Non-Proliferation Treaty 10 Years Later: Where to Go?

Transformation of the Nuclear Control Regime
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Einstein, Gorbachev and the Need for New Thinking

Without nuclear disarmament the non-proliferation regime is at stake

“The splitting of the atom has changed everything save our modes of thinking, and thus we drift toward unparalleled catastrophe.” (Albert Einstein)

Hundred years ago, in 1925, Albert Einstein published five articles that changed the world. Most famous became his formula $E = mc^2$ that equates energy and mass, with a factor given by the square of the speed of light. The enormous size of this factor demonstrates how much energy is stored even in small amounts of mass. What started as pure thinking became a precondition for the nuclear age.

It took more than three decades before the full implications were recognized. The discovery of the nuclear chain reaction in 1938 induced a chain of events that merged with World War II. Einstein’s concern that Nazi Germany could build the bomb lead the inventor of relativity theory to relativize his pacifism and write a letter to US President Roosevelt about his concerns. With the Manhattan Project, the US launched a crash program to build the bomb. In a rather short period and four decades after Einstein’s discovery, the validity of the energy-mass formula was demonstrated by the nuclear mushroom clouds over Hiroshima and Nagasaki in 1945, proving that scientific thinking can have dramatic political implications.

In the decade after the war, until his death in 1955, Einstein observed the escalation of the nuclear arms race that brought the world close to the brink of nuclear annihilation. The above statement warned about the dangers of old thinking in the nuclear age and demanded a new thinking compatible with the new realities. In the last days of his life, he signed the Russell-Einstein Manifesto which became the founding document of the Pugwash movement. The famous pledge “Remember your humanity, and forget the rest” discards nuclear weapons and nuclear war as acts against humanity.

The new thinking that Einstein requested was buried under the madness of the Cold War which produced tens of thousands of nuclear weapons, many times enough to eradicate life on Earth. It took another three decades until the quest for new thinking found a counterpart in the political arena. Since Mikhail Gorbachev came into power in 1985, the world has transformed at a breathtaking pace. Only four years later, the Soviet Empire collapsed in chaos, but with hardly any violence. Like Einstein, Gorbachev showed how important thinking can be for changing the world.

After the end of the Cold War, the bomb had lost its justification, if there ever was one. Since the early 1990s, a global movement called for the abolition of all nuclear weapons, in accordance with Gorbachev’s 1986 plan for nuclear elimination by 2002. INESAP used the 1995 Review and Extension Conference of the Non-Proliferation Treaty (NPT) in New York to push for a nuclear-weapon-free world with its report “Beyond the NPT” (see article by Wolfgang Liebert, Martin Kalinowski and myself), together with many NGOs who founded the Abolition 2000 Network. Joseph Rotblat vehemently spoke out against nuclear weapons and for the responsibility of scientists, and later in 1995 was awarded the Nobel Peace Prize (see announcement of his publication “Science and the Bomb” in this Bulletin).

The growing abolition movement contributed to the end of nuclear testing in China and France, clearing the path for the Comprehensive Test Ban Treaty, which however left loopholes for modernizing the nuclear arsenals. In a collaborative effort, a Model Nuclear Weapons Convention was drafted and presented at the NPT Preparatory Committee meeting in New York in 1997, which demonstrated that problems of nuclear disarmament could be resolved in principle and has since proven useful to further discussions on the path to a nuclear-weapon-free world.

Despite all efforts, those who do not want to give up the power they assign to nuclear weapons countered the quest for nuclear abolition. The new arms race from 1998 included nuclear and missile testing by India and Pakistan, missile testing by North Korea and Iran, new missile defense programs as a consequence of the Rumsfeld Commission 1, the quest for space dominance by the US Space Command and the Rumsfeld Commission 2, and finally the terror attacks of 9/11. These were used by US President Bush to justify an enormous arms buildup and a series of wars. The continued downward trend is indicated by the ongoing bloody war in Iraq, the outing of A.Q. Khan’s global nuclear proliferation network, the withdrawal of North Korea from the NPT, the nuclear cat-and-mouse game over Iran’s ambiguous nuclear program.

Being a living manifestation of old thinking, Bush has miserably failed in so many fields of foreign policy. After more than three years of the “war on terror,” Bin Ladin is still alive and the Al Qaeda network operational. Despite the continued military operations in Afghanistan and Iraq, the situation is explosive. Threatening nuclear proliferators did not prevent North Korea and Iran from pursuing their nuclear ambitions, rather gave them more reasons to build a nuclear deterrence against foreign interventions. Missile defense is far from being operational, not even testable, despite the doubling of the budget and the initial deployment of some interceptors. And the world’s image of the United States has severely suffered after the initial wave of solidarity shown after 9/11. Like the closely coupled enemies of the East-West Conflict, Bush and Bin Ladin depend on each other to legitimate their strategies. The mindsets of Jihads and Holy Wars are opposites to the new thinking that is needed to resolve global problems.

This year’s NPT Review Conference is another opportunity to revive new thinking, 100 years after Einstein’s discoveries, 50 years after his death and the Russell-Einstein Manifesto, 60 years after the end of World War II and the bombing of Hiroshima and Nagasaki, and 10 years after the 1995 NPT extension. Under current circumstances, the prospects for progress are poor. When the disarmament obligations under NPT Article VI are not fulfilled, the whole non-proliferation regime is at stake.

With this 25th issue, the INESAP Information Bulletin continues to raise the flag for a more peaceful and sustainable world without nuclear weapons. The articles deal with obligations for nuclear disarmament and the need for a nuclear regime change (Hal Feiveson, Anatoli Diakov, Eugene Miaskov, Dingli Shen, Fernando de Souza Barros), or promote the nuclear-weapon-free world and the abolition movement (Doug Roche, Zia Mian, A. H. Nayyar, M. V. Ramana, Alyn Ware, Peter Weiss, Ron McCoy, Colin Archer, Janet Bloomfield, Pamela Meidell). In the Einstein Year, the responsibility of scientists is covered by David Krieger, Joseph Rotblat and the Scientists for Global Responsibility. Current nuclear proliferation risks are discussed by Hui Zhang, Matthias Engler, Soyoung Kwon and Glyn Ford, while the risks of the emerging missile defense and space race are raised by Dave Webb, Bernd Kubbig and Keiko Nakamura.

Jürgen Scheffran
Champaign, April 16, 2005.
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Beyond the NPT
The Transformation of the Nuclear Control Regime to a Nuclear-Weapon-Free World

Jürgen Scheffran, Wolfgang Liebert, Martin Kalinowski

The 1995 Review and Extension Conference of the Non-Proliferation Treaty was hoped to mark a watershed in the struggle for a nuclear-weapon-free world (NWFW). Ten years later, the international situation in nuclear non-proliferation and disarmament is much worse than before. This is most visible in the fact that two more nations have officially tested nuclear weapons (India and Pakistan) and a third one (North Korea) has declared to possess them. The recognized nuclear weapon states (NWS) intend to maintain their nuclear weapons arsenal indefinitely (and therefore plan its permanent modernization). In particular the Bush Administration has almost completely abandoned arms control and instead justifies its quest for missile defense and space dominance. In the following, we will analyze some of the previous initiatives, the causes for failure and the prospects for transforming the existing non-proliferation regime into a nuclear-weapon-free world, with the Nuclear Weapons Convention as its core element.1

The Birth of the Nuclear Abolition Movement in 1995

Inspired by the opportunities offered by the end of the Cold War, a global movement for the abolition of nuclear weapons emerged in the mid-1990s, further catalyzed by the four-week gathering of diplomats and non-governmental organizations (NGOs) in New York in April/May 1995. INESAP used the opportunity to present the results of its Study Group “Beyond the NPT”, which brought together about 50 experts from 17 countries to study the necessity and the possibilities of a NWFW.2 In the framework of this study the idea of a Nuclear Weapons Convention (NWC) was presented for the first time.3

A critical mass was achieved at the Forum for the Abolition of Nuclear Weapons on 25/26 April 1995, organized by the International Coalition for Nuclear Non-Proliferation and Disarmament,4 which included the International Physicians for the Prevention of Nuclear War (IPPNW), the International Peace Bureau (IPB), the International Association of Lawyers Against Nuclear Arms (IALANA), the International Network of Engineers and Scientists for Global Responsibility (INES), and INESAP. The authors of this article, together with two dozen speakers at this Forum, among them Joseph Rotblat, Randell Forsberg, Jonathan Schell, Miguel Marin Bosch, and Daniel Ellsberg, emphasized the need to get rid of the bomb before it could threaten civilization and life on our planet.5 The forum triggered the formation of the Abolition 2000 network which in its founding statement called for immediate “negotiations on a nuclear weapons abolition convention that requires the phased elimination of all nuclear weapons within a timebound framework, with provisions for effective verification and enforcement.”6

The representatives of a large number of NGOs and many diplomats put significant pressure on the NWS at the New York NPT Review Conference. They could not really change the course of action of the nuclear powers and their allies, but the indefinite extension of the NPT could only be achieved because the NWS agreed to minimal obligations towards nuclear disarmament, laid down in the Principles and Objectives for Nuclear Non-Proliferation and Disarmament, which included a Comprehensive Test Ban Treaty (CTBT) by 1996, utmost restraint in nuclear testing, a fissile materials cutoff and the ultimate elimination of nuclear weapons.7

In the following two years, the call for nuclear abolition attracted considerable attention to the cause of nuclear disarmament and shaped the international policy debate. A majority of nations, former statesmen and generals, many scientists, a group of US Senators, and the majority of the European Parliament signed up for nuclear abolition, and even US think tanks discussed it seriously.8

The International Discourse on Nuclear Abolition and the Model Nuclear Weapons Convention

Renewed nuclear testing by China and France in 1999, which contravened the above mentioned Principles and Objectives, aroused a storm of protest from both governments and NGOs. This protest and the 50th anniversary of the Hiroshima and Nagasaki bombings in 1995, however, helped to finally stop active nuclear testing and to build support for Joseph Rotblat’s Nobel Peace Price, as well as to initiate the Canberra Commission by the Australian government in July 1996. In its report, the commission explored the requirements and opportunities for a NWFW.9 One month earlier, the International Court of Justice (ICJ) ruled in its Advisory Opinion on The Legality of Threat or Use of Nuclear Weapons that “There exists an obligation to pursue in good faith and bring to a conclusion negotiations leading to nuclear disarmament in all its aspects under strict and effective international control.”10 The ICJ underlined this obligation in spite of pressure from the NWS. A few months later, a widely recognized statement by 60 former Generals and Admirals as well as a pledge by more than 100 former statesmen were published, both calling for the elimination of all nuclear weapons.11
In adherence with the obligation stated by the ICJ, Malaysia introduced a resolution at the 1996 UN General Assembly which was re-introduced in subsequent years. This resolution calls upon “all states to fulfill that obligation immediately by commencing multilateral negotiations in 1997 leading to an early conclusion of a nuclear weapons convention prohibiting the development, production, testing, deployment, transfer, threat or use of nuclear weapons and providing for their elimination.”12 This resolution received a majority of well above two-thirds of the voting countries, among them the nuclear weapon state China as well as India and Pakistan.

