

Presentations delivered to the 7th World Summit of Nobel Peace Laureates



The 7th World Summit of Nobel Peace Laureates took place in Rome from November 17 to 19 and was held, as were previous Summits, on the initiative of Mikhail Gorbachev and the Mayor of Rome, Walter Veltroni.

The ceremony of the acknowledgement of Man of Peace 2006 took place before the opening of the Summit. It was awarded to Peter Gabriel.

Those taking part in the Summit were: Frederik Willem De Klerk, Mairead Corrigan Maguire, Lech Walesa, Carlos Filipe Ximenes Belo, International Atomic Energy Agency, International Physicians for the Prevention of Nuclear War, International Peace Bureau, United Nations Organization, United Nation High Commissioner for Refugees, United Nations Children's Fund, International Labour Organization, Mèdecins sans Frontières, American Friends Service Committee, Red Cross, International Campaign to Ban Landmines, Pugwash Conference. Guests of honour were: Mayor of Hiroshima and President of the World's Mayors for Peace Tadatoshi Akiba, Nobel Laureate for Medicine Rita Levi Montalcini, Man of Peace 2006 Peter Gabriel, Representative of the Weapons of Mass Destruction Commission Jayantha Dhanapala, President of the Foundation on Economic Trends and Greenhouse Crisis Foundation Jeremy Rifkin, Under-Secretary-General of the United Nations Nobuaki Tanaka and Under-Secretary-General of the United Nations Jose Antonio Ocampo.

Campidoglio, Rome, Italy

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www.nobelpeace.org



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Dear Colleagues:

Recently, I had the privilege of representing the International Peace Bureau (IPB) at the recent Summit of Nobel Peace Laureates in Rome. They adopted a very strong, clear statement on nuclear weapons. I urge you to use the Rome Declaration in advocacy and to spread it far and wide. (The Rome Declaration is available here: http://www.gsinstitute.org/docs/Rome_Declaration_2006.pdf)

Attached are selected presentations delivered at the Summit, including those of Hon. Douglas Roche, O.C., Chairman of the Middle Powers Initiative, who presented on behalf of the Nobel Peace Laureate organization Pugwash Conferences on Science and World Affairs (1995), and former United Nations Under-Secretary-General and GSI Advisory Board Member Jayantha Dhanapala, who presented on behalf of the Weapons of Mass Destruction Commission.

Sincerely,

Jonathan Granoff
President, Global Security Institute
IPB Delegate

Related Links:

International Peace Bureau
<http://www.ipb.org>

Global Security Institute
<http://www.gsinstitute.org>

Nobel Peace Laureate Summit
<http://www.nobelforpeace.org>

Middle Powers Initiative
<http://www.middlepowers.org>

Pugwash Conference on Science and World Affairs
<http://www.pugwash.org>

Weapons of Mass Destruction Commission
<http://www.wmdcommission.org>



A Call of Conscience: Nuclear Disarmament

By Jonathan Granoff

President
Global Security Institute

*Delegate of the International Peace Bureau
to the
7th World Summit of Nobel Peace Laureates*

Rome, Campidoglio, November 17, 2006

A Call of Conscience: Nuclear Disarmament



As Nobel Peace Laureates and Laureate Organizations, we have gathered here in Rome, Italy, to express our alarm at the lack of political and public attention paid to the need to eliminate dangers posed to humanity by nuclear weapons. As a representative of the International Peace Bureau and as the President of the Global Security Institute, I urge in the strongest possible terms that we use every fiber of our energies to generate a new level of public concern and advance actions to achieve nuclear disarmament. We are living in a critical moment.

We must make a clear and forceful call this year to help forge a consensus of conscience and reason. Nuclear weapons are unworthy of civilization. No other threat to human survival is as immediate and hazardous.

Trillions of dollars have been spent to develop the existing arsenals, and well over 110 million dollars are squandered each day to keep them primed and ready. Compare this to the fact that the International Atomic Energy Agency has never spent more than 110 million dollars in a year to perform all of its critical inspections worldwide.

The destructive force of a nuclear weapon is beyond human imagination. Many yield more than 70 times the horrific atomic bomb dropped upon Hiroshima. A relatively common size of a 150 kiloton yield bomb in today's arsenals is ten times the destructive force of Hiroshima, which, if dropped on Mumbai, would kill 8 million people rapidly, and many more over time. A few dozen exploding in Russia or the US would end these nations and cause immeasurable suffering, even poisoning the genetic pool. There are many in the megaton or million ton range. The triggering devices on today's weapons are the size of the Hiroshima bomb.

Nuclear weapons cannot distinguish between combatants and civilians. How can we, in good conscience, tolerate threats in our names, through our own governments, to level these horrors upon millions of normal, peaceful, law abiding, innocent people?

Today, well over a decade since the end of the cold war, over 27,000 of these radiation fire ovens with wings remain with us; Russia and the US possess over 95% of the arsenals and persist in keeping thousands on high alert launch-on-warning status.

By accident or design, over time, these weapons will be used. No use can be controlled in space or time. Nothing stimulates the desire for, and acquisition of, nuclear weapons as much as the refusal of a handful of states- United States, Russia, United Kingdom, France, China, India, Pakistan and Israel- to make progress on elimination.

Challenges such as North Korea or Iran are symptoms of the underlying contradiction of attempting to stem proliferation while relying on the threat to use nuclear weapons as a core security policy. This hypocrisy sometimes reaches absurd proportions. For example, only two countries voted against a ban on nuclear weapons testing this year in the UN General Assembly- the US and North Korea.

The justification for Russia and the US's arsenals has shifted; previously, their existence was reasoned as a way to prevent them from being used. If each had sufficient retaliatory capacity to render a return volley unacceptably destructive, no one would use the weapons. Thus, we became accustomed to the claim that we need to have arsenals to prevent them from being

used. This bizarre logic had a tenuous but moral foundation, preventing use. Now, new doctrines are advanced, integrating nuclear weapons into conventional war fighting strategies, thus lowering the moral taboo of use and making the unthinkable not only possible, but probable.

