Lecturer at the Department of Medical Virology, University of Pretoria, gave a stimulating presentation on preventative strategies and vaccine developments, from a South African perspective. The history of HIV research is

plagued with early optimism ('We hope to have a vaccine ready for testing in two years', was said in 1984). She stated that the reality was that a vaccine would certainly not be ready in 2006 and probably not even in 2016. Webber presented four big problems in vaccine development. First, there are no acceptable animal models that can be directly extrapolated to humans. Second, she claimed, it was ethically unacceptable to use 'live attenuated' HIV vaccines in trials. Third, science is confronted with a massive immunological challenge (many different vaccines will be needed for different people). Finally, a partially effective vaccine is not good enough. There are also problems in antiretroviral therapy. Since HIV is a rapidly mutating virus that is quickly developing multi drug resistance and is getting fitter as well, Webber stressed the importance of keeping track of exactly how the virus is changing everywhere across the globe, but especially in Africa (at geographic hotspots of extensive recombination). Generally, viral diversity is a growing feature of the HIV pandemic. Webber pointed out that not enough is known about this diversity yet, though there are strategies available to monitor: national serosurveys should therefore be put into place. Furthermore, since vaccines would not become available soon, more energy should be put into prevention. Knowledge of what has already happened in earlier waves of the epidemic should be used to prevent similar things from happening again, both at the same place and elsewhere. Webber emphasised that the world needs to act now. Several

interventions are available, such as the prevention of mother-to-child transmission. It should be noted that the large-scale provision of antiretroviral therapy depends on the behaviour of the patients for its success. If patients do not take their drugs, the development of drug resistance is enhanced. If patients do not protect others from getting the virus, these mutated virus strains start spreading through the population. It should also be borne in mind that the drugs could have severe side effects. For doctors, it is considered ethically right to treat the individual patient. At the epidemiological level, however, the ethical issues are more complex. It may be better from the epidemiological perspective sometimes not to provide treatment, but doctors, like Webber herself, are not likely to follow that road.

In the discussion, a parallel was drawn with other infectious diseases and the question was raised of how different HIV is from tuberculosis, for instance, which is also developing multiple drug resistance. A plea was made that the public health system should tackle the issue of drug resistance, but that this resistance should not be used as a reason for not providing treatment to patients. Countering this claim, another participant argued that HIV is an exceptional virus and should be fought in exceptional ways. On a more positive note, it was remarked that HIV research had greatly increased international collaboration in a very short period and had resulted in spin-off (drugs developed for other diseases than HIV/AIDS). Webber replied that indeed scientists are living in exciting

times and have done more than ever. They may even have a solution that works within a few years, but they cannot anticipate it yet. Participants asked several questions about live attenuated HIV vaccines: Who would be prepared to participate in trials? What are the research ethics questions that arise in such trials? Live attenuated virus vaccines may have a negative effect not only on the person treated, but also on the sexual partners of this person, and ultimately on the whole community. Vulnerable populations must be protected, so it is unacceptable to pressurise poor people without an understanding of the situation to participate.

The crucial question asked after Webber's presentation was: Should antiretroviral therapy be scaled up in Africa, or not? The epidemiological data suggest a need for caution in scaling up. But also, if treatment were not provided, people could still get the treatment on the black market. What is at issue here is the completion of therapies. Non-completion is often a matter of ability rather than choice. From this, some participants concluded that the solution to the development of multi drug resistance is not to make access to the drugs harder. If treatment were provided on a large scale, the programme should be sustainable: will it be possible to keep everyone on treatment? However, one participant insisted that other medical interventions should be considered that could be applied on a large scale in a more cost-effective manner than large-scale antiretroviral therapy. Potential interventions that could be further investigated are male circumcision and the use of

intra-vaginal microbicidal agents by women (starting with the cheapest and simplest of all, a little lemon juice). In addition to medical interventions, sexual behaviour needed to be changed, and the participants acknowledged that to change sexual behaviour one first needed to change people's worldviews.

Role of religion and ethics in the prevention and control of the epidemics

The workshop participants received a presentation on 'UNDP/HARPAS Religious Leaders Initiative on HIV/AIDS in The Arab Region: the Ethics of a Developmental approach' by Dr. Khadija Moalla, Dr. Ehab El Kharrat MD, and Sayed EL Zenari MD of the UNDP HIV/AIDS Regional Programme in the Arab States (HARPAS), Cairo, Egypt. Any effective response to HIV/AIDS cannot stop at the health approach, but must involve many sectors of the society in a concerted effort. In the Arab world, like elsewhere, HIV/AIDS provokes deep ethical issues and dilemmas. Compassion, breaking the silence, overcoming denial and a proactive stance can be challenged by moral concerns about modesty, chastity, avoiding undue alarming of the public and a conviction that there are other priorities towards which the limited resources available should be directed. HARPAS identified religious leaders as key players in the region, who have an enormous impact on people's values and attitudes. It was considered both possible and worthwhile to win their support to proven and human rights based responses to the

HIV/AIDS epidemic. The Religious Leaders Initiative started in April 2004, and involved a technical meeting for key religious leaders, to prepare for the major Cairo Colloquium (11–13 December 2004) that involved 80 top Muslim and Christian leaders. They produced a progressive Declaration with a major change from their earlier stance. Since then, the Declaration had been endorsed by thousands of Muslim Imams and Christian Ministers in the region. It had been described as revolutionary by reporters covering the story. It emphasised the urgency of responding to the HIV/AIDS epidemic, calling for awareness campaigns, outreach to vulnerable groups, treatment and care for those infected and affected by the virus. It even explicitly supported women's right not to be infected, implying a possible review of the age-old power imbalance of gender in sexual relations in the region. Penal views explaining away the epidemic as an expression of God's wrath upon the unrighteous are easily subscribed to in this region and elsewhere. But after the courageous stance of major religious leaders, the circumstances had been changing. The two HIV/AIDS manuals written by and for Muslim and Christian religious leaders had been well received by mid-level and grass root leaders all over the Arab world. They contained suggested material for sermons and religious lessons on HIV/AIDS-related issues, which integrate fact-based messages from not only the medical but also the broader development perspective, and a human rights based approach based on references from the Koran and