At the same time, the idea of a Nuclear Weapons Convention proposed by INESAP in 1995 was actively picked up by an international team of lawyers, scientists, disarmament experts and policy makers, led by the Lawyers Committee on Nuclear Policy (LCNP), IPPNW and INESAP. They drafted a model Nuclear Weapons Convention (mNWC) which was presented at the 1997 NPT Prep Com in New York, attracting considerable attention among delegates and NGOs.13 In 1997, a revised version of the mNWC was submitted to the UN Secretary-General by Costa Rica as a discussion draft and thus became an official UN Document which was consequently translated into all official UN languages.14 The full text was later published in the book Security and Survival along with explanations and comments from experts and activists.15 INESAP provided scientific input on some of the crucial issues of the mNWC, including the link between civil and military nuclear power, restraints on fissile materials, the definition of nuclear weapons and the verification of nuclear disarmament.

The Fading of the Abolition Movement

Despite some success, the abolition movement lost ground after 1997. The CTBT negotiations came to a successful conclusion in 1996 without any realistic chance to enter into force, the further nuclear disarmament process came to a standstill and the Geneva Conference on Disarmament fell in a stalemate which continues until today. Negotiations on the nuclear weapon material production cut-off were postponed to this day. In order to overcome the unproductive confrontation, the Middle Powers Initiative (MPI) another new international activity started promoting a nuclear-weapon-free world in 1998. Since then, MPI has been lobbying middle powers in the hope that like-minded non-nuclear weapon states from the northern and southern hemisphere speak out for nuclear abolition and gain some influence on the international debate.16 In the same year, the New Agenda Coalition (NAC) an initiative of middle powers was formed. In its first UN General Assembly resolution, the NAC called for an “unequivocal commitment to the speedy and total elimination of [...] nuclear weapons” and suggested amongst others a subsidiary body to be established for this purpose by the Conference on Disarmament in Geneva as well as an international conference.17 While 114 states voted in favor of the resolution, 18 opposed and 38 abstained, among them 12 out of 16 NATO countries. The United States, France and the UK voted “no”. Seven years later, the most recent NAC resolution in November 2004 mustered support by a number of NATO states, including Germany.18 The NWS and many of their allies, however, decided not to move towards the elimination of nuclear weapons. Even now, the path to abolition is not chosen although it is the most convincing remedy against the proliferation of weapons of mass destruction.

The year 1998 became a turning point to the worse when India and Pakistan officially tested their own nuclear weapons. They also conducted ballistic missile tests, as did North Korea, Iran, and Iraq. This supported the rise of conservative political forces in the US which, with its 1998 Report of the Commission to Assess the Ballistic Missile Threat to the United States,19 drafted under the commission chair Donald Rumsfeld, pinned their hopes not on the elimination of nuclear weapons and strategic missiles but on military countermeasures like National Missile Defense (NMD). With the complete disregard of the Bush Administration for international law and multilateral negotiations, the last hopes for any substantial move towards a NWFW faded away.

Non-Proliferation Regime Change Still Pending

The established non-proliferation and disarmament regime was able to slow down proliferation of and ongoing research on nuclear weapons and allowed for first cuts in the nuclear arsenals of the US and Russia, but it is not likely to lead to a nuclear-weapon-free world in due time and irreversibly. The effectiveness of the NPT is endangered by the discriminating privileges of the nuclear weapon states and by the uncontrolable proliferation of nuclear technology which has contributed to the spread of nuclear weapons due to the close and complex civilian-military ambivalence.20 The commitment to nuclear disarmament according to Article VI of the NPT was reaffirmed by the nuclear weapon states at the NPT Review and Extension Conference in May 1995 with “the ultimate goal of the complete elimination of nuclear weapons”.21 Steps towards that goal, however, have never been seriously on the NWS’ agenda while, rather, decisions are being implemented which confirm the NWS’ reliance on nuclear weapons. As long as some members of the world community have legal access to nuclear weapons, the nuclear threat and the dangers of nuclear proliferation will persist.

International law demands equal rights for all states. In the long run, it cannot be tolerated that some states claim the right to possess nuclear weapons and at the same time deny it to others. In its advisory opinion of July 8th, 1996, the ICJ in The Hague declared that “the threat and use of nuclear weapons would generally be contrary to the rules of international law applicable in armed conflict, and particularly the principles and rules of humanitarian law.”22 Only in the exceptional case of “an extreme circumstance of self-defense, in which the very survival of a state would be at
ment. The Court affirmed unani-
ously that “[t]here exists an obliga-
tion to pursue in good faith and bring
to a conclusion negotiations leading
to nuclear disarmament in all its as-
pects under strict and effective inter-
national control.” The unambiguous
interpretation of Article VI of the
NPT demands that these negotiations
must be concluded.

In complete disregard of the
ICJ’s ruling, negotiations on nuclear
disarmament are being declined and
the goal of complete nuclear disarma-
ment is officially being regarded as
contrary to the national security in-
terests of the NWS. Developments in
the past year give reason to doubt
any sincere commitment to disarma-
ment.19

The U.S. Nuclear Posture Re-
view of the year 2001 made it quite
clear that the U.S. will rely on their
nuclear arsenal in the coming decades.
Even worse, for both former oppo-
nents in the Cold War, the US and
Russia, nuclear weapons still play a
significant role in their respective se-
curity strategy, which is increasingly
directed against nations that were not
directly involved in the East-West
confrontation. To date, more than
20,000 nuclear warheads still exist in
the active and reserve arsenals of
the nuclear weapon states and 20,000
more are stored while awaiting dis-
mantlement. The little disarmament
that is actually going on in the two
countries proceeds at a very unsatis-
factory pace.

Even worse, all five official nu-
clear weapon states modernize their
nuclear arsenals, in contradiction to
their promises given on the occasion
of the indefinite extension of the NPT
in 1995. NATO still adheres to a first-
use option, although the alliance has
roughly a threefold conventional su-
periority over other potential alli-
cances. In consequence, Russia has
also officially adopted a first-use op-
tion. Nuclear sharing has been ex-
tended to some new NATO members
in Eastern Europe (Poland, the Czech
Republic and Hungary), although for
the time being deployment of nuclear
weapons in these countries is not for-
mally intended. A factual reduction
of the military value of nuclear weapons
is reflected in the decreasing number
of US nuclear weapons deployed in
European NATO countries from a
few thousands in the 1980s down to
the 480 bombs estimated today.20

Their relevance in Europe is essen-
tially limited to a political function to
hold together the transatlantic al-
liance. Given the absence of an adver-
sary in Europe, they are also increas-
ingly harder to justify, and they are an
extremely dangerous heritage of the
Cold War.

The lack of commitment for nu-
clear disarmament by the official
NWS and NATO creates an interna-
tional environment in which nuclear
proliferation is harder to prevent, if
only because the still excessively large
nuclear arsenals provide an excuse for
other countries to build the bomb. This
goes together with the fact that the
existing non-proliferation regime has
not been able to prevent even
NPT members such as North Korea
and Iran from acquiring the basic in-
frastucture to build the bomb. On
the contrary, the spread of nuclear
technology for “peaceful purposes” is
not only an “inherent right” accord-
ing to Article VI of the NPT, but at
the same time inherently provides
the basis for its military use.

In order to completely and sus-
tainably eliminate the threat of nu-
clear weapons, all nations are required
to undertake systematic efforts and
agree to negotiations about a road to-
wards a nuclear-weapon-free world,
which is then codified in international
law. Only the complete abolition of
all nuclear weapons would remove the
most prominent motive for other
states’ acquisition of nuclear weapons,
namely the possession of nuclear
weapons by other nations. The result-
ing nuclear-weapon-free world must
go beyond the NPT. It requires a new
treaty as its center piece, and we sug-
gest that to be a Nuclear Weapons
Convention.

Step by Step Towards the Goal:
The Transformation Towards a
Nuclear-Weapon-Free World

To remove the capabilities needed
to build the bomb, the scientific-techni-
cal requirements for nuclear weapons
in the civilian sector have to be re-
stricted. This concerns in particular
use of weapon-grade nuclear materials
and the respective production tech-
nologies in civilian nuclear programs.
Required are regulations which are
binding for all states. The transforma-
tion process into a NWFW would
comprise a number of single steps
which would all serve the goal of
eliminating the conditions and capa-
bilities for the development and pro-
duction of nuclear weapons, thus
making the nuclear disarmament
process sustainable and irreversible.
Even though nuclear weapons cannot
be disintegrated, the barriers against
access to them can be raised and the
latent technical nuclear option can
be dismantled in order to discourage
political decisions in favor of nuclear
weapons.

The best path to a nuclear-
weapon-free is heavily disputed.
Many analysts are convinced that an
evolutionary approach via the NPT
would be more appropriate and prom-
ising than a comprehensive concept
to a nuclear-weapon-free world.22
In contrast, a number of leading non-
aligned states and many NGOs do no
longer believe in the “leverage” of Ar-
ticle VI of the NPT. In view of the bad
experience with the repeatedly broken
promises of the NWS, they demand a
strictly defined sequence of nuclear
disarmament steps down to zero
which would define from the start all
individual steps and a predetermined
timetable up to point of disarming the
last remaining nuclear weapon. That
program would be legally bindingly
to all nuclear weapon states.23

From our point of view, a strict
schedule in an early phase would
indeed be unrealistic and would proba-
lly raise the hurdle for disarmament
negotiations. But what is desperately
needed is a credible commitment to
the goal of a nuclear-weapon-free
world by the NWS. We believe there
could be a “compromise” between the
different positions if all states agreed in principle on the goal of nuclear weapons abolition by beginning negotiations on a Nuclear Weapons Convention. That would be a convincing sign of the “good faith” willingness of the NWS and it would have politically and also legally binding consequences. In the framework of NWC negotiations, future non-proliferation and disarmament measures can be combined, harmonized and finally be integrated into a coherent concept.27

Of utmost urgency are measures for increased transparency and risk reduction, like those proposed by the Canberra Commission. An immediate step is de-alerting in order to terminate the high alert status of nuclear weapons.28 The target coordinates in the computers used to guide nuclear weapons should be permanently deleted. Strategic bombers can be kept on the ground; warheads can be removed from the delivery systems and be stored separately. To improve the data exchange on missile launches and avoid misunderstandings and accidents, the Joint Data Exchange Centre (JDEC) on missile launches. This initiative, which has been held up by the Bush Administration, should be renewed. Successful implementation would considerably reduce the danger of accidental missile launches.29

In the START treaties, the US and Russia agreed to cut down their strategic intercontinental-range missiles and bombers to 1,600 and strategic warheads to 3,000-3,500. After George W. Bush had wrecked the multilateral arms control process, both sides committed in the 2002 Strategic Offensive Reductions Treaty (SORT) to reducing their strategic warheads to 1,700-2,200 each by the year 2012. Even though this is considerable less than at the height of the Cold War, excess nuclear weapons will not be eliminated but kept in reserve. In addition, SORT lacks any implementation and verification mechanisms and thus provides only a weak barrier against break out.

US-Russian deep cuts would be an essential precondition to finally involve smaller nuclear powers in nuclear disarmament. Within two decades, the number of deployed nuclear weapons in any region could be reduced to 10-20 without technical problems.30

The quantitative reduction of nuclear weapons, however, can only be sustained if new development of nuclear weapons is rendered impossible, beyond the restricted measures of the Comprehensive Test Ban Treaty. This could be done, for instance, by way of a moratorium or an international treaty that forecloses future nuclear weapons development.31 The qualitative nuclear arms race would thus be terminated and an important signal for irreversible nuclear disarmament would be given.