Nuclear weapons serve no purpose against terrorists or criminals. They represent a thoroughly modern paradox: the more they are perfected, the less security is obtained. Nuclear weapons themselves are more dangerous than any problem they seek to solve. This unacceptably risky situation should not be tolerated.

To use a nuclear weapon against another nuclear weapon state is suicidal. To use a nuclear weapon against a non-nuclear weapon state is patently immoral.

If the people of the world knew fully the destructive sword that hangs over the civilian populations of our cities and threatens the very viability of human life, they would summarily reject nuclear weapons, neither wanting to be subject to this threat nor wanting to threaten others- millions of innocent people like themselves.

Nuclear weapons represent one aspect of a course that pursues security by seeking absolute dominance through terror. This quest reaches burlesque proportions in its logical extension - the weaponization of space. This is a consequence of failing to see and pursue our common security interests on earth.

Is there a way out of this predicament? Yes, we know there is.

First, we must clearly determine that universally verifiable, legally enforceable nuclear weapons abolition is our collective, unambiguous obligation. Heads of State, governments and individual citizens' efforts must be galvanized to fulfill this duty.



Having set this compass point, we must follow a map, each step of which must strengthen our collective security, diminish the security of no state, enhance the rule of law and fulfill existing legal obligations. Some of these steps might take time to be implemented, but we, all states, must begin immediately to advance:

- (1) The entry into force of the Comprehensive nuclear Test-Ban Treaty;
- (2) Negotiating a verifiable Fissile Material Cut-Off Treaty;
- (3) Irreversible and verifiable cuts in existing arsenals;
- (4) Codification of legally binding negative security assurances;
- (5) Pledges of no first use;
- (6) De-alerting nuclear weapons from launch-on-warning status;
- (7) Dramatically strengthened International Atomic Energy monitored safeguards
- (8) The convening of a Summit of states to eliminate threats posed by nuclear weapons and the beginning of negotiations on a Nuclear Weapons Convention

There are no technical impediments to advancing these proposals. It is a failure of courage and political will alone that is blocking our route to a safer, secure future.

To eliminate this self-inflicted threat and address the real threats to international security, greater levels of cooperation are required. In order to address the entire spectrum of global

threats, such as terrorism, poverty or failing to protect and live in harmony with the natural world, greater cooperation is imperative.

A nuclear apartheid with 'haves' and 'have nots' shreds cooperative security. The tools of cooperation - diplomacy, law, norm setting, dialogue, negotiations - which are needed to collectively address poverty and protect the environment are exactly the same tools needed to address nuclear threats. Yet, we can sadly observe that as cooperation corrodes, the law of power overtakes the power of law.

In a world with different levels of security where some claim the right to threaten to use weapons of mass destruction, is it realistic to expect states to refrain from taking short-term economic opportunities in deference to long-term environmental needs? Of course not. There must be a common recognition of our shared interests in a secure environment, in a healthy environment. That shared interest is the basis for pursuing a cooperative security environment. Nuclear apartheid is not compatible with a cooperative security regime.

Let us declare that our capacity for a safe, sane, cooperative future based on principles of sustainability is within our each. We know that we must fulfill the mandate for negotiating nuclear disarmament embodied in the cooperative security paradigm of the Nuclear Nonproliferation Treaty. 9/11 cannot be claimed as an excuse for not living up to this practical, moral and legal duty.

9/11 cannot be used to diminish our confidence in the guidance of reason, in sacred web of life, and in the responsibilities of conscience.

We understand that eliminating the axis of threats to our collective well-being- poverty, environmental degradation and nuclear weapons- demands a new course. At the most recent Summit at the UN, a statement on nuclear nonproliferation- no less disarmament- could not be obtained. The Secretary- General recently described this situation as a kind of "sleepwalking." We cannot sit back and be ineffectual because heads of state fail to exercise their leadership responsibilities. We have a responsibility also.

States have the power of armies. People have the power of love and conscience. Moral power and authority should not be ignored. As Nobel Peace Laureates we have a heightened duty to act. We must not ignore this duty, and if by acting collectively, strengthen our abilities, then we must act accordingly.

I urge that we use our moral authority to help convene a summit of world leaders- from the worlds of business, art, entertainment, politics, religion, law, culture and science- to collectively identify and promote programs and policies that work towards a sustainable future. We could call this The Summit for A Safe, Sustainable Future. In that regard, we could be giving support, convening events, raising awareness and articulating the needs for such an event to world. By mobilizing our commitment to work together, to gather all Nobel Peace Laureates and Laureate Organizations to utilize their powers of persuasion and advocacy identify and promote proposals and policies for a safe, sustainable future. Our efforts here to create and offer the Charter for a World Without Violence and a call for the abolition of nuclear weapons will help set a course.

Please join us in the journey.