Hadith, or the Bible and its scriptures. Sub-regional training workshops to promote the toolkits are currently being organised by UNDP's HARPAS and national initiatives are mushrooming in almost every Arab country, creating a regional transformation. The change of heart individually among religious leaders takes place not only through sharing accurate information but also through religious leaders meeting face to face with People Living with HIV and AIDS. Participants also benefit from a package of leadership development exercises that encourage them to go beyond statistics and intellectual arguments, in order to develop an empathetic understanding of the issues that surround HIV/AIDS. The lessons learned from the promising results of this initiative included the value and methods of building trust, the importance of an empathetic and motivational approach, the effectiveness of religious leaders in either promoting or hindering developmental approaches, the gradual nature of the mechanisms of transformation and the possibility of discovering new meanings of virtue and spiritual values even among the most conservative circles. UNDP did not 'tell' the leaders what to do; rather it provided the platform for them to explore the issues in a safe and warm environment and trusted that they would find the right answers. Facing HIV/AIDS provokes either rigidity or open mindedness and compassion. Religious leaders in the Arab region are moving in the direction of the latter. This may have long-term repercussions in their reactions to many developmental issues including

women's rights, governance and access to knowledge. All of these aspects should be seen as essential components in any effective response to HIV/AIDS.

In the discussion, participants congratulated the UNDP HARPAS team upon the results already achieved. It was asked whether the approach would also work elsewhere: in Africa, for example. The general answer was positive: if you can find and influence the opinion leaders, who are often the religious leaders, you may be able to move the society. It does not go without martyrs and pioneers, however. But there are seeds of hope for a new understanding of religion. One participant expressed worries about the relation between science and religion. The freedom of the scientific community is at stake here: it may be dangerous to empower religion to get a foot into science and medicine. It was replied that in the Arab world there currently are gaps between government, academia and religious leaders. What the programme did was to start a dialogue between these three sectors of society. In fact, the scientists had nothing to lose in this interaction. If scientist were not doing anything, wrong things could happen, such as fatwas on the use of condoms. In the current situation, the programme is trying to convince religious leaders to talk to and learn from scientists. But there is a need for research on the role of religion in democratisation. The hope is that the acknowledgment of the existence of a pluralistic Arab society could act as a first step towards the freedom of thought and the freedom of science. Since scien-

tists are much respected and listened to by progressive communities in the Arab world, they bear a responsibility to take up an advocacy role.

Summary of salient points

Social ethical problems of combating the long wave HIV/AIDS pandemic

The epidemic reflects very powerful social forces (the socially deprived are more at risk, e.g., very young girls being infected by older men).

- Leadership and legislation are needed. Currently, some leaders are not willing to discuss it.
- States have a responsibility to protect all people. Do these people know about it? Do they want to be protected?
- Public support for dealing with HIV/AIDS in developing countries should be gained by presenting it as an ethical issue to the public and by referring to different kinds of reasons, including self interest.
- Whilst the provision of health care is the responsibility of the state, companies, NGOs, intergovernmental organisations and others may counterbalance the failure of public health systems.
- However, the lack of equitable access to health care remains a main problem. More can be done to improve health systems. There is a role for the global research community here.
- The cost-effectiveness approach to health system reform in developing countries that was driven by the international monetary institutions has resulted in major difficulties, since it is money-driven and not

value-driven.

- Policymakers should better appreciate the position that Africans, through their informal economy, are finding some solutions themselves.
- There is an urgent need to use society's knowledge of what has already happened to prevent similar things from happening again, both at the same place and elsewhere; it is vital to act now.

Ethical issues in HIV/AIDS research in developing countries

- The guidelines that are available for biomedical research in developing countries contain principles (e.g., human rights, benefit sharing) that should also guide HIV/AIDS research. If HIV/AIDS is considered to be an exceptional case, this could give rise to reasons to deviate from these guidelines. It is therefore vital that all research proposals are reviewed by ethics committees.
- It is very important to promote local involvement with clinical trials.
- It is necessary not only to focus on trials, but also to study the infrastructure needed to deliver effective care.
- It is vital to continue research on the virus, since there are huge areas of ignorance. Particularly, research is needed to follow the changes of the virus; for this, relatively cheap monitoring strategies exist.
- In testing live attenuated virus vaccines, the negative effects on communities—that are hard to restrict—must be taken into account.

Ethics and action of multinational companies against HIV/AIDS

- Companies providing treatment for their employees find it difficult to decide who else should receive it. The way forward is to form partnerships with NGOs and (inter-) governmental actors.
- *Ethical implications of treatment versus prevention-led strategies*
- It is unwise to promise that a vaccine will be available within a couple of years.
- One can do good for individuals in the short term in a way that harms the public in the long term. Thus, in the battle against multiple drug resistant HIV, it is necessary to keep a critical look at the completion of treatments and to ensure that treatment can be sustained for everyone involved.

Role of religion and ethics in the prevention and control of the epidemics

- It is of critical importance to use the current window of opportunity in areas where the epidemic is starting to take off, e.g. the Arab region.
- The sexual behaviour of those at risk could and should be changed by trying to influence their worldviews.
- Changing people's worldviews can be done, in the Arab world and elsewhere, by starting a dialogue with religious leaders.
- Scientists can facilitate this process by undertaking research on topics like the effects of religion in HIV/AIDS and by playing an advocacy role.

Future work for Pugwash

At the end of the workshop, potential future work for Pugwash (and others) was discussed. Several proposals were put on the table.