This would also send a signal to the smaller NWS as well as to the de facto nuclear weapon states Israel, India, Pakistan and now North Korea, which at some point must join the nuclear disarmament process. To take the specific situations in the various regions into consideration, regional measures are indispensable. The withdrawal of US nuclear weapons from the territory of NATO non-nuclear weapon states is an urgent measure which would further marginalize the significance of nuclear weapons. This is also true for a denouncement on ‘first use’ and security guarantees on the non-use of nuclear weapons. The extension of existing nuclear-weapons-free zones (Latin America, Pacific, Africa, South-East Asia, Antarctic) and the potential establishment of new ones (Europe, Central Asia, North-East Asia, Middle East) would also lead in that direction. Measures in the area of delivery systems are also of importance, such as international missile control, a missile flight test ban and the limitation of missile defense systems. In recent years, various missile-related initiatives have been discussed on governmental and non-governmental levels, such as the Hague Code of Conduct, the UN Report on Missiles, the Russian proposal for a Global Missile Control System and the INESAP proposal Beyond Missile Defense.32

Fissile materials from nuclear disarmament have to be placed under safeguards. A comprehensive cut-off agreement is an essential step on the road to the NWC. It would ban the production and use of weapon-grade nuclear materials in significant amounts and also cover the existing material stocks.33 Certain civilian production and usage of weapon-useable material is dispensable and can be terminated (e.g. separation of plutonium from spent fuel for use in mixed-oxide fuels). Relevant materials and production technologies which cannot be eliminated should be removed from national control as laid out in the integrated concept of preventive control.34 Only when the technically meaningless classification of weapon materials as either military or civilian stocks is terminated, would a cut-off convention ensure that any possible new production of nuclear weapons is averted at its source. Besides, suitable procedures must be developed and employed in order to dispose of or eliminate nuclear weapon materials, respectively.

A New Debate Is Needed

Even though today the world’s power structures block progress towards a NWF, the debate on how to achieve it is a vital challenge for mankind. It is quite clear that the majority of the world’s people and states want to get rid of nuclear weapons. The analysis and the ideas included in the INESAP Study Beyond the NPT35 is by no means outdated. The debate has to and could be revived along these lines.

The Mayor of Hiroshima, who is President of the Mayors of Peace with almost mayors in 110 countries, was invited by INESAP to speak at a panel during the NPT Preparatory Committee meeting 2004 in Geneva. On that occasion, he also addressed the NPT delegates with An Urgent Call for the Total Abolition of Nuclear Weapons. In the name of the Abolition NGOs, he demanded “here and now that, when the States Parties review the NPT in 2005, you take that opportunity to pass by majority vote, regardless of any nations that may oppose it, a call for the immediate de-alerting of all nuclear weapons, for unequivocal action toward disman-
tling and destroying all nuclear weapons in accordance with a clearly stipulated timetable, and for negotiations on a universal Nuclear Weapons Convention establishing a verifiable and irreversible regime for the complete elimination of nuclear weapons. ... Let us ban nuclear weapons in 2005." Mayor Akiba's appeal was eagerly taken up by Abolition 2000 and has since been evolving into a global campaign with support from many mayors and grassroots groups. The model Nuclear Weapons Convention plays a prominent role in the campaign to lobby the NPT Review Conference 2005 to commit to commence negotiations on a Nuclear Weapons Convention and to complete them by 2010 with the goal of eliminating all nuclear weapons by 2020.


4 That International Coalition was a precursor of the Abolition 2000 Network.

5 The program of the Forum for the Abolition of Nuclear Weapons is available at www.abolition2000.org.


21 Principles and Objectives, op.cit.


23 There are strong voices in the USA which resist the abolition of nuclear weapons in principle. For example refer to C.P. Robinson, K.C. Bailey, To Zero or Not to Zero: A US Perspective on Nuclear Disarmament, Security Dialogue, vol. 28(2), 1997, pp.149-158.


25 For example refer to the discussion by W. Walker, Evolutionary Versus Planned Approach to Nuclear Disarmament, Disarmament Diplomacy, May 1997, pp. 2-4.


34 The expression “safety controls” used in the first draft of the NWC is supposed to be changed to “preventive controls” following a discussion in the drafting committee. Refer to M.B. Kalinowski, Preventive Control, Integrated Prevention and Detection of Dispersion of Special Nuclear Material in the Nuclear Weapons Convention, in: M.B. Kalinowski, Global Elimination of Nuclear Weapons, op. cit., pp. 57-60; M. Datan, J. Scheffran, Principles and Means for Verification of a Nuclear Weapons Convention, INESAP Bulletin, No.14, Nov. 1997, pp. 21-24. These preventive controls are supposed to be applied to civilian material and exceed the current control standard. The goal is to avoid any uncontrollable national access to nuclear material.

35 INESAP (ed.), Beyond the NPT, op. cit.

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Personal note from INESAP Germany

Three German physicists who are active for INESAP and who have been working with IANUS at Darmstadt University of Technology for many years have recently accepted academic positions in arms control and international security in the United States.

Jürgen Scheffran took up work at the University of Illinois at Urbana-Champaign in August 2004. He joined the Program in Arms Control, Disarmament, and International Security (ACDIS) as senior research scientist and adjunct associate professor at the Department of Political Science. His research interests include new approaches to space and missile control as well as modeling of energy scenarios and their impact on climate change and security. Martin Kalinowski joined the Department for Nuclear, Plasma and Radiological Engineering at the same university as assistant professor in January 2005. He is also affiliated with ACDIS. His research focuses on monitoring atmospheric noble gases to detect clandestine nuclear activities. He is on Special Leave from the CTBTO PrepCom Provisional Technical Secretariat in Vienna and will return there in summer 2005.

Alexander Glaser arrived at the Program in Science and Global Security of the Woodrow Wilson School of Public and International Affairs at Princeton University in February 2005, where he is a member of the research staff. Alexander was in the USA before for two years as visiting scientist at MIT. His primary affiliation during his PhD work has been with IANUS at Darmstadt University of Technology. He has just submitted his PhD thesis on reducing the enrichment of reprocessing reactor fuel and will continue to work on fissile material issues while in Princeton.
A Nuclear Weapons Free Future
A New Basis of Hope

Douglas Roche

After sixty years of the threat of nuclear Armageddon hanging over our heads and now the emergence of the Second Nuclear Age, is there any reason to hope that the curse of nuclear weapons can be lifted from humanity? Are the five permanent members of the U.N. Security Council so fixated on nuclear weapons for their own security that they will continue to ignore the legitimate call of many other States for an end to the nuclear madness? Will civil society finally awaken to the realization that it is living on the knife’s edge of doom and force political leaders to take meaningful action towards the elimination of all nuclear weapons?

These questions come into focus as we consider the forthcoming Seventh Review Conference of the Non-Proliferation Treaty. The NPT was supposed to lead to a nuclear-weapons-free world. Instead, there are 34,145 nuclear weapons still in existence. This number is an improvement over the 65,000 nuclear weapons at the height of the Cold War. But is the world supposed to be satisfied that the current number allows the world to be blown apart, say, 100 times rather than 200? The destructive power of the world’s nuclear arsenal is beyond comprehension.

It is not only the sheer quantitative power of nuclear weapons that is a source of danger; it is also that the nuclear weapons States have embedded nuclear weapons in their military doctrines and are holding them for war-fighting purposes. This shift in strategy from nuclear deterrence to war-fighting is what characterizes the Second Nuclear Age.

The NPT Review Conference faces a stark reality: the nuclear weapons States are claiming that the NPT priorities should be directed to stopping the proliferation of nuclear weapons and that the problem of their own compliance with Article VI, which calls for good faith negotiations toward the complete elimination of nuclear weapons, is non-existent. The leading non-nuclear weapons States claim the exact opposite: the proliferation of nuclear weapons cannot be stopped while the nuclear weapons States arrogate unto themselves the possession of nuclear weapons and refuse to conclude comprehensive negotiations toward elimination as directed by the International Court of Justice.

The NPT in Crisis

The present crisis is the worst in the 35-year history of the NPT. While the NPT meetings have never been free of conflict, the battles of the past were frequently patched over by an application of good will and a minimum show of trust. Now the good will and trust are gone, largely because the nuclear weapon States have tried to change the rules of the game. At least before, there was a recognition that the NPT was obtained through a bargain, with the nuclear weapon States agreeing to negotiate the elimination of their nuclear weapons in return for the non-nuclear States shunning the acquisition of nuclear weapons. Adherence to that bargain enabled the indefinite extension of the Treaty in 1995 and the achievement of an “unequivocal undertaking” in 2000 toward elimination through a programme of 13 Practical Steps. Now the U.S. is rejecting the commitments of 2000 and premising its aggressive diplomacy on the assertion that the problem of the NPT lies not in the nuclear weapons States’ own actions but in the lack of compliance by States such as North Korea and Iran. The United Kingdom, France, and Russia are abetting the U.S. in the new tactics of shifting attention away from Article VI commitments and towards break-out States. The nuclear weapons States are widely criticized around the world for this double standard. For example, Brazil warned: “One cannot worship at the altar of nuclear weapons and raise heresy charges against those who want to join the sect.”

The whole international community, nuclear and non-nuclear alike, is concerned about proliferation, but the new attempt by the nuclear weapons States to gloss over the discriminatory aspects of the NPT, which are now becoming permanent, has caused the patience of the members of the Non-Aligned Movement to snap. They see a two-class world of nuclear haves and have-nots becoming a permanent feature of the global landscape. In such chaos, the NPT is eroding and the prospect of multiple nuclear weapons States, a fear that caused nations to produce the NPT in the first place, is looming once more. The U.N. Secretary-General’s high-level U.N. panel put the issue bluntly: “We are approaching a point at which the erosion of the non-proliferation regime could become irreversible and result in a cascade of proliferation.”

The U.S. particularly is in the forefront of the current struggle. Its participation in the consensus of 2000 was made under the Clinton administration. When President George W. Bush was elected, the U.S. position regressed: the U.S. abandoned the Anti-Ballistic Missile Treaty and turned its back on the Comprehensive Test Ban Treaty, two of the 13 Practical Steps of 2000. During 2001, the U.S. administration conducted a Nuclear Posture Review, which made clear that its nuclear weapons stockpile remains a cornerstone of U.S. national security policy. The Review establishes expansive plans to revitalize U.S. nuclear forces, and all the elements that support them, within a New Triad of capabilities that combine nuclear and conventional offensive strikes with missile defences and nuclear weapons infrastructure. The Review assumes that nuclear weapons will be part.
of U.S. military forces for at least the next fifty years. The U.S. is the only country that deploys nuclear weapons outside its own territory. Approximately 480 U.S. tactical (i.e., non-strategic) nuclear weapons are located at eight air force bases in five ostensibly non-nuclear countries in continental Europe: Belgium, Germany, Italy, The Netherlands and Turkey; also, the U.S. maintains more than 100 nuclear weapons at its Lakenheath base in Suffolk, U.K. Hans Kristensen, author of a Natural Resources Defense Council report on this subject, asks the key question: "Why are they still there more than a decade after the Cold War ended? Neither the U.S. nor NATO has been able to articulate a credible mission for the weapons." Many States hold that this ongoing deployment— which seems to have escaped public scrutiny violates Articles I and II of the NPT and perpetuates a terrible precedent for other nuclear powers to deploy nuclear weapons outside their territory and to share them with non-nuclear States.