Appendices setting forth background on nuclear issues

- 1) Fact Sheet: The Current Crisis of Nuclear Weapons
- 2) Fact Sheet: What Previous Nobel Laureate Summits Said about Nuclear Weapons
- 3) Fact Sheet: How a Nuclear Weapon Works
- 4) Fact Sheet: Risks of nuclear weapons
- 5) Fact Sheet: The International Legal Regime Governing Nuclear Nonproliferation and
Disarmament
- 6) Fact Sheet: Nuclear Energy



FACT SHEET: The Nobel Laureates and the Crisis of Nuclear Weapons



Recognizing that the use of nuclear weapons or an accident resulting from the stockpiling of such weapons could cause massive human casualties and severe environmental damage, **Nobel Peace Laureates have chosen to address the issue of nuclear proliferation at this year's Summit.**

Though the Cold War has been over for a decade, **nuclear weapons remain the greatest threat to world security and human survival.**

- 27,000 nuclear weapons are stockpiled today;
- Nuclear materials are inadequately tracked and monitored, leaving every major city in the world vulnerable to the threat of a terrorist nuclear attack;
- No longer just for deterrence, nuclear weapons are being modernized for offensive purposes;
- Thousands of nuclear weapons remain on high-alert and launch-on-warning status. The risk of accident multiplies daily;

Attention today is focused on stopping Iran and North Korea from furthering their nuclear programs, but **virtually no attention is paid to the responsibility of the existing Nuclear Weapons States to fulfill their legal obligation to eliminate their nuclear weapons.**

- Under Article VI of the nuclear *Non-Proliferation Treaty (NPT)*, the Nuclear Weapon States have an obligation to "pursue in good faith and bring to a conclusion negotiations leading to nuclear disarmament in all its aspects under strict and effective international control".
- In 1996, the *International Court of Justice* unanimously ruled that the threat or use of nuclear weapons "would generally be contrary" to humanitarian and other international law regulating the conduct of warfare;
- In 2000, the Nuclear Weapon States agreed to "an unequivocal undertaking" to accomplish the total elimination of their nuclear arsenals;
- Dr. Hans Blix, Chairman of the Weapons of Mass Destruction Commission, points out that the greatest obstacle to an effective non-proliferation regime lies with the original Nuclear Weapons States, who demonstrate a lack of compliance with legal obligations.

This is a fundamental dilemma: the Nuclear Weapons States desire to keep their weapons indefinitely while condemning others who attempt to acquire them. **If the Nuclear Weapons States do not proceed with their legal obligations to disarm, the non-proliferation regime will crumble.**

- The UN Secretary-General's High-level panel on Threats, Challenges and Change asserted that, "We are approaching a point at which the erosion of the non-proliferation regime could become irreversible and results in a cascade of proliferation."
- Israel, India and Pakistan have all acquired nuclear weapons and remain outside the NPT regime;
- the US and India have agreed to an exchange of nuclear technology that could lead to greater proliferation;
- North Korea recently declared that it conducted its first nuclear weapon test, raising the very real possibility of multiple arms races in Asia;
- Iran's resolve to further develop nuclear technology would give it the capability to develop nuclear weapons at a later date;
- 44 states have the nuclear resources and sufficient technical know-how and resources to develop nuclear weapons if the decision to do so were made.



FACT SHEET: The Nobel Laureates and the Crisis of Nuclear Weapons



What have Previous Nobel Laureate Summits said about Nuclear Weapons?

The Nobel Peace Laureates expressed in the 2005 Declaration released following the 6th Nobel Laureates Summit in Gwangju, South Korea:

If we are to have stability we must have justice. This means the same rules apply to all. Where this principle is violated disaster is risked. In this regard we point to the failure of the nuclear weapons states to fulfill their bargain contained in the Nuclear Nonproliferation Treaty to negotiate the universal elimination of nuclear weapons. To pursue a nuclear-weapons-free Korean Peninsula or Middle East or South Asia, without credible commitment to universal nuclear disarmament is akin to a parent trying to persuade his teenagers not to smoke while puffing on a cigar. There are steps available to make progress in this area and they include: a. Completing a treaty with full verification mechanisms cutting off further production of highly enriched uranium or plutonium for weapons purposes; b. Universal ratification of the Comprehensive Test Ban Treaty, now ratified by 176 nations; c. Taking the arsenals of Russia and the US off of hair trigger, launch on warning high alert; d. Legally confirmed pledges by all states with nuclear weapons never to use them first; e. Making cuts in the US and Russia's arsenal irreversible and verifiable

From the 2004 Rome Final Statement:

....We reject double standards and emphasize the legal responsibility of nuclear weapons states to work to eliminate nuclear weapons. We call for continuation of the moratorium on nuclear testing pending entry into force of the Comprehensive Test Ban Treaty, and for accelerating the process of verifiable and irreversible nuclear arms reduction. We are gravely alarmed by the creation of new, usable nuclear weapons and call for rejection of doctrines that view nuclear weapons as legitimate means of war-fighting and threat pre-emption.

From the 2003 Rome Final Statement:

The threat of weapons of mass destruction remains with us. We call for an immediate end to the newly resurgent arms race, which is being fueled by a failure to universally ratify a treaty banning nuclear testing, and by doctrines that lower the threshold of use and promote the creation of new nuclear weapons. This is particularly dangerous when coupled with the doctrine of pre-emption.

For some to say that nuclear weapons are good for them but not for others is simply not sustainable. The failure of the nuclear weapons states to abide by their legal pledge to negotiate the elimination of nuclear weapon, contained in the Nuclear Non-Proliferation Treaty, is the greatest stimulus to their proliferation.

Nuclear weapons are immoral and we call for their universal legal prohibition. They must be eliminated before they eliminate humanity.

FACT SHEET: The Nobel Laureates and the Crisis of Nuclear Weapons

What Is a Nuclear Weapon?

A nuclear weapon is a weapon whose explosive power is generated by the process of nuclear fission (an **atomic bomb**) or nuclear fusion (a **hydrogen** or **thermonuclear bomb**).

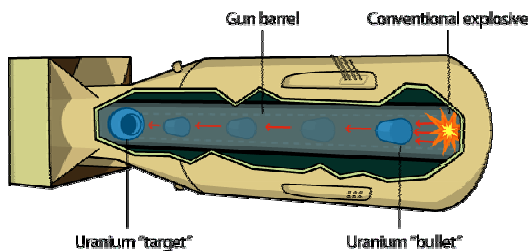
In order to create a fission or fusion reaction, a nuclear weapon must use what are commonly called **fissile materials**, either plutonium or highly enriched uranium (HEU), to fuel its explosion.