First, it was proposed to broaden the scope from HIV/AIDS to infectious diseases. Not everyone was convinced that HIV/AIDS is special as compared with other infectious diseases. The health situation in developing countries is so bad that it does not make sense to be focused on HIV/AIDS alone. To make a special case of HIV/AIDS may even be considered unethical. It should be considered as one of the infectious diseases and attention should be drawn to the right of access to health care in the developing world. Too little research is being conducted on health systems. Other reasons to broaden the agenda to infectious diseases are that the same or similar sorts of social factors play a role (the poor are the most affected), that opportunistic diseases may increase (e.g., TB 'piggybacking' onto HIV/AIDS), that infectious diseases in general pose a global security threat, and that the security implications of other infectious diseases could be more serious than HIV/AIDS.

Second, the scientific community should speak truth to power. Pugwash is one of the vehicles that can facilitate this. The community should stress the importance of evidence-based decision making.

Third, Pugwash should further investigate new frameworks for partnering private companies, NGOs and governments. Maybe Pugwash could also work on the new global Medical Research and Development Treaty

that the Consumer Project on Technology and others have recently proposed. The signatories of this treaty would take on obligations to fund a minimal amount of basic biomedical research as well as priority research for neglected diseases, pharmaceuticals, vaccine development, diagnostic tools, and so on.

Fourth, the results of the four Pugwash workshops now held on HIV/AIDS should be brought to other countries. Both the Muslim world and sub-Saharan Africa were mentioned as areas where follow-up work should be done on the HARPAS programme in the Arab world. Russia was also mentioned. But the most concrete proposal was to engage further with the Indians, who were present at the third Pugwash Workshop on HIV/AIDS. The plan is to organise a 5th workshop in New Delhi in 2006, where the insights that have been gained so far will be used to sound the alarm to India.

Fifth, there was a general consensus that ignorance about the nature and scale of sexual violence worldwide in the face of the HIV/AIDS pandemic, and ignorance about the underlying 'social construction' of sexuality, was a major block to effective prevention. The participants welcomed the suggestion of several that an independent collaborative research proposal to address these difficult but necessary issues be drafted as one of the outcomes of this workshop.

Six, a Pugwash Occasional Paper should be prepared, based on the work done in these four workshops.

Participants

Dr. Joan **Box**, Clinical Research and Ethics Liaison Manager, Medical Research Council, London, UK

Col. (ret.) Pierre **Canonne**, Member, Pugwash Council [formerly: Senior Lecturer, Disarmament and Arms Control, Univ. Marne-la-Vallés/Paris, France; Head, Training and Staff Development Branch, OPCW; Senior Staff, Strategic Affairs Department, Ministry of Defence; Counsellor, Permanent Mission of France to the Conference on Disarmament, Geneva]

Prof. Nola **Dippenaar**, Professor, Dept. of Physiology, School of Medicine, Faculty of Health Sciences, University of Pretoria, Pretoria, South Africa; Vice-Chair, South African Pugwash Group

Dr. Ehab El **Kharrat**, MD, MSc Psychiatry, PhD, Consultant at UNDP- HIV/AIDS Programme in The Arab States; Founder and Executive Director of the Freedom, HIV/AIDS and Drugs Programme

Dr. Sayed El **Zenari**, MD, MPH, Consultant of UNDP- HIV/AIDS Programme in The Arab States; Director of Projects in the Arab Medical Union

Dr Clive **Evian**, Medical Officer, Johannesburg Hospital and freelance practice, South Africa; Director, AIDS Management and Support

Prof. Georg **Frerks**, Professor of Conflict Prevention and Conflict Management, Centre for Conflict Studies, Utrecht University, The Netherlands; Professor of Disaster Studies, Wageningen University; Chairman, Pugwash Nederland

Prof. Olga **Kubar**, Chair of the Forum for Ethics Committees in the Commonwealth of Independent States (FECCIS) and the Head of Clinical Department, Saint-Petersburg Pasteur Institute, Saint-Petersburg, Russia

Mr. Patrice **Lucas**, Vice President, Social Policies, Lafarge, Paris, France

Dr. Khadija T. **Moalla** (Tunisia), HIV/AIDS Policy Specialist, UNDP Regional Coordinator, HIV/AIDS Regional Program in the Arab States, Cairo, Egypt

Prof. Marie **Muller**, Chair of the Pugwash Council; Dean, Faculty of Humanities, University of Pretoria, South Africa;

Prof. Catherine **Peckham**, Professor of Pediatric Epidemiology, Institute of Child Health, London, UK; Vice-Chair, Nuffield Council on Bioethics

Dr Arthur **Petersen**, Senior Policy Analyst and Director, Methodology & Modeling Program, Netherlands Environmental Assessment Agency (MNP), Bilthoven, The Netherlands; Treasurer, International Student/Young Pugwash; Treasurer, Pugwash Netherlands

Dr. Marie-Anne **Phelouzat**, Assistant, Association Suisse Pugwash, Geneva; High school teacher, Geneva [formerly: Maitre-assistante, Faculty of Medicine, Geneva, Switzerland]

Prof. Gwyn **Prins**, Alliance Research Professor, London School of Economics and Political Science, UK and Columbia University, New York.