Recently, the U.S. Congress balked at funding the research for a new "bunker-buster" nuclear weapon. But that action has not interfered with administration plans to retain a total stockpile of active and reserve nuclear weapons and weapons components several times larger than the publicly-stated goal of 1,700 to 2,200 "operationally deployed weapons."

Former U.S. President Jimmy Carter is very critical of the actions of the U.S. Administration. "The United States claims to be upholding Article VI," he said recently, "but yet asserts a nuclear arsenal. China is modernizing its nuclear arsenal. For its part, NATO, an expanding Western military alliance of 26 nations with a combined population of 880 million people, one-sixth of world population, adheres to its strategic policies that nuclear weapons are "essential." Despite efforts by Canada and Germany, NATO has refused to change its nuclear doctrine in which the "supreme guarantee of the security of the allies is provided by the strategic nuclear forces of the Alliance." Yet NATO also claims to be committed to the "unequivocal undertaking" and 13 Practical Steps of 2000. It is evident that NATO is mired in policy incoherence. The very NATO countries providing a home to U.S. nuclear weapons voted at the U.N. in 2004 in favour of a resolution calling for further steps to reduce non-strategic nuclear arsenals. Why don't they practice what they preach? While the five permanent members of the Security Council try to justify, with the most specious arguments, their retention of nuclear weapons, is it any wonder that other States—India, Pakistan, Israel—have boosted their power by joining the "nuclear club? Or that others—North Korea, Iran—want in? The Threat of Nuclear Terrorism The spectrum of nuclear terrorism is now raised by the speed of proliferation. Mohamed elBaradei, Director-General of the International Atomic Energy Agency (IAEA), has pointed out: "In recent years, three phenomena— the emergence of a nuclear black market, the determined efforts by additional countries to acquire the technology to produce fissile material useable in nuclear weapons, and the clearly expressed desire of terrorists to acquire weapons of mass destruction— have radically altered the security landscape." Addressing the capacity of terrorists to obtain highly enriched uranium and improvise an explosive device with power equal to the Hiroshima bomb, the eminent physicist Dr. Frank von Hippel told a meeting at the U.N.: "Nothing could be simpler." If the 9/11 terrorists had used a nuclear bomb at Ground Zero, hundreds of thousands of New Yorkers would have met the fate of those in Hiroshima on August 6, 1945. The IAEA reports at least 40 countries have the capability to produce nuclear weapons, and criticizes the inadequacy of export control systems of nuclear materials which are unable to prevent the existence of an extensive illicit market for the supply of nuclear items. The disappearance, by theft or otherwise, of nuclear materials from Russia is well established. The threat of nuclear terrorism is on the mind of every official I know. ElBaradei says the margin of security today is "thin and worrisome." U.S. security officials testified in mid-February that "it may only be a matter of time before Al-Qaeda or other groups attempt to use chemical, biological, radiological, or nuclear weapons." U.S. Senator Ed-
ward Kennedy of Massachusetts goes further: “If Al Qaeda can obtain or assemble a nuclear weapon, they will certainly use it – on New York or Washington, or any other major American city. The greatest danger we face in the days and weeks and months ahead is a nuclear 9/11, and we hope and pray that it is not already too late to prevent.”

The international community has at least awakened to new dangers. Thus, the U.N. Security Council in 2004 adopted Resolution 1540 requiring all States to take measures to prevent non-State actors from acquiring or developing nuclear, chemical, and biological weapons and to prevent the spread of these weapons. The Proliferation Security Initiative of the U.S. seeks to interdict on the high seas the transfer of sensitive nuclear materials. And the G8 countries have allocated $20 billion over ten years to eliminate some stockpiles of weapons of mass destruction in Russia.

These steps are by no means sufficient to ward off looming catastrophes. The fact remains that the proliferation of nuclear weapons cannot be stopped as long as the most powerful nations in the world maintain that nuclear weapons are essential for their own security.

Of course, North Korea and Iran and any other such state must be stopped from acquiring nuclear weapons, and inspection and verification processes of the IAEA must be stepped up with more funding and personnel. But attempting to stop proliferation as a sort of one-dimensional activity will never work unless meaningful disarmament steps are combined with it.

**Recommendations from NAC and MPI**

Such steps have been spelled out by the New Agenda Coalition, (NAC) a group of States (Brazil, Egypt, Ireland, Mexico, New Zealand, South Africa, and Sweden) which came into existence to press the nuclear weapons States to fulfil their disarmament obligations. The NAC has been gathering political momentum, and its most recent resolution at the U.N. was supported by eight NATO States, including Germany and Canada. That resolution, calling on the nuclear powers to cease activities leading to “a new nuclear arms race,” identifies priorities for action:

- universal adherence to the NPT and the early entry-into-force of the Comprehensive Nuclear Test Ban Treaty;
- reduction of non-strategic nuclear weapons and non-development of new types of nuclear weapons;
- negotiation of an effectively verifiable fissile material cut-off treaty;
- establishment of a subsidiary body to deal with nuclear disarmament at the Conference on Disarmament; and compliance with principles of irreversibility and transparency and verification capability.

Even though this resolution was mild compared to the regular demands of the Non-Aligned Movement for a time-bound Nuclear Weapons Convention that would ban all possession of nuclear weapons, the three Western NATO nuclear States, the U.S., the U.K., and France, voted against it. China voted for the resolution and Russia abstained.

We come now to the NPT 2005 Review Conference. The future of nuclear weapons on the planet is riding on the gathering of 187 States Parties to the Treaty.

On January 26-28, 2005, the Middle Powers Initiative (MPI) held a Strategy Consultation at the Carter Center, Atlanta/USA, where the issue was clearly put: to avert a complete breakdown in the non-proliferation regime, the whole international community must hold firm to the obligations and commitments to non-proliferation and disarmament assumed by the parties to the NPT at its commencement and reinforced and elaborated at the 1995 and 2000 Review Conferences. Progress on both the nuclear disarmament and non-proliferation sides of the Treaty must be made at the same time.

Following the Atlanta Consultation, MPI has made these recommendations:

1. A successful outcome of the Review Conference depends on its ability to address equally every aspect of the Treaty. The strengthening of the commitments contained in the NPT regarding nuclear non-proliferation and nuclear disarmament should be done in a balanced way.
3. The United States and Russia should build upon their progress in the Moscow Treaty by applying the principles of transparency, irreversibility, and verification to reductions under the Treaty, and by negotiating further deep, verified, and irreversible cuts in their total arsenals, encompassing both warheads and delivery systems.
4. Russia and the United States should engage in a wider process of control of their non-strategic weapons, through formalization and verification of the 1991-1992 initiatives, transparency steps, security measures, U.S. withdrawal of its bombs deployed on the territories of NATO countries, and commencement of negotiations regarding further reduction/elimination of non-strategic weapons.
5. Nuclear weapon States should implement their commitment to decreasing the operational readiness of nuclear weapons systems (“de-alerting”) by planning and executing a program to stand down their nuclear forces, culminating in a global stand-down by the 2010 Review Conference.
6. Nuclear weapon States should further implement their commitment to diminishing the role of nuclear weapons in their security policies by not researching or developing modified or new nuclear weapons and by beginning negotiations on a legally-binding instrument on the non-use of nuclear weapons against non-nuclear weapon States party to the NPT.
7. States should begin and rapidly conclude negotiations on a treaty banning the production of fissile materials for nuclear weapons in accordance with the 1995 statement of the Special Coordinator and the mandate contained therein, with the understanding that negotiations can and should address a range of issues, including dealing with existing military materials. As soon as possible a technical advisory panel should be created to assist with issues regarding verification of the treaty. In addition, States should work to develop a global inventory of weapons-useable fissile materials and warheads, and the
nuclear weapon States should accelerate placing their “excess” military fissile materials under international verification. States should seriously consider proposals to ban production of all weapons-usable fissile materials, and to establish multilateral controls on uranium enrichment and plutonium reprocessing technology and a moratorium on supply and acquisition in the meantime.

8. Adherence to the Additional Protocol on Safeguards should become a universal standard for compliance with non-proliferation obligations and treatment as a member in good standing of the NPT with access to nuclear fuel.

9. Prior to or at the Review Conference, a firm agreement should be reached on a program of work in the Conference on Disarmament that includes a subsidiary body to deal with nuclear disarmament. Achieving such an agreement in advance would greatly enhance the prospects for a cooperative outcome to the conference. Should it not prove possible to overcome the deadlock on a program of work, alternative venues should be pursued.

10. The Comprehensive Test Ban Treaty should be brought into force at an early date. In the meantime, States should continue to observe the moratorium on nuclear testing, fund the Preparatory Commission for the Comprehensive Test Ban Treaty Organization, and support completion of the International Monitoring System.

11. States should use the opportunity provided by the NPT review process to build upon the 13 Practical Steps to undertake deeper consideration of the legal, political, and technical requirements for the elimination of nuclear weapons, in order to identify steps that could be taken unilaterally, bilaterally, and multilaterally that would lead to complete nuclear disarmament. The United Kingdom’s initiative on verification, the New Agenda Coalition’s proposals on security assurances and the strengthening and expanding of Nuclear Weapon Free Zones are positive examples in this regard. Such consideration should include the investigation of means to enhance security without relying on nuclear weapons.

The Voice of “the Moderate Middle” and the Public

The Middle Power Initiative’s recommendations are wholly in accord with the New Agenda Coalition’s latest resolution. That resolution, to repeat, earned the support of eight NATO States. Thus a bridge has already been constructed between the NAC and NATO. This bridge is shoring up what might be called the “moderate middle” in the nuclear weapons debate. The debate is indeed polarized: on one side are the recalcitrant nuclear weapons States; on the other is the Non-Aligned Movement, calling for immediate implementation of a time-bound program for the elimination of nuclear weapons. I would like to make it clear that MPI stands for the complete elimination of nuclear weapons at the earliest possible moment. But in the political reality of our times, the goal is not immediately achievable. Hence, we must take realistic steps toward that goal. Adherents of the middle range of the debate want to move in this direction. As the centre strengthens with more countries joining it, the potential grows for a strong impact on the nuclear weapons States. The Non-Proliferation Treaty in 2005 will be saved if the “moderate middle” successfully impress on the nuclear weapons States that they must now begin to implement the steps toward nuclear disarmament already agreed to in 2000. In short, the only way to stop the erosion of the NPT is for a new burst of energy to be shown by the middle-power States – the New Agenda, non-nuclear NATO, the European Union, and a few other like-minded States – to shore up the centre positions in the nuclear weapons debate. The “moderate middle” must stop being cowed by the all-powerful nuclear weapons States; they must speak up forcefully in the name of humanity.

The voice of the public matters a great deal in whether governments will bestir themselves. It was the voice of the public that obtained the partial Test Ban Treaty of 1963, the Intermediate Nuclear Forces Treaty of 1987, and the Comprehensive Test Ban Treaty of 1996. A new awakening of the public is precisely the strategy of Mayor Tadatoshi Akiba of Hiroshima in his emergency campaign for Mayors for Peace. More than 100 Mayors from the Mayors for Peace Campaign, which has drawn together the top executives from more than 700 cities around the world, are expected to attend the opening days of the NPT Review Conference and lobby for action. They will be joined by the representatives of 2,000 peace organizations from dozens of countries. Parliamentarians from the Parliamentary Network for Nuclear Disarmament will be on hand to press their governments to move forward.