A nuclear explosion is the result of a rapid release of energy from a nuclear reaction, either fission or fusion. The result is an enormous blast of energy and thermal radiation.

What are the Types of Nuclear Weapons?

Uranium bomb

The Hiroshima bomb “Little Boy” is an example of a uranium fission bomb. Fueled by enriched uranium, this type of bomb is also called a "gun-triggered" bomb, because the splitting of uranium is achieved when a small mass of uranium is "shot" down a tube where it collides with a larger mass. The most powerful basic uranium fission bomb will detonate with a 50kt explosion force.¹



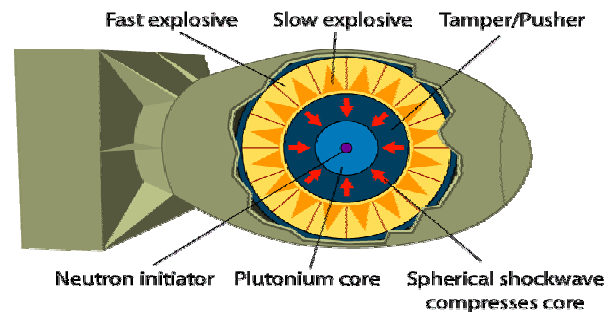
Bunker Busters and Mini-nukes

“Mini-nukes” (5-kt yield) and “bunker busters” (unspecified yield) are the newest in the development of low-yield nuclear weapons. Both mini-nukes and bunker busters would have the ability to attack deeply buried targets, thereby decreasing the amount of collateral damage.

However, because low yield nuclear weapons blur the distinction between conventional and nuclear weapons it is thought that their deployment may lower the threshold for the use of nuclear weapons.²

Plutonium bomb

The Nagasaki bomb “Fat Man” utilized the fission of plutonium, created by detonating an explosive around a ring of pie-shaped masses of plutonium, driving them to collide simultaneously in the center creating a fission reaction. Plutonium offers several advantages over uranium as a component in a nuclear weapon. Only about 4kg of plutonium is needed to make a bomb and only a small reprocessing plant would be needed. Such a device would explode with the power of 20 kilotons.³



¹ *The Nuclear Fuel Cycle*. BBC News. Available at: http://news.bbc.co.uk/2/shared/spl/hi/sci_nat/05/nuclear_fuel/html/plutoniumbomb.stm

² Dr. Frank Barnaby and Dr. Jack Mendelsohn. *Low-Yield and Earth-Penetrating Nuclear Weapons aka “Mini-Nukes” and*

“Bunker-Busters.” Oxford Research Group and the Global Security Institute. December 2003.

http://www.gsainstitute.org/docs/12-2003_Bunkerbuster.pdf

³ Ibid.



FACT SHEET: **The Nobel Laureates and the Crisis of Nuclear Weapons**



What Are the Risks of Nuclear Weapons?

Accidental launch:

- Thousands of warheads remain on high-alert; once launched, they cannot be recalled;
- There have been over 20 recorded instances of false alarms, including computer glitches, that were narrowly avoided;
- In addition to the risk posed by and for the US and Russia, those with the biggest arsenals, an even greater risk applies in India and Pakistan, whose long history of conflict combined with their close proximity makes it even more likely that a false alarm lead to an accidental launch;
- Space-based missile defense interceptors, such as those proposed by the US, can increase the risk of accidental detonation by eliminating pace-based early warning satellites, used by both the US and Russia;

Radiological Dirty Bomb:

- A “dirty bomb” is a device containing radioactive material and conventional explosives, such as dynamite;
- When the device explodes, neither fusion nor fission occur, though it will spread the radioactive material, contaminating the surrounding area;
- Radiological terrorism has occurred twice, in 1995 and 1998, both in Russia;

Environmental Consequences of Nuclear Weapons:

- Radioactive materials released from the testing or detonation of nuclear weapons remain in the ecosystem for thousands of years;
- Drinking radioactive contaminated water over a long period of time is closely linked to high cancer rates;
- Nuclear radiation, which results from the neutrons and gamma rays associated with fission, is lethal in high doses, and has many lingering effects, including increased cancer rates and organ damage. In addition to the 200,000 estimated deaths from the Hiroshima and Nagasaki bombs, thousands of other civilians developed cancer and other diseases from the high levels of radiation.

Nuclear Weapons Proliferation:

- In late 2003 a clandestine network, headed by the father of the Pakistani nuclear program - Dr. A.Q. Khan, was found to have been secretly and illegally supplying nuclear weapons technology to Libya, Iran and North Korea;
- The risk of other nuclear proliferation increases if the commitments of the nuclear Non-Proliferation Treaty are not honored and the verification regime is not maintained.
- Some countries have referenced the non-proliferation regime as “nuclear apartheid” – a system structured by the nuclear weapons states to deny non-nuclear weapons states status and respect and to keep technology from them in order to maintain their inferior and dependent status;
- In an interview after receiving the Nobel Peace Prize, IAEA Director General Mohamed ElBaradei commented that “we need a security system that’s equitable...you cannot ask everybody not to smoke while you’re dangling a cigarette from your mouth. It is not credible; it is not sustainable.”



FACT SHEET: The Nobel Laureates and the Crisis of Nuclear Weapons



What is the international legal regime governing nuclear nonproliferation and disarmament?

- **The NPT:** The nuclear Non-Proliferation Treaty (1968) is an agreement by which non-nuclear states promise to forgo acquisition of nuclear weapons in return for access to peaceful civilian nuclear technology and, under Article VI, a commitment by the nuclear states to eliminate their nuclear arsenals. In 1995, the NPT was extended indefinitely.

Five states (the US, the UK, Russia, China and France) are classified as Nuclear Weapon States. India, Pakistan, Israel and possibly North Korea are known to have nuclear weapons yet remain outside the NPT regime.