Dr. Gilles **Raguin**, Infectious Diseases Specialist, Hôpital Saint-Antoine, University of Paris, France [formerly: Director, International Operations, Médecins du Monde]

Dr. Michael **Selgelid**, Sesquicentenary Lecturer in Bioethics, Centre for Values, Ethics and the Law in Medicine; and Unit for History and Philosophy of Science, University of Sydney, Australia

Dr. Carthage **Smith**, Deputy Executive Director, International Council for Science (ICSU), Paris, France; Ex-Officio Representative on the UNESCO World Commission on the Ethics of Scientific Knowledge & Technology (COMEST)

Prof. Jean-Pierre **Stroot** (Belgium/Switzerland), retired Physicist ; President of the Board of the Geneva International Peace Research Institute (GIPRI), Geneva; Association Suisse Pugwash, Geneva

Mr. Olivier **Vilaca**, PhD Candidate, Champagne-Ardenne University, Reims, France; Researcher, Lafarge HIV/AIDS Project Manager, Paris

Dr. Lynne **Webber**, Clinical Virologist and Consultant Pathologist, Lancet Laboratories; Lecturer, Department of Medical Virology, University of Pretoria

PUGWASH STAFF

Claudia Vaughn, Program Coordinator, Pugwash Conferences, via della Lungara 10, I-00165 Rome, Italy, Tel. (+39-06) 687-2606, Fax: (+39-06) 687-8376, Mobile: (+39-333) 456-6661, E-mail: pugwash@iol.it



Thinking with Einstein: The Responsibility of Science for Peace in the 21st Century

Berlin, Germany, 14-16 October 2005

By Goetz Neuneck

From 14-16 October 2005 the International Conference “Thinking with Einstein: The Responsibility of Science for Peace in the 21st Century” brought together several hundred scientists and participants at the “Urania in Berlin”. Albert Einstein, who lived and worked in Berlin from 1918 to 1921, was a scientist who was also passionately engaged in the political debates of his time and he was always aware of the social responsibility that should accompany his profession. For these reasons, it was particularly appropriate to organize such an event in Berlin during the International Year of Physics in Berlin.

The three day meeting was part of the International Einstein Year 2005. The Conference was sponsored by the Federal Ministry of Education and Research (BMBF) and was opened by then Minister Edelgard Bulmahn, who had participated as an MdB at the Pugwash Annual Conferences in 1991 and 1992. All speakers at the opening event emphasized the important role Pugwash has played in many conflict eras. Especially, all of them deeply regretted very much the absence of Sir Joseph Rotblat, who had previously agreed to come to this meeting. In his absence, a larger than life-size photo of Sir Joseph Rotblat reminded all participants to strive for a nuclear weapon-free world.

Marie Muller, chair of the Pugwash Council spoke in her plenary lecture about the work of Pugwash, especially on human security problems in Africa. On Saturday, internationally renowned scientists discussed, in a series of forums, the issues of scientific responsibility and whistle blowing, peace through sustainability, novel social challenges posed by “key technologies”, ambivalence over various military uses of science and technology, arms control as a response to new military strategies and modern weapons technologies, privatized wars and state interventionism, and global governance. Several Pugwashites participated in these discussion groups.

The main objective of the plenary discussion “For a future Without Weapons of Mass Destruction” was to foster political dialogue. Pugwash Secretary General, Paolo Cotta-Ramusino, participated together with representatives from IPPNW, the European Government, the German Ministry of Foreign Affairs and the German research community. The German Pugwash Group and its support organization, the Federation of German Scientists, was one of the five organizers providing much organizational and conceptual support for the conference.



Top left: Marie Muller; right: Paolo Cotta-Ramusino. Bottom: Goetz Neuneck, Marie Muller, Paolo Cotta-Ramusino, and Kevin Clements.

Report from International Student/Young Pugwash

Report

Juan Pablo Pardo Guerra

The second half of 2005 was a period marked by the consolidation of International Student/Young Pugwash's (ISYP) standing projects, in particular, the annual ISYP Conference and the ISYP Journal on Science and World Affairs. The nature and outcomes of these are briefly described below in the context of other overarching events.

During the 21st and 22nd of July 2005, 30 students and young professionals from 16 countries gathered in Hiroshima, Japan, as part of the 2005 ISYP Conference, "Engaging a new generation for peace." Aimed at addressing the complex theoretical and practical features of human security, the conference provided a forum in which young professionals discussed the means by which solutions to global problematques might be achieved. As has become the tradition, the ISYP Conference also included spaces for reflecting on modern conflicts. Such was the case of the Sir Joseph Rotblat Symposium, which focused on ways of engaging civil society in the quest for nuclear disarmament. As an the outcomes of the 2005 Conference, the Executive Board of ISYP produced a Vision Statement which synthesises the aims of the Student Pugwash community as well as its relation to the overall Pugwash tradition.



International Student/Young Pugwash participants at the Hiroshima conference, July 2005

In December 2005, the print version of the ISYP Journal on Science and World Affairs was presented to the Pugwash community. Dedicated to the memory of Sir Joseph Rotblat – a close friend and supporter of Student Pugwash – the electronic edition of the ISYP Journal on Science and World Affairs was also made available at www.scienceandworldaffairs.org. By including articles which touch upon topics ranging from biotechnology and the social responsibility of scientists to non-proliferation and regional security, the ISYP Journal is a forum in which

both young and established scholars can present their views on a number of timely issues.

In parallel to the evolution of these projects, the composition of the Executive Board of ISYP has also experienced some important changes. As part of the normal

renewal process of ISYP's Board, Arthur Petersen (The Netherlands) and Moira Goodfellow (Canada) left the Executive Board of ISYP in October 2005. As of December 2005, the composition of the ISYP Board is: Jessy Cowan-Sharp (Canada), Rian Leith (South Africa), Irna van der Molen (The Netherlands), Wakana Mukai (Japan), Nagappan Parasuraman (India), Benjamin Rusek (USA), and Juan Pablo Pardo-Guerra (Mexico). An organising committee for the 2006 ISYP Conference has also been established, consisting of the ISYP Executive Board and Inas Ezz and Karim Kadry (Egypt).

Mission possible: engaging a new generation

ISYP vision statement, Hiroshima, Japan, 27 July 2005

With the invention of nuclear weapons, humanity for the first time obtained the capacity to extinguish itself. Today, our global society faces continued threats from nuclear weapons and nuclear proliferation, as well as social, economic and environmental problems that put human security at risk. New tools need to be developed within an interdisciplinary framework to actively search for and realise sustainable and equitable solutions. We have to learn to think in a new way.