Mayor Akiba has already launched his “Vision 2020” campaign, by which he means that negotiations on the elimination of nuclear weapons should be concluded by 2010 and fully implemented by 2020. This could become an unstoppable campaign if the city administrations, parliamentarians, and public around the world persist in this demand. The activity leading up to the 2005 NPT Review Conference shows me that hope for a nuclear weapons-free world is certainly alive. It is being acted on in new and compelling ways. A new force of enlightened governments and a visionary civil society is starting to move.

This address was given at the Nobel Institute in Oslo, Norway, on February 29, 2005.

1 [Editor’s note:] The Moscow Treaty, or Strategic Offensive Reduction Treaty, agreed upon between the US and Russia in 2002, requires both countries to decrease the number of operative strategic nuclear weapons to 1,700-2,100. The Treaty foresees no verification mechanism and no destruction of the warheads.

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The Middle Powers Initiative organized an Extraordinary Strategy Consultation on the Non-Proliferation Treaty (NPT) 2005 Review Conference in cooperation with former U.S. President Jimmy Carter at The Carter Center in Atlanta, January 26-28, 2005. Atlanta Consultation II: On the Future of the NPT involved 75 participants and observers, including high-level representatives of key governments and non-governmental expert practitioners. The Consultation was modeled after the successful Atlanta Consultation I, which MPI held at The Carter Center in 2000.

The important dialogue during Atlanta Consultation II formed the basis for MPI's recommended policy options presented [] to the states party to the NPT for their consideration.1

Atlanta Consultation II was based on the initiatives of the New Agenda Coalition (NAC) and MPI's briefing paper, Building a Nuclear Weapons-Free Future[]. Well-established but unfulfilled pragmatic and effective steps toward nuclear disarmament were emphasized at the Consultation. They include reducing the operational status of nuclear weapons; negotiating a fissile materials treaty; applying the principles of transparency and irreversibility to U.S.-Russian arms reduction agreements; controlling/eliminating non-strategic weapons held by the United States and Russia; establishing a body in the Conference on Disarmament (C.D.) to deal with nuclear disarmament; and bringing the Comprehensive Test Ban Treaty (CTBT) into force.

The entire nuclear non-proliferation regime is under stress from the policies and doctrines of the nuclear weapon states and from attempts by more states to go nuclear. As President Carter said at the opening plenary, "It is disturbingly obvious that there has been no improvement over the situation as it was described in our previous meeting. In fact, proliferation and the behavior of the nuclear weapon states with regard to disarmament have worsened over the past five years."

The Consultation noted how shocking it is that, after three two-week meetings of the Preparatory Committee, an Agenda for the Review Conference has not yet been agreed upon. It is improper for any state to obstruct the setting of an Agenda and attempt to go forward without recognizing the results of the 1995 and 2000 Review Conferences. The Agenda for 2005 must refer to the specific matters of substance as well as the resolution on the Middle East adopted in 1995, and also the outcome of the 2000 Review Conference, including developments affecting the operation and purposes of the Treaty.

The President-designate of the Review Conference has a right to expect support from the parties on this issue. Lack of an agreed agenda may block the work of the Conference and precipitate a long and fruitless discussion, preventing meaningful debate on the substantive issues. Different parties have different views on what would constitute a successful Conference. All parties agree, however, that the Conference should strive to preserve and strengthen the credibility of the Treaty so that it can be effective and lasting.

MPI calls on all governments to assert in public declarations—prior to the 2005 Review Conference—the integrity of the strengthened review process decided upon in 1995 and enhanced in 2000. Any reopening of the debate on commitments agreed upon at the Review Conferences since 1995 would invariably lead to an undermining of the Treaty. It is of utmost importance for the review process to continue from the point of the 13 Practical Steps arrived at by consensus in 2000 and move forward from there.

A successful outcome is linked to the ability of the Review Conference to address equally every aspect of the Treaty. The strengthening of the commitments contained in the NPT regarding nuclear non-proliferation and nuclear disarmament should be done in a balanced way. Reinforcement of non-proliferation provisions should be carried out along with a stronger adherence to the commitment to nuclear disarmament contained in Article VI.

A key issue is how to preserve the integrity and credibility of the Treaty in face of recent doubts about compliance and of withdrawn support from political commitments accepted in previous Review Conferences. Lack of trust in the fulfillment of non-proliferation obligations and backtracking from previous disarmament commitments only erodes the credibility of the Treaty.

On the disarmament side of the equation, agreement is within reach on a program of work in the Conference on Disarmament encompassing commencement of negotiations on a fissile materials treaty and establishment of a body to deal with nuclear disarmament. It is vital to finally and definitively overcome the deadlock that has stalemated the C.D. for years, prior to or at the Review Conference. Doing so in advance of the Conference would greatly enhance prospects for a cooperative outcome.

The present crisis regarding compliance with non-proliferation obligations by North Korea, and to a lesser extent Iran, points to the obvious need to ensure that the safeguards and verification system provided for in Article III works effectively. In light of recent episodes that gave rise to accusations of lack of
compliance, there is a need to strengthen the non-proliferation provisions of the Treaty. Adherence to the Additional Protocol on Safeguards should become a universal standard for compliance with non-proliferation obligations and treatment as a member in good standing of the NPT with access to nuclear fuel.

A more far-reaching non-proliferation-related proposal has come from IAEA Director-General Mohamed ElBaradei, who called for “working towards multilateral control over the sensitive parts of the nuclear fuel cycle enrichment, reprocessing, and the management and disposal of spent fuel.” The matter is extremely sensitive. Non-nuclear weapon states regard access to technology as their right under Article IV of the NPT. However, it was understood from the beginning of the nuclear age that the spread of nuclear technology, especially the means of producing fuel for nuclear reactors, would also provide the foundation for nuclear weapons programs. For reasons of effectiveness, legitimacy, and promotion of global norms generally, states should seriously consider proposals for multilateral controls.

Through the Middle Powers Initiative, eight international non-governmental organizations—among them INES—are able to work primarily with “middle power” governments to encourage and educate the nuclear weapons states to take immediate practical steps that reduce nuclear dangers, and commence negotiations to eliminate nuclear weapons.

1 [Editor’s comment:] The eleven recommendations are fully quoted in the previous article in this INESAP Information Bulletin: Douglas Roche, A Nuclear Weapons Free Future: A New Basis of Hope, p. 10.

For more information on the Atlanta Consultation II see the MPI website at www.middlepowers.org.

Looking at the NPT and Beyond

Ronald McCoy

The Treaty on the Non-Proliferation of Nuclear Weapons (NPT), which was ratified in 1970, is the only legally binding international agreement on nuclear disarmament. It is based on a quid pro quo by 188 states. The nuclear weapon states promised to give up their nuclear weapons and in return the non-nuclear weapon states renounced nuclear weapons and were guaranteed access to peaceful uses of nuclear energy.

In the past 35 years, there have been six NPT Review Conferences, the final reports of which often consisted of a litany of promises that were made and broken. The record of NPT negotiations is tarnished by examples of narrow national interests trumpering common global interests. In 1995, at the fifth NPT Review Conference, the indefinite extension of the NPT was secured, on the strength of promises made in the final document, Principles and Objectives for Nuclear Non-Proliferation and Disarmament. Five years later, the sixth NPT Review Conference, in its final statement, outlined an agreement by all States parties to implement thirteen practical steps for systematic and progressive disarmament, including “an unequivocal undertaking by the nuclear weapon states to accomplish the total elimination of their nuclear arsenals.”

As we approach the seventh NPT Review Conference in May 2005, there is widespread consensus that the integrity of the NPT is seriously under threat as there are clear signs that many of the thirteen practical steps have not been acted on, such as:

- securing the early entry into force of the Comprehensive Test Ban Treaty (CTBT);
- negotiating a fissile materials treaty;
- establishing a subsidiary body in the Conference on Disarmament (CD) to deal specifically with nuclear disarmament;
- applying the principles of transparency and irreversibility to American and Russian arms reduction agreements;
- controlling and eliminating non-strategic nuclear weapons held by the United States and Russia;
- reducing the operational status of nuclear weapons.

The 1996 report of the Canberra Commission on the Elimination of Nuclear Weapons warned that the possession of nuclear weapons by any state is a constant stimulus to other states to acquire them. In other words, nuclear apartheid breeds proliferation.

The 2004 Report of the UN Secretary-General’s High-Level Panel on Threats, Challenges and Change has warned about the possible collapse of the NPT regime: “The nuclear non-proliferation regime is now at risk because of lack of compliance with existing commitments, withdrawal or threat of withdrawal from the Treaty on the Non-Proliferation of Nuclear Weapons to escape those commitments, a changing international security environment and the diffusion of technology. We are approaching a point at which the erosion of the non-proliferation regime could become irreversible and result in a cascade of proliferation.”

The integrity and credibility of the NPT will largely depend on an even-handed, balanced approach by States parties to both disarmament and non-proliferation obligations at the 2005 NPT Review Conference. The recent revelation of a clandestine black-market in nuclear technology and nuclear developments in North Korea and Iran suggest that the nuclear proliferation concerns of the nuclear weapon states will dominate the conference and marginalize the disarmament concerns of the non-nuclear weapon states.

To succeed, the 2005 NPT Review Conference must generate the
political will to adhere to the obligations and commitments made in 2000 and to build on the 13 Practical Steps, particularly the “unequivocal undertaking” by the nuclear weapon states to eliminate their nuclear arsenals. The nuclear weapon states have to understand that all the other practical steps stem from this fundamental undertaking. This is the intrinsic core of the NPT, because nuclear disarmament and non-proliferation are two sides of the same coin.

We know that since the 2000 NPT Review Conference, none of the nuclear weapon States parties to the NPT has taken this undertaking seriously:

- Not one nuclear weapon state has abandoned plans to develop new nuclear weapons.
- The new US nuclear doctrine envisages a new triad of capabilities and new weapons, and expanding the role of nuclear weapons beyond their core function of deterrence to their use as ‘legitimate’ tactical weapons on the battlefield.
- Russia has announced plans to build a new generation of “hypersonic” multiple warhead missiles to counter US plans to mount ballistic missile defences.
- Britain plans to replace Trident warheads and has renewed its collaboration with the US on nuclear weapons research at Los Alamos and Lawrence Livermore laboratories, including advanced computer simulation technology for designing, developing and testing new weapons.
- France is modernizing its nuclear arsenal, which now boasts two new French missiles for nuclear warheads.
- China also continues to modernize its nuclear arsenal to keep up with the rest.

To demonstrate genuine good faith, the nuclear weapon states would have to renounce nuclear weapons as the cornerstone of security, renounce plans to develop new nuclear weapons and weaponise outer space, de-alert all nuclear weapons, extend negative security assurances to non-nuclear weapon states, ratify the CTBT, start negotiating a fissile materials treaty, and set up a subsidiary body in the CD to deal with nuclear disarmament in all its aspects.