In 2000, the Nuclear Weapon States agreed to “an unequivocal undertaking” to accomplish the total elimination of their nuclear arsenals.

- **The CTBT:** The Comprehensive nuclear Test-Ban Treaty (1997) prohibits all nuclear test explosions. To enter into force, the CTBT requires the ratification of 44 states identified as having a significant nuclear capability. Out of these, ten states, including the US and China, have not.
- **The ICJ:** In 1996, the International Court of Justice unanimously ruled that the threat or use of nuclear weapons “would generally be contrary” to humanitarian and other international law regulating the conduct of warfare. In addition, the court ruled that states are obligated to bring to conclusion negotiations on nuclear disarmament in all its aspects.
- **The IAEA:** The International Atomic Energy Agency conducts inspections to verify compliance and prevent the diversion of fissile materials for weapons use. In 1997, the IAEA established a voluntary Additional Protocol, designed to strengthen and expand existing IAEA safeguards under the NPT. As of January 1, 2005, 90 NPT states-parties have signed the Additional Protocol, and 62 of those states have put the Additional Protocol into force.
- **The FMCT:** Not yet negotiated, a Fissile Materials Cut-Off Treaty would prohibit the production of fissile materials for weapons purposes. Most states are generally in favor of such a treaty, though some issues remain in debate, such as the verifiability of such a treaty, as well as its scope; some states, for instance, want an FMCT to put a cap on existing stocks of fissile materials.
- **The General Assembly:** The First Committee of the United Nations General Assembly addresses all matters relating to international peace and security. The Committee passes resolutions each year reiterating the world’s desire for the elimination of nuclear weapons. In 2006, 16 resolutions addressed the need for nuclear disarmament. GA resolutions are not legally binding in and of themselves, but rather work towards strengthening international norms.



FACT SHEET: The Nobel Laureates and the Crisis of Nuclear Weapons



Nuclear Energy

In 1934, an Italian scientist named Fermi and his colleagues bombarded uranium with slow moving neutrons and he realized that it produced much higher radioactivity than any other element treated the same way. Five years later Fermi discovered that the nucleus of uranium 235, if hit by a neutron, would split down the middle in two very similar fragments. This process was to be known as nuclear fission and it resulted in strong energy emission at the expense of the nucleus' initial mass.

The use of nuclear fission for civilian uses bases itself on the ability of controlling the chain reaction of such a process. In nuclear plants, the process of fission is tightly controlled through the use of special materials such as cadmium that are able to absorb neutrons and regulate the heat produced.

Nuclear Power Plants in Use Today

Slow Nuclear Reactors

These are the most common kind and are based on the nuclear fission principle; they are used in thermo-nuclear power plants and on air carrier ships. These reactors are built around a large cylinder where thousands of combustible pastilles (uranium 235) are inserted; controlled nuclear fission is then created and energy is produced in the form of heat that makes the water contained in the reactor evaporate and makes a turbine rotate thus producing electric energy through an alternator or making the propeller blades of a ship move.

Fast Nuclear Reactors

Fast nuclear reactors are called self-fertilizing because they are able to use the 99% of uranium that is not fissionable and which used to be disposed of in previous nuclear plants. These reactors are able to produce waste in the form of an artificial fissionable element named plutonium 238 or uranium 238. The first prototypes of these reactors entered service in 1974 in England and France. By using fast reactors uranium reserves could last for almost one thousand years.

From Fission to Fusion: Is Clean Nuclear Energy a Possibility?

Hydrogen is the lightest element in nature and is found in great quantity in water. Nuclear fusion theory rests on fusing two lighter atoms of hydrogen to obtain heavier ones (helium).

Specifically, nuclear fusion is achieved from two isotopes of hydrogen, deuterium and tritium, to obtain a nucleus of helium and a neutron. The construction of nuclear fusion reactors is very difficult: hydrogen atoms only fuse at temperatures above 100 million centigrade, and no known material can withstand such temperatures.

By fusing small quantities of hydrogen within a metal container (reactor) one could produce a regular and controlled energy flux; heat would be transferred to water by an independent circuit and the vapor would activate numerous turbines, thus producing energy.

There are currently two possible techniques that are being experimented with in laboratory settings:

Magnetic confinement based on a deuterium/tritium reaction.

The nucleus at the plasma state is enclosed in a reactor and separated from its sides by an incredibly powerful magnetic field. This reaction causes no radioactive waste, but radioactivity is produced in the reactor and causes noticeable neutron emissions.

Inertial confinement based on a deuterium/deuterium reaction.

This reaction is cleaner. By shooting lasers at small masses of deuterium and causing small fusion explosions in rapid succession, one could achieve a continuous energy flux. If nuclear fusion is ever achieved, humanity's energy problems will be solved as hydrogen is readily found in waters across the world's surface.

***“Gaining Confidence in Nuclear
Disarmament Steps”***

**Address by the Honorable
Douglas Roche, O.C.
Chairman, the Middle Powers Initiative**

The Nobelists’ Summit of Rome

Rome, Italy

17-19 November 2006

One year ago, the Middle Powers Initiative – an international non-governmental coalition of which I am privileged to chair – began a process we called the “Article VI Forum,” named after the article of the Nuclear Non-Proliferation Treaty committing all states parties to the elimination of nuclear weapons.

The Article VI Forum began out of the crisis of the 2005 NPT Review Conference trying to find a way around the institutional and procedural deadlocks that beset the nuclear disarmament agenda. MPI sincerely believes that, with the stakes for humanity so high, there must be progress. Middle power countries, working in a non-adversarial environment, and focusing on goals for which there is virtual agreement, can and must build a framework to repair the non-proliferation regime. Our faith in the rule of law, multilateral cooperation, and the call of necessity inspires confidence that disaster is not inevitable and success is possible.