The Russell-Einstein Manifesto articulates the dangers of war in the age of the hydrogen bomb and humanity's responsibility to prevent universal death. Guided by the Manifesto, International Student/Young Pugwash draws together international students and young professionals concerned with global problems and the socially responsible application of science and technology. Through exposure to a diversity of disciplines, cultures, and ideologies the members of ISYP form common understandings and collaborative links at an early stage in their careers and keep each other committed to ISYP's ideals.

ISYP has a mutually reinforcing relationship with the Pugwash Conferences on Science and World Affairs that enables the two organisations to focus in parallel on both the root causes and the symptoms of global insecurity. Through the intellectual proximity of these efforts, the Pugwash movement can foster truly creative approaches to world affairs.

The result of this relationship is an unprecedented opportunity for young people to concentrate on long-term, sustainable and equitable solutions. In order to pursue this goal, ISYP's focus is on educating students and young professionals; promoting dialogue and collaboration between young scientists, policy makers, and international institutions; and preparing members to reach crucial positions within the international policy community.

In this way, ISYP is committed to transfer the spirit of Pugwash to future generations. To engage a new generation, ISYP remains, and will continue to remain, infused by the indelible spirit echoed by the Russell-Einstein Manifesto: Remember your humanity, and forget the rest.



International Student/Young Pugwash
Flat A Museum Mansions, 63A Great Russell Street, London
WC1B 3BJ, UK; board@student-pugwash.org

Hermann Bondi

(1919-2005)

Hermann Bondi, co-author of the steady-state theory of the universe and a member of UK Pugwash, died on September 10, 2005 at the age of 85.

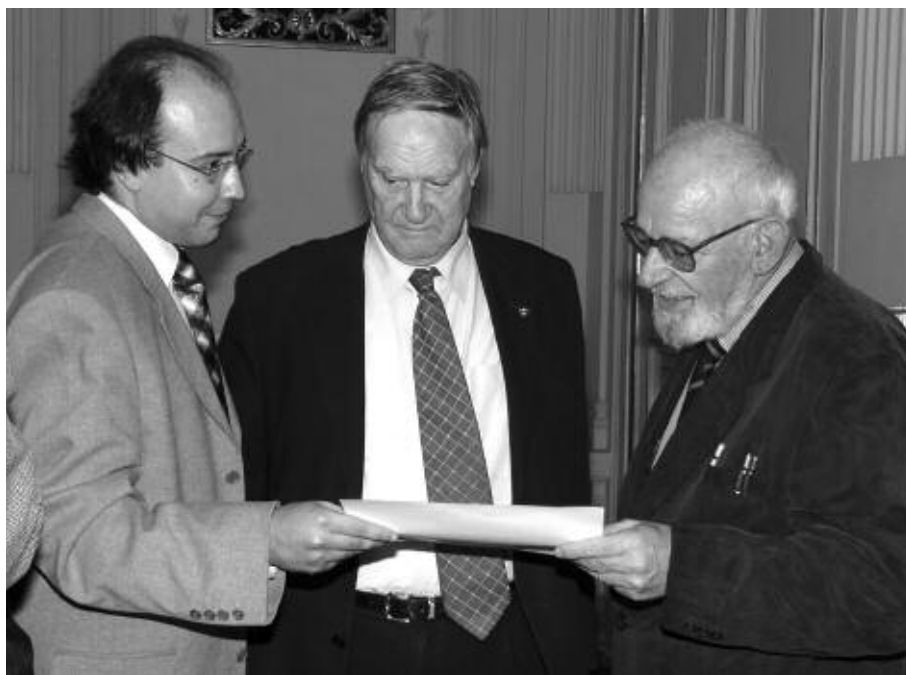
Born in Vienna in November 1919, Bondi attended Trinity College, Cambridge, where he earned a degree in mathematics in 1940. As an Austrian citizen, Bondi was interned by the UK government in Canada until 1942, when he returned to Britain to work for the Admiralty on radio installations, particularly the theory of aerials. This work brought him into contact with Thomas Gold and Fred Hoyle and led to the collaboration that in 1948 produced their steady-state theory of the universe (positing that the universe has always existed in a steady state, as such having no beginning or end).

Following the war, Bondi returned to the University of Cambridge in 1945 and remained there until 1954, when

he became Professor of Mathematics at King's College, London, where he taught and did research until 1971. Other duties included tenure as Director General of the European Space Research Organization from 1967 to 1971, and Chief Scientific Advisor to the UK Ministry of Defence from 1971 to 1977. From 1983 to 1990, Bondi was Master of Churchill College, University of Cambridge.

Elected a Fellow of the Royal Society in 1959 and knighted in 1973, Bondi was very interested in the public education of science, and was an innovator in using television to popularize science.

Bondi attended several Pugwash conferences and meetings, the first being the 14th Pugwash Conference, *International Cooperation for Science and Disarmament*, in Venice, Italy in April 1965.



Russian Pugwash memorial service for Joseph Rotblat, Mikhail Lebedev, Sergei Kapitsa, and Francesco Calogero, Moscow, October 2005

Philip Bartlett Smith (1923- 2005)

On behalf of the Board and members of Pugwash Netherlands, I have the sad task of informing the international Pugwash community of the passing away on December, 15, 2005 of Philip Bartlett Smith. Phil was born in 1923 in the United States as an American citizen. In 1950, when the McCarthy era made it impossible for a person of his convictions to find employment, he had to leave. Phil worked in Brazil for seven years, and then moved to the Netherlands, where he spent the majority of his working life. From 1963 till his retirement in 1988 he was a Professor of Experimental Nuclear Physics at Groningen State University.

Phil Smith was a Pugwashite from the early 1960s, and a member of the Pugwash Council from 1987 till 1992. He served Pugwash Netherlands as secretary, treasurer and member of the Board during the full forty years of his membership.