For the past 35 years, the NPT process has been a predictable diplomatic charade. It is diplomatic gamesmanship at its best, worthy of a world cup. Disarmament activists have seen how one-sided interpretations of simple words and phrases have been used to distort negotiations and thwart disarmament initiatives. Such diplomatic activity has provided an insight into the inbuilt ambivalence and deceptive language, which engenders distrust, suspicion and instability in international relations.

Each Review Conference is an opportunity for the international disarmament community to hold governments accountable to their NPT obligations. Although it is obligatory for States parties to submit regular reports on the implementation of Article VI in order to ensure transparency and accountability, the record shows that reporting is minimal. Only 39 States parties have submitted at least one formal report and none of the nuclear weapon states have submitted an official conference document.

It would be fair to say that the NPT is not in good health and that the prognosis is ‘guarded,’ to use a medical term when a patient is in a serious condition. There is an urgent need to address the dichotomy between the nuclear weapon states and the non-nuclear weapon states, restore the health of the NPT, and reduce nuclear dangers stemming from nuclear proliferation and nuclear terrorism. It will take an even-handed, balanced approach to build a bridge between the two, although even-handedness is a rare quality in international affairs, where national interests override global interests.

The New Agenda Coalition (NAC) countries – Brazil, Egypt, Ireland, Mexico, New Zealand, South Africa and Sweden have been playing a bridging role in the United Nations. By agreeing on a pragmatic agenda for the implementation of key priorities in both segments of the dichotomy disarmament and non-proliferation the NAC could close the gaps in the NPT debate. Through a series of resolutions that have been adopted by the UN General Assembly since November 2000, the NAC has the potential to form a partnership of like-minded states, within and without nuclear alliances, to exert leverage on the nuclear weapons states to comply with their NPT obligations, as spelt out in the 13 Practical Steps. In 2004, the NAC resolution was adopted by the UN General Assembly by a vote of 151 to 6, with 24 abstentions. Eight NATO member states Belgium, Canada, Germany, Luxembourg, Netherlands, Norway, Lithuania and Turkey voted for the resolution, as did Japan and South Korea, two allies of the United States. The United States, Britain, France, Israel, Latvia and Palau voted against.

If the NPT lingers on and requires intensive care, it would be appropriate to look beyond the NPT and seek a fresh approach, in parallel with the NPT, such as by adopting a framework for the abolition of nuclear weapons through a Nuclear Weapons Convention, now made feasible by advances in verification technology and compliance procedures. Considerable conceptual work has already been done on the legal, technical and political requirements for achieving and maintaining a nuclear weapons free world, including the drafting, circulation and submission of a Model Nuclear Weapons Convention to the United Nations.

The Model Nuclear Weapons Convention does not answer all the questions involved in the abolition of nuclear weapons, but it does indicate that such questions can be answered when negotiations are under way and that nuclear abolition is a practical achievable goal.

While nuclear disarmament is primarily a technical process of dismantling and eliminating nuclear weapons, nuclear abolition is primarily a normative process of prohibiting the development, acquisition, transfer, use and threat of use of nuclear weapons, but also embraces elimination.

Nuclear disarmament relates to positive obligations, that is, to eliminate stockpiles. Nuclear abolition includes both positive obligations and negative obligations, which include
not acquiring, transferring, using or threatening to use nuclear weapons. In other words, nuclear abolition combines the positive obligations of eliminating nuclear weapons or disarmament with the negative obligations of not acquiring them or non-proliferation. Nuclear abolition is therefore the synthesis of the two competing approaches in the NPT disarmament and non-proliferation.

The concept of an abolition framework is therefore close to what the nuclear weapon states have already agreed on disarmament and it encompasses their concerns about non-proliferation. As such, it may be an easier framework with which to engage the nuclear weapon states than one which focuses purely on disarmament.

The Canberra Commission on the Elimination of Nuclear Weapons affirmed that there were no inherent obstacles to nuclear abolition except a lack of political will. One effective way of generating political will and building worldwide support for abolition would be the Emergency Campaign to Ban Nuclear Weapons or “2020 Vision”, launched in 2003, led by the Mayors of Hiroshima and Nagasaki, and supported by a global Mayors for Peace network, whose target is the elimination of nuclear weapons by 2020. The campaign has already attracted the support of almost one thousand mayors, including those of capital cities in the nuclear weapon states.

Yet another approach would be to follow the ‘Ottawa Process’ which demonstrated the power of partnership between civil society, like-minded governments, international agencies and the United Nations in redressing the global problem of anti-personnel landmines and securing a Mine Ban Treaty in 1997. When it became clear to Canada’s Foreign Minister, Lloyd Axworthy, that a few key States were intent on disrupting negotiations in the United Nations for a ban on anti-personnel landmines, he initiated an alternative approach by inviting all interested States (Norway, Austria, Germany, Belgium, South Africa) and the International Campaign to Ban Landmines (ICBL) to Ottawa, to negotiate and adopt a treaty, outside traditional diplomatic fora, practices and methods.

The Mine Ban Treaty demonstrated that it is possible for small and medium-sized countries, acting in concert with civil society, to provide global moral leadership and achieve major diplomatic victories, even in the face of opposition from major countries. It showed that civil society has the ability to rouse public opinion and conscience on humanitarian issues.

Although there are political, military and strategic differences between landmines and nuclear weapons, there is considerable merit in the concept of an independent Ottawa-style conference on nuclear abolition, in which all States are invited to join and work on abolition measures, even if not all nuclear weapon states will agree. Like the Ottawa Process, such a conference would generate considerable media coverage and political pressure on all nuclear weapons states, declared and undeclared, to abandon nuclear deterrence and embrace abolition.

Such a conference would be a useful forum for setting out plans and procedures required for the abolition of nuclear weapons, including key issues such as security assurances, compliance measures, a verification regime, and disposition of fissile materials. There are a number of States with the right credentials to initiate or lead an Ottawa-style process.

Whatever the reasons or concerns that have led some States to develop nuclear weapons and doctrines, nuclear weapons pose an intolerable threat to humanity and must be abolished. The NPT has failed abysmally to enforce compliance with both disarmament and non-proliferation obligations among States parties. Unless the 2005 NPT Review Conference can show that there has been unequivocal progress on the 13 Practical Steps, the time has come to explore other approaches to nuclear disarmament and non-proliferation. The NPT road map has been there for 35 years. A dog-eared, faded treaty, stained with the tears of frustration and disappointment, a mockery of diplomacy, a testament of hypocrisy and double standards, and of cruel betrayal of hibakusha and our humanity. When the majority of the people of the world are in favour of abolishing nuclear weapons, what will it take to translate the will of the majority into democratic action to overturn the political and military power of the few?

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Award for David Krieger

Global Green, the US affiliate of Green Cross International, and President Mikhail Gorbachev honored David Krieger with the 2005 International Environmental Leadership Award on April 15, 2005, at a gala ceremony in Los Angeles.

The annual award celebrates individuals and organizations who have “demonstrated international leadership to protect the environment and create a value shift toward a sustainable, secure future. Throught their use of collaboration and partnership, they shine a light on environmental challenges and conflicts while providing innovative solutions and initiatives.”

David Krieger is President of the Nuclear Age Peace Foundation and Deputy Chair of the International Network of Engineers and Scientists for Global Responsibility, INESAP’s “mother organization.” He is a recognized leader in the global effort to abolish nuclear weapons and the author of many studies on achieving peace in the nuclear age.

Ferment in the Nuclear Non-Proliferation Regime

Harold A. Feiveson

Up to now, the nuclear non-proliferation regime and its cornerstone element – the nuclear Non-Proliferation Treaty (NPT) have worked very well. Only three countries have remained completely outside the treaty – India, Pakistan, and Israel; and only one country – North Korea has withdrawn from the treaty. Essentially all declared civilian nuclear facilities in the non-nuclear-weapon states are under International Atomic Energy Agency (IAEA) safeguards. Many of the non-nuclear countries within the treaty have ended nuclear weapon programs which they once had or were exploring – including South Africa, Libya, Germany and Japan, Argentina and Brazil, Switzerland, Sweden, and others.1

There are gathering clouds, however. First, the violation of the NPT by North Korea, and its subsequent withdrawal, has put a spotlight on the uncertain enforcement mechanisms of the treaty. Second, the discovery in 2003 and 2004 of the machinations by the A.Q. Khan network showed glaring weaknesses in the effectiveness of international safeguards and of controls established by the Nuclear Suppliers Group (NSG), a group of the major exporters of nuclear technologies. The Khan network of suppliers and middlemen had for several years been supplying centrifuge technologies (and possibly also a nuclear weapon design) clandestinely to a number of countries, including North Korea, Iraq, Iran, and Libya, all of which were parties to the NPT and subject to IAEA safeguards. Third, Iran’s pursuit of centrifuge technologies, heavy water production, and other nuclear technologies has dramatized the risk of “latent proliferation” that a country in good standing under the NPT and subject to IAEA safeguards could nevertheless, under the cover of a civilian nuclear program, move to the edge of a nuclear weapons capability, months away from nuclear weapons once a decision was made. Finally, it is clear that many of the non-nuclear countries are growing increasingly restless with the seeming indifference of the nuclear weapon states in fulfilling their obligations as called for in Article VI of the NPT.

One way for the international community to deal with this ferment in the non-proliferation regime is to focus on the two countries of immediate concern – North Korea and Iran (with Iraq’s nuclear program already settled!). Such has been the approach of the U.S. Administration. But the problems recently highlighted go beyond just these countries and must be addressed by more global undertakings. This is all the more apparent if the international community is to effectively confront the threat of nuclear proliferation to non-state actors – to terrorists. Here it is critical that fissile materials – plutonium and high-enriched uranium – be rigorously protected and safeguarded in all countries, not only in those few who the U.S. and others brand as rogue or dangerous. Therefore, the challenge now for the nonproliferation regime is to address not just the special cases of North Korea and Iran but as well the enduring and interconnected problems these cases have highlighted – enforcement, safeguards, latent proliferation, and the obligations of the nuclear weapon states.

Enforcement

Article X of the NPT allows a country to withdraw from the treaty upon due notice. However, it is of critical importance, especially in light of the latent proliferation discussed below, for the parties to the treaty and the U.N. Security Council to determine whether a country could use fissile materials or production facilities (including those of indigenous origin) acquired prior or while they were parties to the NPT to make weapons after its withdrawal from the treaty. If the determination is not to allow this, the Security Council could state that the withdrawal of a country from the NPT in this fashion would constitute “a threat to the peace” under section VII of the U.N. Charter and be prepared to authorize an escalating series of sanctions against any country that does so. There is a precedence of sort. At the level of heads of state and government, the Security Council in January 1992 noted that “The proliferation of all weapons of mass destruction constitutes a threat to international peace and security.”

In another valuable precedent, the Security Council took an impressive step in April of 2004 by adopting Resolution 1540.2 Under the Resolution, the Security Council requires among other stipulations “that all States … shall adopt and enforce appropriate effective laws which prohibit any non-State actor to manufacture, acquire, possess, develop, transport, transfer or use nuclear, chemical or biological weapons and their means of delivery;” that States “develop and maintain appropriate effective measures to account for and secure” nuclear, chemical, or biological weapons and materials; and that States “establish, develop, review and maintain appropriate effective national export and trans-shipment controls over such items, including appropriate laws and regulations to control export, transit, trans-shipment and re-export” of such items, along with appropriate penalties for violations.