The Article VI Forum is an initiative intended to stimulate and shape effective responses to the crisis of the non-proliferation/disarmament regime manifested by the breakdown of the 2005 Review Conference of the Non-Proliferation Treaty. The aim is to advance international cooperation to prevent the spread of nuclear weapons and to fulfill existing commitments to achieve the reduction and elimination of nuclear arsenals. The Forum helps to reassert the centrality of nuclear disarmament and the validity of multilateral negotiations.



It is precisely focused on paving the way to a successful 2010 NPT Review Conference. MPI takes the view that the NPT cannot withstand two successive failed review conferences. Thus we seek to influence the preparatory process to ensure that political agreement on basic items can be reached to fulfill commitments to “systematic and progressive” nuclear disarmament, as called for in Article VI of the NPT and reinforced by the International Court of Justice.

When the Middle Powers Initiative convened the first meeting of the Article VI Forum October 3, 2005 at the United Nations, New York, we were greatly encouraged at the strong endorsement given this new initiative by the 28 participating States. Our optimism has grown with each new consultation. In March 2006 we met in The Hague, The Netherlands and in September in Ottawa, Canada. We are laying the groundwork now for a fourth session to be held just prior to the first preparatory meeting of the NPT states parties in the spring of 2007. The Hague consultation focused on key legal, political and technical issues that need to be addressed to overcome security concerns of the Nuclear Weapons States, which are currently preventing them from commencing negotiations leading to complete nuclear disarmament. In Ottawa, we examined five core issues – including a cut-off of fissile materials and taking nuclear weapons off hair-trigger alert – and the possible strategies

for making these proposals realities. The next meeting will seek to synthesize all we have learned with the goal of making a substantive impact on the NPT review process.

Our consultation in the Canadian capital on September 28-29 centered on the premise that the next review conference in 2010 of the NPT, the central instrument that is supposed to stop the proliferation of nuclear weapons, not repeat the failure of the 2005 review. Twenty-five nations took part in that session, including for the first time, two nuclear weapon states, China and the United Kingdom (the other three were also invited but declined to attend). In another first of which I am particularly pleased, the meeting was addressed by Canada's Foreign Minister Peter MacKay – the first time a foreign minister has addressed an Article VI Forum gathering. In welcoming the participants, Minister MacKay said, "Canada recognizes and supports the valuable role that civil society can play in the NPT Review Process. Our support for this meeting here in Ottawa today is a tangible sign of that belief."

By the end of the two day session, I was truly heartened by the creativity and enthusiasm demonstrated by the governments present, both in terms of advancing the nuclear disarmament agenda and in support of the work of the Article VI Forum. At the conclusion, I said that MPI "takes it as a hallmark that we are in business to help the NPT. We are committed to the NPT," adding that MPI stands ready to assist states in ensuring a positive outcome for the NPT review process.

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We take very much to heart Secretary General Kofi Annan's warning that the world is "sleepwalking" towards a possible nuclear catastrophe. The leaders and officials of these governments along with knowledgeable leaders of civil society understand that the day will arrive when either nuclear weapons are eliminated or the world will be devastated by a nuclear attack. One or the other will happen. No objective person, informed on the gravity of the situation, can deny it.



Left to right: Former South African President De Klerk, Senator Douglas Roche, O.C., IPB President Tomas Magnussen

Despite the institutional and procedural problems we face in the nuclear disarmament agenda, MPI believes that the international community stands on the threshold of the construction of a viable plan leading to a nuclear weapons-free world. In this current cycle of history, some might argue that only minimal progress toward achieving the elimination of nuclear weapons is being made. Actually, the Middle Powers Initiative believes that a historical momentum is building up. Though the obstacles are formidable, nuclear proponents are finding that they have less and less ground to stand on to justify retention. The vast majority of world public opinion favours nuclear disarmament. The creative development of ideas at the Article VI Forum will send a positive message to a waiting world that serious work is being done to help humanity attain a nuclear weapons-free world.

Consider the elements on which there was wide support at the 2005 Review Conference of the Non-Proliferation Treaty:

- Nuclear Weapon States must stop nuclear sharing for military purposes under any kind of security arrangements;
- The most effective way to prevent nuclear terrorism is the total elimination of nuclear weapons;
- International action to stop proliferation is essential;
- Building upon the decisions taken at the 1995 and 2000 Review Conferences, including the “unequivocal undertaking” for total nuclear disarmament, no new nuclear weapons should be developed;
- Anticipating the early entry-into-force of the CTBT, the moratorium on testing should be maintained;
- The Nuclear Weapons States must respect existing commitments regarding security assurances pending the conclusion of multilaterally negotiated legally binding security assurances for non-nuclear States Parties to the Treaty;
- Nuclear weapons-free zones strengthen the non-proliferation regime and deserve to receive security assurances;
- Assurances are not applicable if any beneficiary is in material breach of its own non-proliferation and disarmament obligations.

In addition, there were many practical and popular proposals for making progress in specific areas. These proposals, put forward in working papers by States and groups of States – if given their proper due – would do much to strengthen the Treaty that all States Parties say they want to survive. Opposition by a small number of States cannot diminish the value of this work.

There is, then, a solid basis for stating that a viable plan for progress in nuclear disarmament exists. We are close to having a common vision for the way forward. The Article VI Forum is designed to create a space for like-minded governments to explore in a stimulating and informal environment ways and means to advance that agenda.

In the Article VI Forum, we combine long-range vision and short-term practicalities. Our work can truly move the world to safety and true human security.

Thank you.

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**“A TIME FOR ACTION:
THE REPORT OF THE WEAPONS OF MASS DESTRUCTION
COMMISSION”**

Jayantha Dhanapala

7th WORLD SUMMIT OF PEACE LAUREATES – “ATOMS FOR PEACE OR FOR WAR”, ROME.