Speaking at his funeral on December 20th, in Groningen, I compared the significance of Phil Smith for Pugwash Netherlands with that of Jo Rotblat for Pugwash International. We called him “Mr. Pugwash Netherlands”. Jo and Phil both devoted half their lives to the cause of Pugwash. One of Phil’s last written contributions was an obituary of Jo Rotblat, published in the INES Newsletter of September 2005, and in the Newsletter of Pugwash Netherlands. He there expressed his great admiration for the courage of Jo Rotblat, as the only scientist to leave Los Alamos before the end of the Second World War, soon after it became clear in the autumn of 1944 that Nazi Germany would never succeed in making an atomic bomb before the end of the war. He called Jo a man “who invented conscience.” We take the liberty of applying these words to Phil himself. This admiration was characteristic for Phil. During his Council Membership he had disagreed many times with Rotblat and other Council Members, for

instance on the value of the NPT. He dismissed the core concept of the NPT, the legal acceptance of Nuclear Weapon States as against Non - Nuclear Weapon States, of the “haves” versus the “have-nots,” as an error of principle. Indeed, we must admit that Article VI has been misused for 35 years as a legal loophole to legitimate the possession of nuclear weapons.

Phil had a tense relationship to his native country. He deeply rejected its power policy, not only in recent years, but also far earlier. He labeled it “The holy American Empire,” with great abhorrence. As one of his sons said, he was an early “asylum seeker.”

Phil Smith, who around 1963 became the secretary of Pugwash Netherlands, in succession to the founder Hans Tolhoek, served on the Board till January 2003. For many years, till around 1985, he was factually the only Board member, and even in later years, when the Board grew from three till seven persons, he still remained the heart and soul of the organization. Phil withdrew from the Board in 2003, and to the surprise of many also resigned as member. In his last years he wanted to be free to speak and write unfettered on the many subjects of his concern: armament; environment and energy; poverty and world economics. To his resignation we can only say “deplorable,” “respect” and “understand.” Phil Smith probably had greater affinity to the unyielding Bertrand Russell of earlier days than to the Pugwash Community of today.

But throughout his last two years it was clear that Phil could not really live without Pugwash, nor could we forget our “Mr. Pugwash Netherlands.” So we came to that last ceremony, to say farewell to our respected and beloved Philip Bartlett Smith, fighter for justice and peace. May he rest in peace.

—*Bart van der Sijde, Secretary, Pugwash Netherlands.*

Pugwash Council for the 2002–2007 Quinquennium

Amb. (ret.) Ochieng Adala, of the Africa Peace Forum (APFO) in Nairobi, Kenya, is former Permanent Representative of Kenya to the United Nations in New York, former Deputy Secretary/Director for Political Affairs, Ministry of Foreign Affairs and International Cooperation, and former Ambassador of Kenya to the Arab Republic of Egypt, the Kingdom of Morocco, Algeria and Tunisia; APFO, P.O. Box 76621, Tel.: (+254-2) 574092/6, Fax: (+254-2) 561357, E-mail: kilenem@africaonline.co.ke

Dr. Jeffrey Boutwell is Executive Director of Pugwash Conferences on Science and World Affairs, former Associate Executive Officer at the American Academy of Arts and Sciences in Cambridge, and former Staff Aide at the National Security Council in Washington, DC; Pugwash Conferences, 2029 P St., NW, Suite 301, Washington, D.C. 20036, Tel. (+1-202) 478-3440, Fax: (+1-202) 238-9604, Email: Pugwashdc@aol.com

Prof. Francesco Calogero is Professor of Theoretical Physics at the University of Rome “La Sapienza”. Formerly, he was Secretary-General of Pugwash (1989-1997), Chair of the Pugwash Council (1997-2002), and a member of the Governing Board of SIPRI (1982-1992); Pugwash Conferences, via della Lungara 10, I-00165 Roma, Italy, Tel. (+39-06) 687-2606, Fax: (+39-06) 687-8376, E-mail: francesco.calogero@roma1.infn.it / francesco.calogero@uniroma1.it (please use BOTH)

Col. (ret.) Pierre Canonne is a Lecturer in Disarmament and Arms Control issues at the Univ. Marne-la-Vallée/Paris, former Head of TDB at the Organization for the Prohibition of Chemical Weapons in The Hague, former Senior Staff in the Strategic Affairs Department of the French Ministry of Defense, and former Negotiator, Chemical Weapons Convention; 29 Avenue Danton, 43300 Langeac, France, Tel./Fax: (+33-4) 71 77 24 57, E-mail: pmcanonne@club-internet.fr

Mr. Chen Jifeng is Convener of the Pugwash Group of China; Vice President of the China Arms Control and Disarmament Association; Executive Vice Presi-

dent of the China Association for Promotion of International Science and Peace; he was formerly Secretary General of the Chinese People's Association for Peace and Disarmament (CPAPD) in Beijing, and Council Member of the Chinese Association for International Understanding; CPAPD, PO Box 188, 15 Wanshou Rd., Beijing, China 100036, Tel.: (+86-10) 6827-1736 or 6821-4433 (ext. 8586), Fax: (+86-10) 6827-3675, E-mail: jifengchen66@sina.com

Prof. Paolo Cotta-Ramusino is Secretary General of Pugwash Conferences (since August 2002); Professor of Mathematical Physics at the University of Milan; Director of the Program on Science, Technology and International Security, Landau Network – Centro Volta, Como; and former Secretary General of the Union of Italian Scientists for Disarmament (USPID); Department of Physics, University of Milan, Via Celoria 16, 20133 Milan, Italy, Tel.: (+39-02) 5031 7277, Fax: (+39-02) 5031 7480, E-mail: cotta@mi.infn.it

Dr. Lynn Eden is Associate Director for Research and Senior Research Scholar at the Center for International Security and Cooperation (CISAC) at Stanford University in California, and co-chair of the US Pugwash Committee; CISAC, Encina Hall, 2nd floor, Stanford University, Stanford, California 94305-6165, Tel.: (+1-650) 725 5369, Fax: (+1-650) 724 5683, E-mail: lynnedden@stanford.edu