Safeguards

While a party to the NPT and subject to IAEA safeguards, Iraq, prior to the first Gulf War, had assembled a massive program designed to make nuclear weapons and hidden from safeguards. As a consequence of the failure of safeguards in Iraq, the IAEA in 1997 developed an Additional Protocol (INFCIRC 540)3 which allows the Agency to look for undeclared weapons activities, through environmental monitoring and such. The value of this Protocol has been further underscored by the revelations of the A.Q. Khan network. It will be im-
portant for all countries to adhere to this Protocol, a result which could be furthered by the Nuclear Suppliers Group requiring such adherence by countries importing nuclear technologies.

**Latent Proliferation**

Iran has put a spotlight on the dangers of the proliferation of uranium enrichment – one of the two routes (along with the reprocessing of spent nuclear fuel) to the production of nuclear explosive materials. Although reprocessing and enrichment in civilian nuclear programs remain limited at present to a small number of facilities, most of them in the nuclear weapon states, several non-nuclear countries – including notably Iran – assert the right under the NPT to engage in these activities as long as they are for civilian purposes and under IAEA safeguards. The spread of these technologies to more and more countries, however, will place these countries very close to nuclear weapons. Civilian reprocessing, which though being done or planned on a large scale in the U.K., France, Russia, and Japan, does not have clear economic value at present, and thus may not be an immediate problem. But uranium enrichment is a critical part of the civilian nuclear fuel cycle; and countries, such as Iran and Brazil, argue that they need their own, national enrichment facilities for fuel cycle independence and/or for commercial reasons – to allow them to sell enriched uranium on the world market.

The uranium enrichment process that today is the most economic is centrifuge enrichment. And the spread of centrifuge technologies is particularly troubling. From a proliferation view, centrifuges are a nightmare. For one, even a substantial centrifuge cascade producing significant quantities of weapon-grade uranium could produce few emissions detectable outside of the facility, and the facility itself could be inconspicuous. Second, a centrifuge cascade could in a matter of hours be converted from one producing low-enriched uranium for reactor fuel to one producing weapon-grade uranium. Third, in part by virtue of the Khan network, centrifuge technology has now become widely available. And finally, weapon-grade uranium can be incorporated into a weapon far more readily than could plutonium, even by a relatively unsophisticated country, and conceivably also by a terrorist group.

To discourage the proliferation of centrifuge (and also reprocessing) technologies, the Director of the IAEA, Mohammed ElBaradei, and an expert group established under the auspices of the IAEA, have championed the creation, through voluntary agreements and contracts, of multinational enrichment and reprocessing facilities, in which these activities would be outside of strictly national control. The United States Administration and the G-8 have also sought to stop the proliferation of enrichment technologies to countries that do not now have them through the imposition of strict export constraints.

The prevention of the proliferation of reprocessing and enrichment technologies is a vital goal for the non-proliferation regime. However, any enduring policy will likely have to be universal or near-universal in its application. It will not be possible in the long run to sustain a policy that forbids certain civilian technologies to some countries and allows them in others.

**Obligations of the Nuclear Weapon States**

The strengthening of enforcement protocols, safeguards, and limits to latent proliferation will all require actions by the non-nuclear countries, possibly including a reinterpretation of the NPT by the parties to the treaty. But such new undertakings and interpretations by the non-nuclear countries will not be possible if the nuclear weapon states walk away from their own obligations under Article VI of the treaty.

At the 2000 Review conference of the NPT, the parties agreed to a 13-step program toward nuclear disarmament. These 13 steps included: early entry into force of the Comprehensive Nuclear Test Ban Treaty; conclusion within five years of a verifiable fissile material cutoff treaty; an unequivocal commitment by the nuclear weapon states to full nuclear disarmament; and a commitment by the nuclear weapon states to allow the inspection and disposition for peaceful purposes of all excess fissile material. None of this has happened. Even so, it is still in the interest of most of the non-nuclear parties to the treaty to remain in the treaty – few countries will want their neighbors to be free of safeguards obligations. However, if the nuclear weapon states continue pointedly to turn their backs on the 13 steps, a few countries at least might consider withdrawing from the treaty – perhaps not with the initial intention of acquiring nuclear weapons, but nevertheless initiating an unraveling of the NPT.

And this connection to nuclear proliferation is but one reason for the nuclear weapon states to address seriously their own nuclear arsenals. Quite apart from the (rightful) concerns over proliferation, the existing arsenals continue to pose grave risks. These include nuclear war in South Asia and, in the greatest nightmare scenario, an accidental or inadvertent nuclear exchange between the U.S. and Russia, a danger made more palatable by the incongruous fact that nearly 15 years after the end of the Cold War, each of them keeps over 1,000 nuclear warheads on high alert, ready to be launched within tens of minutes of an order to do so.

5 George Perkovich et al., op. cit., pp. 151-154.

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The forthcoming Non-Proliferation Treaty (NPT) Review Conference in New York is devoted to discuss and find ways to strengthen the non-proliferation regime, how to preclude the appearance of new de facto nuclear states and how to prevent nuclear weapons from falling into the hands of terrorists. Unfortunately, a sequence of recent events called into question the effectiveness of the Treaty. The most notable developments were the withdrawal of the Democratic People’s Republic of Korea (DPRK) from the NPT and its announcement of possession of nuclear weapons. Besides that, a network of ‘black market’ technologies and materials for nuclear weapons production was uncovered. The network was coordinated by Dr A.Q. Khan, the father of the Pakistani nuclear bomb. On the other hand, the difference in the US approach in dealing with Iraq and the DPRK clearly demonstrated the advantages of possession of nuclear weapons to those states that are not considered friendly with the United States.

The future of the NPT largely depends on how existing contradictions between its States parties will be resolved, and the main responsibility for the preservation of the Treaty regime will undoubtedly fall on nuclear states. Thus, adherence of nuclear states to fulfillment of their NPT obligations, particularly to those outlined in Article VI, and compliance of their actual nuclear policies with their declarations are of great importance.

It is not news that NPT States parties have serious complaints against the official five nuclear weapons states. In particular, Ambassador Hussein Haniff, a representative of the Non-Aligned States, reprimanded the P5 (permanent five members of the UN Security Council) at the 3rd Preparatory Committee meeting for the NPT Review Conference in April 2004.1 His presentation pointed out the lack of progress towards achieving the total elimination of nuclear weapons despite announcements of bilateral and unilateral reductions. It underscored that, although the Strategic Offensive Reduction Treaty (SORT) was signed in May 2002, reductions in deployment and in the operational status cannot substitute for irreversible cuts in nuclear weapons. According to the Non-Aligned States, the non-entry into force of START II is a setback to the 13 practical steps toward nuclear disarmament adopted at the 2000 NPT Review Conference. Amb. Haniff also criticized the development of new types of nuclear weapons and the lack of progress to bring the Comprehensive Test Ban Treaty (CTBT) into force. The Non-Aligned States also emphasized the tendency of growing roles for nuclear weapons in military doctrines of nuclear states. They expressed concern that abrogation of the Anti-Ballistic Missile (ABM) Treaty and deployment of strategic defensive systems may trigger a new nuclear arm race and lead to deployment of weapons in outer space.

The presentation of the Non-Aligned States representative did not specify the nuclear states that had failed to carry out their NPT commitments. However, it is quite clear that the criticism is directed mainly at the United States and Russia, who still possess the largest nuclear arsenals in the world. Sadly, the listed accusations are in general fair.

One of the main reasons for the current state of affairs is that the United States and Russia continue to be in a mutual nuclear deterrence relationship in spite of the end of the Cold War and repeated declaratory statements from both parties about entirely new partnership relations. Objectively the nature of mutual nuclear deterrence is such that, if one side undertakes any measures that may be regarded by the other side as breaking the existing balance of strategic capabilities, the other side is forced to react. At the same time, it does not matter that the first side declares its measures as not directed against the second side. It matters that the second side perceives that measures as a potential danger to its interests.

In particular, in 2002, the United States unilaterally abandoned the ABM Treaty. Russia responded by withdrawing from the START II Treaty and taking a decision to prolong the service live of its land-based intercontinental ballistic missiles (ICBMs) with multiple independently targetable re-entry vehicles (MIRVs) until 2020-2030, although previous plans assumed elimination of these missiles by 2008 in accordance with the Helsinki agreements of 1997. Frequently repeated statements of Russian officials on future “unique systems, that no other country possesses”3 may also be regarded as a reaction to US abrogation of the ABM Treaty. The Russian response will likely also follow in the case that US ballistic missile interceptors are deployed on the territory of new NATO members, as Russian officials warn.4

Another example can be given: The future of the CTBT is obviously in question because of the current attitude of the United States. Although the US keep the moratorium of on nuclear tests which are forbidden by this Treaty, the readiness of the test site in Nevada is maintained at an appropriate level. Unlike the US, Russia has ratified the Treaty, but also keeps its range at Novaya Zemlya ready for resumption of full-scale nuclear tests, referring to similar US practice and to their development programs for new types of nuclear weapons.5

The deadlock on negotiations on further reductions of strategic offensive arms certainly represents the central problem in the bilateral US-Russian dialog on nuclear issues. In spite of optimistic statements of both parties with respect to the SORT agreement, this treaty is at most is declaration of
good will. It is not a document like SALT, SALT II, START and START II that contained clear mechanisms for reductions and their objective verification. As many experts foresaw, the parties interpret the SORT provisions on reductions entirely differently. The US side proposes to replace reductions by decreasing the alert status of strategic systems. The Russian side continues to insist on strict coordination of the reductions with elimination of delivery systems, which would better ensure the irreversibility of strategic offensive arms cuts. Overcoming the existing differences in the two countries’ approaches seems very problematic, not to speak of concrete steps for further reductions of strategic arms. To some extent, the situation is eased while START is still in force. The parties regularly exchange data on their strategic forces and verify the nuclear cuts in accordance with START provisions. However, START run out after December 2009, and prospects for its prolongation are vague. Thus, in five years, indeed, a legal vacuum may occur, which was a major fear of the Russian side when it insisted on signing SORT.

Another problem is the reduction of non-strategic nuclear arms. US and Russia never made progress with regard to reductions of weapons of this type since the US and Soviet Presidents pledged unilateral obligations in 1991. Moreover, in fact, the US recently blamed Russia for failing to fulfill its part. Most likely, the cause was related to a delay in the elimination of nuclear weapons of Russian Ground Forces. A number of publications in recent years suggest that Russia reconsidered its previous plans to eliminate all nuclear weapons of the Ground Forces, and these weapons continue to be viewed as promising payloads for tactical missiles of the ‘Tchoka’ (SS-21) and ‘Iskander’ (SS-26) type.

Russia’s concerns about US nuclear weapons deployed in Europe are even better grounded. According to an expert from the Natural Resource Defense Council (NRDC), about 480 nuclear bombs are currently deployed on the territories of US European allies, so that NATO tactical aircraft can be armed with these weapons.

Russia considers these weapons as strategic, because most of the European part of Russia falls within reach of NATO tactical aircraft. The urgency of this problem inevitably grows as NATO expands and therefore the zone of US influence covers more former Soviet Union states in Central Asia, Caucasus and Eastern Europe.

Russian non-governmental arms control experts express deep concern on the state of affairs and propose a set of measures in order to transform the mutual nuclear deterrence relationship between Russia and the United States. Suggestions of the Russian experts may provoke arguments about the pros and cons, but the key problem is a lack of political will both in the United States and Russia to come back to the bilateral dialog.