I thank the organizers for their kind invitation to the World Summit of the Nobel Peace Laureates. It is also good to be in Rome the Eternal City whose grandeur never fades. This year's summit has the special distinction of being the first since the annual World Summit established a permanent secretariat. The institutionalization of what has become a significant event in the global conference calendar must be welcomed. It will give these gatherings the form and substance it requires to sharpen its focus on the global problems of our time and to ensure the impact of its deliberations and conclusions.

I congratulate Dr. Mohammed Yunus and the Grameen Bank of Bangladesh for winning the Nobel Peace Prize this year. I am personally delighted by this because it is an honour for South Asia where I come from and an affirmation that the elimination of poverty is an essential component of a stable peace.

I also welcome the choice of issue for discussion this year. 'Atoms for Peace or for War' is not only relevant to one of my long-standing professional concerns but it is also among the most urgent issues today. It is over fifty years since President Eisenhower's famous speech on "Atoms for Peace" and the International Atomic Energy Agency (IAEA) - created as a consequence of Eisenhower's lofty vision - celebrates its fiftieth anniversary next year.

The Director-General of the IAEA speaking at the UN General Assembly on 31 October this year wisely focussed on the twin issues of 'atoms for peace' and 'atoms for war' when he said, " Fifty years after the Atoms for Peace initiative, the time has come to think of a new framework for the use of nuclear energy – a framework that accounts for both the lessons we have learned and the current reality. This new framework should in my view include:

1. innovative nuclear technology that is inherently safe, proliferation resistant and more economical;
2. universal application of comprehensive safeguards and the additional protocol;
3. concrete and rapid progress towards nuclear disarmament;
4. a robust international security regime; and
5. an effective and universal nuclear safety regime."

Unfortunately there has recently been an unbalanced focus on the threat of the proliferation of nuclear weapons without any attention being paid to the vital question of nuclear disarmament. Non-proliferation and disarmament are two faces of the same coin. We cannot have one without the other. We certainly do not want to have any more nuclear weapon armed countries. We do need to be reassured that the Democratic People's Republic of Korea and Iran are not going on the same road taken by the USA, the Russian Federation, UK, France, China, Israel, India and Pakistan.

That does not mean that the world accepts the monopoly that these states have over nuclear weapons. Nor do we tolerate the apartheid of some nuclear "haves" and the others as nuclear "have-nots".

We cannot also distinguish arbitrarily between 'good' proliferators and 'bad' proliferators. The excellent example of South Africa which abandoned its nuclear weapons programme and joined the Treaty for the Nonproliferation of Nuclear Weapons (NPT) as a non-nuclear weapon state needs to be emulated. Somehow and somewhere we have lost sight of the fundamental danger of nuclear weapon possession by any state because of the very destructive nature of this weapon. Like Janus, the Roman god with two faces, all scientific inventions of humankind have a beneficial use and a malefic use. So is it with nuclear power. We must promote the good and ban the bad. That is why the recently produced report of the Weapons of Mass Destruction Commission - chaired by the highly respected Dr. Hans Blix and in which I was privileged to serve- recommended the outlawing of all weapons of mass destruction including nuclear weapons.

Let me briefly explain my theme today. I have had a life-long conviction that nuclear arms must be eliminated by a verifiable treaty. It is a conviction that I have honestly voiced again and again and for which I have had to pay a heavy price. The world has banned biological weapons and chemical weapons, which have caused untold suffering in past conflicts. The only weapon of mass destruction that remains unbanned is the nuclear weapon which is prominent in the arsenals of the five permanent members of the United Nations Security Council and of three countries outside the NPT - Israel, India and Pakistan. The fallacious argument continues to be made that one cannot 'disinvent' nuclear weapons. Well, we did not disinvent biological weapons or chemical weapons. We simply outlawed them. And in the case of the Chemical Weapons Convention we have an effective Secretariat to implement the Convention and to verify the ban.

Eisenhower - a Republican President of the United States and a distinguished military man -in his famous "Atoms for Peace" speech significantly called for the "reduction or elimination of atomic materials for military purposes" and for removing "this (nuclear) weapon out of the hands of the soldiers". It is a theme that indisputably links this speech to his equally famous 'military industrial complex' speech. He saw the folly of relying on a non-proliferation strategy alone. In this speech he also rejected the concept of deterrence which prevailed much after his time. He opposed the use of nuclear weapons in the certain knowledge that it would cause unmitigated disaster for the human race. "Surely no sane member of the human race could discover victory in such desolation," he said.

With the end of the Cold War a smug complacency has settled in regarding the threat of nuclear war. Public opinion has been anaesthetized. NGOs in the disarmament area have been starved of funds to conduct their important work to educate and mobilize the public. It was civil society that demanded and achieved a ban on nuclear testing in the atmosphere and which finally capped this with the Comprehensive Nuclear Test

Ban Treaty (CTBT) in 1996. With no transparency from any of the nuclear weapon armed countries on their weapon stocks, we have forgotten that there are still an estimated 27,000 nuclear weapons; 12,000 of them actively deployed and many of them on alert status to be launched on warning. The danger of a nuclear holocaust by accident or design remains very real. No significant arms control measure let alone disarmament agreement has taken place for many years. The NPT Review Conference of 2005 failed to agree on a Final Document although that same treaty was extended in 1995 under my Presidency with specific undertakings being accepted by the nuclear weapon states - undertakings which were reiterated and amplified at the NPT Review Conference of 2000. Not just I personally but all the non-nuclear weapon state parties to the NPT must feel a sense of betrayal of trust over the failure of the nuclear weapon states to fulfill their promises. Later last year at the 60th anniversary UN General Assembly not one line could be agreed upon in the Outcome Document on disarmament.