Prof. Galia Golan-Gild is Professor Government, Interdisciplinary Center (IDC), Herzliya, Israel, and Professor Emerita of the Department of Political Science, Hebrew University of Jerusalem. She was formerly the Darwin Professor of Soviet and East European Studies, and Chair, Department of Political Science, Hebrew University of Jerusalem; E-mail: ggolan@idc.ac.il

Dr. Karen Hallberg is Professor of Physics at the Instituto Balseiro (Bariloche, Argentina), Research Fellow at the Argentine National Council of Science and Technology, a member of the Board of the Argentine Physical Association, and a member of the Bariloche Group for

Science and World Affairs; Centro Atomico Bariloche, 8400 Bariloche, Argentina, Tel.: (+54-2944) 445170, Fax: (+54-2944) 445299, E-mail: karen@cab.cnea.gov.ar

Prof. Pervez Hoodbhoy is Professor of Nuclear Physics at Quaid-e-Azam University in Islamabad; Chairman of Mashal Books; an independent maker of documentary films for popularising science in Pakistan; and an activist for peace and social reform; E-mail: hoodbhoy@pierre.mit.edu

Gen. (ret.) Dr. Mohamed Kadry Said is Head of the Military Studies Unit and Technology Advisor at the Al-Ahram Center for Political and Strategic Studies, Al-Ahram Foundation in Cairo, Egypt; Professor of Missile Mechanics of Flight at the Military Technical College (MTC) in Cairo; Member of the Committee of Strategic Planning of the Egyptian Council of Space Science and Technology; Al-Ahram Center for Political and Strategic Studies, Al-Galaa St., Cairo, Egypt, Tel.: (+20-2) 770-5630, Fax: (+20-2) 578-6037, E-mail: mkadrym@netscape.net

Prof. Saideh Lotfian is Associate Professor of Political Science at the Faculty of Law and Political Science at the University of Tehran, Deputy Director of the Center for Middle East Strategic Studies in Tehran, and the former Director of the Middle East Program at the Center for Strategic Research; Faculty of Law & Political Science, University of Tehran, Enghelab Ave., Tehran, Iran, Tel.: (+98-21) 611-2546, Fax: (+98-21) 896-9565, E-mail: slotfian@ut.ac.ir

Prof. Anne McLaren is Principal Research Associate at Wellcome Trust/Cancer Research UK, Institute of Cell and Developmental Biology; a Member of the British Pugwash Group; Member of the European Commission's Life Sciences Group and European Group on Ethics; and former Foreign Secretary of the Royal Society; Tel.: (+44-1223) 334 088, E-mail: a.mclaren@welc.cam.ac.uk

Dr. Steven Miller is Director of the International Security Program of the Belfer Center for Science and International Affairs at Harvard University's Kennedy

School of Government, Editor-in-chief of the quarterly *International Security*, and Co-chair of the US Pugwash Committee. Formerly, he was a Senior Research Fellow at the Stockholm International Peace Research Institute (SIPRI), and taught defense and arms control studies in the Political Science Department at the Massachusetts Institute of Technology; CSIA, J.F. Kennedy School of Government, Harvard University, 79 JFK Street, Cambridge, Massachusetts 02138, Tel. (+1-617) 495-1411, Fax: (+1-617) 495-8963, E-mail: steven_miller@Harvard.Edu

Prof. Marie Muller is Chair of the Pugwash Council, and Dean of the Faculty of Humanities and Director of the Centre for International Political Studies at the University of Pretoria. She is also a Council Member of the Academy of Science of South Africa, and Chair of the Pugwash South Africa Group; University of Pretoria, Pretoria 0002, Republic of South Africa, Tel.: (+27-12) 420-2318, Fax: (+27-12) 420 4501, E-mail: mmuller@postino.up.ac.za

Dr. Götz Neuneck is a physicist working on international security issues. He is currently Senior Fellow at the Institute for Peace Research and Security Policy (IFSH) in Hamburg; Member of the Council of the German Physical Society (DPG), and Deputy Chairman of the Working Group "Physics and Disarmament" in the DPG; IFSH, Falkenstein 1, D-22587 Hamburg, Germany, Tel.: (+49-40) 866077-21, Fax: (+49-40) 866-3615, E-mail: neuneck@public.uni-hamburg.de

Dr. Alexander Nikitin is Director of the Center for Political and International Studies (CPIS); Vice Chairman of the Russian Pugwash Committee of Scientists for Disarmament and International Security; Professor at Moscow State Institute for International Relations; First Vice-President of the Russian Political Science Association; and Board Member of the Russian Academy of Political Sciences; CPIS, Prospect Mira 36, Moscow, Russian Federation 129010, Tel. (+7-095) 280-3441, Fax: (+7-095) 280-0245, E-mail: cpis@orc.ru

Prof. Hitoshi Ohnishi is Professor of International Relations and Deputy President at Tohoku University in Sendai,

Japan; former President of the Peace Studies Association of Japan; and former Council Member of the Japanese Political Science Association; School of Law, Tohoku University, Kawauchi, Aoba-ku, Sendai 980-8576, Japan, E-mail: hitohnishi@aol.com

Gen. Pan Zhengqiang is Professor at the Institute of Strategic Studies at the National Defense University, PLA, China, a retired Major General in the Chinese People's Army, and former Director of the Institute of Strategic Studies; Institute of Strategic Studies, National Defense University, PLA, China, Tel/Fax: (+86-10) 8283-1159, E-mail: panzq@cgw.net.cn

Senator Douglas Roche, O.C., is a member of The Senate of Canada; former Visiting Professor at the University of Alberta in Edmonton; Chairman of the Canadian Pugwash Group; Chairman of the Middle Powers Initiative; and former Canadian Ambassador for Disarmament; University of Alberta, Edmonton, Alberta, Canada, Tel.: (+1-780) 466-8072, Fax (+1-780) 469-4732, E-mail: djroche@shaw.ca (or) roched@sen.parl.gc.ca

Acad. Yuri Ryzhov is President of the International Engineering University in Moscow; Chair of the Russian Pugwash Group; Academician of the Russian Academy of Sciences; former Member of the Presidential Council of the Russian Federation; and former Ambassador Extraordinary and Plenipotentiary of Russia to France; 6 Leninsky pr., Moscow, Russia, Tel.: +7-095) 236-5066 / 9761, Fax: (+7-095) 236-1469, E-mail: info@miu.ru

Air Commodore Jasjit Singh, AVSM, VrC, VM, a former veteran fighter pilot and Director of Operations of the Indian Air Force, is currently Director of the Centre for Strategic and International Studies; he was Director of the Institute for Defence Studies and Analyses (IDSA) in New Delhi (1987-2001), and a Member of the National Security Advisory Board; he has published extensively on strategic and security issues; 18/803, Heritage City, Mehrauli Road, Gurgaon-122002, India, Tel.: (+91-124) 891-7701, E-mail: jasjit_singh@vsnl.net (or) csis_india@yahoo.co.in

Prof. Ivo Slaus, a Member of the Croatian Parliament, is Chairman of the Parliamentary Subcommittee on Science, Higher Education & Technology, President of Croatian Pugwash, a Member of the Club of Rome, a Fellow of the World Academy and Academia Europea, former Professor of Physics at Rudjer Boskovic Institute, and former Foreign Secretary of the Croatian Academy of Sciences & Arts; Rudjer Boskovic Institute, Bijenicka 54, P.O. Box 1016, 10000 Zagreb, Croatia, Tel.: (+385-1) 46 80 202, Fax: (+385-1) 46 80 239, E-mail: slaus@rudjer.irb.hr

Prof. Fernando de Souza Barros is Professor Emeritus at the Physics Institute of the Federal University of Rio de Janeiro in Brazil; Physics Institute, UFRJ, Tel.: (+55-21) 2562-7337, Fax: (+55-21) 2562-7368, E-mail: fsbarros@if.ufrj.br

Dr. Mark Byung-Moon Suh, a South Korean political scientist, is a Senior Researcher in the Department of Political Science at the Free University of Berlin in Germany and President of the Korean Pugwash Group. He was formerly the director of the Korean International Peace Research Institute (KIPRI) in Seoul, and a member of the Advisory Council on Peaceful and Democratic Unification of Korea; Schlieperstr. 12, D-13507 Berlin, Germany, Tel.: (+49-30) 433-8574, Fax: (+49-30) 433-2896, E-mail: MarkSuh@gmx.net

Prof. M.S. Swaminathan is a renowned agriculture scientist. Considered the scientific leader of the Green Revolution, his approach in pioneering "ever-green revolution" is at the heart of what is now called sustainable agriculture. He is a past recipient of the World Food Prize, the Honda Award, the Ramon Magsaysay Award, the UNESCO Gandhi Prize, and the Indira Gandhi Prize for Peace, Disarmament and Development. He chaired the International Commission on Peace and Food, and is UNESCO Chair in Ecotechnology, and Chairman of the MS Swaminathan Research Foundation in Chennai, India; MS Swaminathan Research Foundation, 3rd Cross Street, Taramani Institutional Area, Chennai-600 113, India, Tel.: (+91-44) 254 2790 / 1698, Fax: (+91-44) 254 1319, E-mail: msswami@mssrf.res.in

Calendar of Future Pugwash Meetings

10-12 March 2006 Islamabad, Pakistan	<i>Pugwash Meeting no. 314:</i> Pugwash Workshop on Prospects for Self-Governance in Jammu and Kashmir, and Present Status of Cooperation and Communications across the Line of Control
17-19 March 2006 Nairobi, Kenya	<i>Pugwash Meeting no. 315:</i> Pugwash Workshop on <i>Security Architecture in the Horn of Africa Sub-Region</i>
7-9 April 2006 Chennai, India	<i>Pugwash Meeting no. 316:</i> 4th Pugwash Workshop on Threats without Enemies (HIV/AIDS)
24-26 April 2006 Tehran, Iran	<i>Pugwash Meeting no. 317:</i> Pugwash Workshop on Regional Security in the Persian Gulf Region
13-14 May 2006 Noordwijk, Netherlands	<i>Pugwash Meeting no. 318:</i> 24th CBW Workshop
26-28 May 2006 Bariloche, Argentina	<i>3rd Bariloche Regional Workshop:</i> Towards the Solution of Economic Inequities in Latin America and of their Social Consequences
7-8 June 2006 Amsterdam, Netherlands	<i>Pugwash Meeting no. 319:</i> Pugwash Workshop on Nuclear Non-Proliferation and Disarmament: The Role of Europe
16-18 June 2006 Wageningen, Netherlands	Pugwash Workshop on New Challenges to Human Security (organized by Pugwash Netherlands) (ISYP Pre-Workshop 14-16 June)
11-15 November 2006 Cairo, Egypt	56th Pugwash Conference on Science and World Affairs

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Rome Office

Accademia Nazionale de Lincei
via della Lungara, 10
I-00165 Rome, Italy
Phone: **39-06-6872606
Fax: **39-06-6878376
E-mail: pugwash@iol.it

Washington, DC Office

1111 19th Street NW
12th Floor
Washington, DC 20036
Phone: **1-202-478-3440
Fax: **1-202-238-9604
E-mail: pugwashdc@aol.com

Geneva Office

16 rue de la Voie-Creuse
1211 Geneva, Switzerland
Phone: **41-22-919-7920
Fax: **41-22-919-7925
E-mail: pugwash.GE@gcsp.ch

London Office

Flat A Museum Mansions
63A Great Russell Street
London WC1B 3BJ, England
Phone: **44-20-7405-6661
Fax: **44-20-7831-5651
E-mail: pugwash@mac.com