Nuclear weapons are in a special category. Not only will their scale of destruction be infinitely greater than conventional weapons but also their impact on the ecology, which supports human existence, and its genetic effects on the survival of the human race could be catastrophic. In the Cold War the so-called Mutual Assured Destruction doctrine (MAD), paradoxically, gave us some hope that these awful weapons would not be used. Today the actual use of nuclear weapons is seriously planned and new types of weapons, such as bunker-busters, are being designed lowering the threshold of use alarmingly. That is why we must at this Rome Nobel Laureates Summit call for a revival of nuclear disarmament. We cannot with any credibility or logical consistency condemn the nuclear tests of the DPRK or the failure of Iran to comply with the IAEA's Safeguards Agreement unless we also make progress in reducing and eliminating the nuclear weapons already in the possession of the eight states who have them. We cannot accept the argument that nuclear deterrence is good for some and unacceptable for others. There are no safe hands for weapons as destructive as nuclear weapons. Besides with today's problems of global terrorism we cannot take the risk of nuclear technology and materials leaking to terrorist groups. There are already too many documented instances of thefts and illegal trafficking in nuclear material and nuclear technology.

It is for these reasons that in my final year as UN Under-Secretary-General I proposed that there should be an International Commission on WMD. Secretary-General Kofi Annan was unwilling to have such a Commission function under the aegis of the UN. Sweden through its courageous Foreign Minister at the time, the late Anna Lindh, accepted the challenge and set up the Commission with Dr. Hans Blix as Chairman. Fourteen of us drawn from different countries began our work early in 2004 meeting in different capitals and exchanging ideas with scholars, researchers and diplomats from a wide range of countries over a period of more than two years. Finally in June of this year we presented the final report to the Secretary-General of the UN and it has been tabled as a document of the UN. Dr. Blix has also spoken to the First Committee of the UN last month apart from addressing numerous audiences and media conferences in different parts of the world.

Our Commission felt that the time for action on weapons of mass destruction has come especially with regard to nuclear weapons. We see them as weapons of terror because they are in fact intended to intimidate those who do not possess these weapons. As the Canberra Commission, in which I also served, said in 1996 " Nuclear weapons are held by a handful of states which insist that these weapons provide unique security benefits and yet reserve uniquely to themselves the right to own them. This situation is highly discriminatory and thus unstable; it cannot be sustained. The possession of nuclear weapons by any state is a constant stimulus to other states to acquire them". The WMD Commission reiterates this adding that "So long as any such weapons remain in any state's arsenal, there is a high risk that they will one day be used, by design or accident. Any such use would be catastrophic."

A co-operative rule based world order requires us to have a nuclear ban negotiated and administered through a multilateral institution. For this purpose we need to convene a World Summit which will discuss WMD and agree on a programme of action. The momentum for that must begin here in Rome.

A total of 60 recommendations have been made in the WMD Commission Report. They include –

- .. The need to agree on general principles of action
- .. The need to reduce the danger of existing arsenals by making deep reductions; securing them from theft especially by terrorist groups; the need to take weapons off their alert status, prohibit the production of fissionable material and having no-first-use pledges by those who have nuclear weapons
- .. The prevention of proliferation through the entry into force of the CTBT; implementing the commitments of the nuclear-weapon states under the NPT; continuing negotiations with DPRK and Iran to ensure their non-nuclear weapon status while assuring them of their security and their right to the peaceful uses of nuclear energy; and international arrangements for the supply of enriched uranium fuel and disposal of spent fuel
- .. Working purposefully for a ban on nuclear weapons within a reasonable time frame; encouraging nuclear weapon-free zones; achieving the universalization of the CWC and BWC

The implementation of these recommendations will not be easy. There are strong forces at work and that is why the moral weight of the Nobel Peace Laureates is so essential. Already at the last First Committee meetings in the UN a resolutions for an Arms Trade Treaty was adopted by an overwhelming majority and work will soon begin with a group of experts. This was supported by a group of Nobel Peace Laureates. Our meeting in Rome can provide the impetus for implementing the recommendations of the WMD Commission by calling initially for a World Summit .We would then have begun a movement - a groundswell which will be supported by civil society in the same way that the ICBL led civil society towards the Mine Ban Convention.

We will not be alone because already supporters for the cause of outlawing nuclear

weapons are mobilising themselves. ICAN is the name of a new campaign of the International Physicians for the Prevention of Nuclear War, (IPPNW), the doctors that won the Nobel Peace Prize for their work on nuclear weapons in 1985. They won that prize because they had worked in the peace movement alongside millions of other people who marched, wrote and organized a loud and vibrant call for disarmament. The goal of ICAN is to educate whole new generations of people about the nature of nuclear weapons, and to show them that a nuclear-weapons-free world is not only possible but absolutely necessary to our common survival. The campaign will be launched in March/April 2007, with a new version of the model Nuclear Weapons Convention, and a series of events around the world, several of which will commemorate the 50th anniversary of the ground breaking declaration by Nobel Peace Prize winner Albert Schweitzer, the first major public appeal by a physician calling on the public to mobilise in opposition to nuclear weapons.

The doctors and health professionals are working with others, including UN Associations, the Mayors for Peace and others, forging joint collaborations towards abolition of nuclear weapons. The ICAN campaign, and the Mayors CANT "Cities Are Not Targets" campaign will involve mayors inviting doctors to inform city councils about nuclear dangers, and both mayors and doctors will make joint presentation to senior government officials, combining strengths and sharing the burden, a particularly good model for driving the message home to national and international decision-makers.

Let me conclude by thanking the Permanent Secretariat of the Nobel Peace Laureates, and especially the Presidents of the Scientific Committee Mikhail Gorbachev and Walter Veltroni, for the excellent organizational arrangements and the hospitality extended to us.

(Jayantha Dhanapala was the United Nations Under-Secretary-General for Disarmament Affairs from 1998 to 2003 and is a former Ambassador of Sri Lanka to the USA)