In the context of the NPT, the situation looks even more illogical. On one hand, nuclear states toughen requirements with respect to obligations of non-nuclear weapon states (IAEA Additional Protocol, an attempt to close the club of states that possess uranium enrichment and plutonium separation facilities, etc.). On the other hand, they lower the burden of their own NPT obligations, causing criticism from non-nuclear weapon states and losing legitimate power in punishing the states that breach the Treaty. Growing imbalance in the rights and obligations between nuclear and non-nuclear weapon states may destroy the NPT regime, which is likely not in the interest of either the US or Russia. Therefore, the sooner the politicians of the two countries begin substantive negotiations on bilateral nuclear cuts, the better the chances for delaying proliferation of nuclear weapons in the world.

2 Nadyozhnuy 1 Dostatochny (Reliable and Sufficient), an interview with Colonel-General Nikolay Solovtsov, Commander in Chief of the Russian Strategic Rocket Forces, Krasnaya Zvezda, December 17, 2004; Gennady Miranovich, Kozel’nyi Redut (Kozel’nik Redoubt), Krasnaya Zvezda, December 17, 2004.
3 Aleksandr Babakin, Vladislav Kramar and Igor Plutaryov, Ministr Grozit Nezashchityayushchym Oruzhyem (Minister Threatens With A Non-Existing Weapon), Nezavisimaya Gazeta, February 14, 2005.
9 In particular, this fact was mentioned in the presentation of A.I. Antonov, Chief of the Russian delegation at the 3rd Preparatory Committee Meeting for the NPT Review Conference, April 28, 2004; www.mid.ru.

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A decade has passed since the Non-Proliferation Treaty (NPT) was extended indefinitely. The leadership role that Jayantha Dhanapala played in 1995 in forging the consensus between the nuclear haves and haves-nots, by balancing the rights and obligations of the two groupings, is unforgettable.

When reviewing the NPT regime of the last decade, one observes a clear mix of frustration and successes. On the plus side: the enhanced safeguards of the International Atomic Energy Agency (IAEA) have been implemented; Libya denounced its nuclear weapons program; A.Q. Khan and his associates were caught and their nuclear smuggling ring stemmed; and a loose coalition, the Proliferation Security Initiative (PSI), brought 60 countries together to interdict suspicious transfer of weapons of mass destruction, their delivery systems or related items across international land, airspace and waters; to name a few.

On the down side: first and foremost, the Democratic People's Republic of Korea (DPRK) has not only quit the NPT and thus set a dangerous precedent, but also announced that it has acquired nuclear weapons. Besides, India and Pakistan tested nuclear bombs; both Iran and South Korea have been identified as having conducted unsafeguarded nuclear activities; and the Comprehensive Test Ban Treaty (CTBT) has never entered into force.

If indeed a nuclear regime change occurred over the past decade, it is probably the fact that the current non-proliferation regime has largely failed. The two most prominent threshold states – India and Pakistan – were not dissuaded and deterred by any instruments of the non-proliferation regime. They neither consider that they have a responsibility to curtail their nuclear weapons development for the sake of an international “norm” of nuclear weapons non-proliferation, nor do they accept the “morality” that they should maintain their security without impairing the security of their neighbors. In their view, it is in their best interest to ensure their ultimate security with their own bombs.

The DPRK is another example where the NPT failed. India and Pakistan never joined the NPT in the first place, and therefore never broke an international commitment in this regard. North Korea, however, is a completely different case. It joined the NPT and was suspected of clandestine development of a nuclear program for military purposes. After wrestling with the U.S. for a decade, it eventually exited the NPT and started to seek nuclear weapons “legally.” In the entire 35-year history of the NPT, this is the sole case that an NPT member state left the treaty in its quest for nuclear weapons.

The NPT has apparent failed to retain North Korea in the treaty system, to persuade India and Pakistan not to turn their de facto nuclear weapons status to a de jure one, and to deter the latter from doing so through international sanctions. Basically, the NPT allows states to pursue nuclear development for peaceful purposes while not depriving them of their access to fissile materials for military use. Theoretically speaking, therefore, the NPT regime cannot prevent non-nuclear weapons States parties from diverting fissile materials from their stockpiles for non-peaceful uses, let alone deterring those few remaining outside the treaty from doing so. Though the enhanced safeguards system can help to detect any diversion, it can never prevent and stop such activities.

The primary reason that states seek to retain or acquire nuclear weapons is that they feel a lack of security. The United States did not feel secure when it faced Nazi Germany developing atomic weapons, so America raced with and beat the Germans. Regardless of how many thousands of nuclear weapons it has deployed, and how strong its conventional armed forces are, the U.S. still feels insecure. The U.S. has even decided to research and develop low-yield “usable” nuclear weapons in the post-“9/11” time. The same logic then also applies to other states, as they, without a military as powerful as the American one, may be better situated when they go nuclear. China justified its acquisition of nuclear weapons with a threat from the U.S., and North Korea used exactly the same rhetoric.

Nonetheless, the non-proliferation regime has not been without highlights. Libya is a good story, but its example has not persuaded any other proliferation aspirant to give up such ambitions. Overall, the drawbacks of the regime far outweighed the headway it has made. Today, non-proliferation measures could come far too late to stop some countries’ activities, thus counter-proliferation and interdiction schemes have been drawn up by some states.

Over the last ten years, the nuclear non-proliferation regime has witnessed a shift of emphasis from state-originated threats to non-state-originated threats. Until recently, it was nations who competed and rivaled each other, and nuclear proliferation was regarded as a threat from and among states. Prior to “9/11”, hardly anyone seriously associated nuclear proliferation with non-state actors. However, after the terrorist attacks in 2001, states became highly concerned that non-state actors could also be involved in nuclear proliferation – a particularly grim perspective, indeed.

As long as states think that their security is not improving given threats from other states and non-state actors, there is no reason to hope
for radical improvement in the field of non-proliferation. For the foreseeable future, India and Pakistan are unlikely to revert their nuclear course, and it is almost impossible that the DPRK will abandon its nuclear weapons. Iran will not give up its nuclear program although it has oil reserves for the next two centuries, and the U.S. is not ready to strike Teheran’s enrichment facilities and probably will never do so.

The past decade has proven that two systems are missing in the contemporary international order. First of all, there is a lack of mechanisms that make nations feel secure. The U.S. feels insecure because of “9/11” and China; China feels insecure because of the U.S.; and both North Korea and Iran feel insecure because of America. Secondly, despite a considerable enhancement of export controls, they no longer suffice to contain the spread of nuclear weapons. The world today calls for a fissile materials control system.

These two problems must first be solved before we can hope for a meaningful post-NPT nuclear regime change. The first element, security, points to the root causes of nuclear proliferation. Regrettably, although this has been understood at all times, no answer to this problem has been found to date. Fundamentally, the lack of security is due to the anarchic order of the world: there are no cops out there. The United Nations? Hardly a supra-national organization that provides security to states and the world community readily. The U.N. functions only when the major powers come to a mutual consent, and they hardly ever do. And when the world needs cops most states do not wish to authorize an existing power to serve this role: the U.S. is not accepted as world cop for sure.

As long as this anarchy prevails – and that will surely be the case -, we cannot hope that all non-nuclear weapons states will voluntarily uphold their nuclear weapons free status. The argument deserves to be repeated: when even the U.S. does not feel secure, other states may have still better reason to feel insecure. (This author, however, does not believe in and agree with the notion that as long as a country feels insecure, it should go nuclear.)

We understand the reason, but we cannot solve the problem. The political regime change that will convince all states that they are safe without nuclear weapons will not come anytime soon. Therefore, there is no fundamental guarantee that the post-NPT nuclear regime will successfully ensure non-proliferation.

The second element is the technical prevention of the ability to proliferate. Theoretically speaking, as long as all nuclear-capable countries cooperate on such an initiative, non-proliferation can succeed. But then, take a look at the substance: what will be the ingredients of a fissile materials control regime?

In my view, as the possession of fissile materials enables nations to cheat on the NPT, the technical solution at the source of all proliferation problems is to deny all non-nuclear weapons states control over fissile materials, regardless of where the fissile materials come from – from import, from enrichment, or from spent fuel. The proposed new regime has the following purpose: that a country can access fissile materials, but cannot control them. To some degree, this scheme asks for an international depository center where no single country can control and divert fissile materials. At the same time, the scheme also requires that all sovereign non-nuclear weapons states abandon their right of possessing fissile materials. Once implemented, this scheme will rid the world of the danger that a certain state would break its promise at any time.

A fissile materials control regime, however, will entail new problems of its own: countries like Japan cannot accept it as they want control over fissile materials for their civilian fuel recycling. Some countries will not agree because in effect they want to keep the nuclear weapons option open. In addition, is in an important question where an international depository center will be located and how it would be managed. The new regime cannot be successful if alternative energy supplies are not available to those states that are to abandon fissile stockpiles of their own. Apparently, to bring about a post-NPT regime change is a daunting task.

Looking into the future of the new century, humankind will remain to be troubled with the contradiction between sovereign independence and lack of control and management of a supranational body. Therefore, proliferation by definition is to occur. All efforts of non-proliferation must be necessarily restricted to lessen the speed and the gravity of the damage done.

A Post-NPT Nuclear Regime Change?

“A Post-NPT Nuclear Regime Change?”

“No country should have nukes”

A poll conducted for Associated Press in March 2005 shows that 66% of all Americans surveyed say that “No country should be allowed to have nuclear weapons,” including the United States (www.ap-iporesults.com). This contrasts sharply with programs in all nuclear weapons states to modernize their arsenals and with efforts by some nations who aim to acquire nuclear stockpiles. The survey also found that 52% believe that within the next five years one country will attack another country with nuclear weapons, and 53% think a nuclear terrorist attack is likely in the same timeframe. Reason enough to continue our efforts to achieve a nuclear weapons free world!
10 Years after the 1995 NPT Review
A Brazilian Perspective on Nuclear Regime Change

Fernando de Souza Barros

The program proposed by INESAP in 1995 – “Beyond the NPT”¹ – was well timed for Latin America. Free of military regimes, the Southern Cone was a scenario of reborn hopes for social justice, civil rights, and fraternity among neighboring states. New approaches for Latin American nuclear issues had taken place towards the end of the 1980s with remarkable success. In 1989, the new civilian governments of Argentina and Brazil agreed to establish a bilateral system of inspections that soon received the recognition of the International Atomic Energy Agency (IAEA). This initiative paved the way for the approval by these two nations of the Tlatelolco Treaty and the Non-Proliferation Treaty in the 1990s. This short article gives brief summaries of (a) Latin America’s main nuclear projects; (b) its contributions for nuclear disarmament; and (c) the repercussions of current nuclear-power policies – led by the US – upon Latin American nuclear policies, with a particular emphasis on the Brazilian case.

Historic Background

At the end of World War II, the destructive power of the atomic bombs over Hiroshima and Nagasaki and the expectation of limitless use of nuclear energy in the near future awakened a worldwide military-industrial interest for nuclear energy. By 1950, practically all industrialized and many Third World countries ran nuclear programs. Argentina and Brazil also began their nuclear programs in the 1950s. To this date, these programs remain the most advanced ones in Latin America.

Argentina’s most sensitive facility is a gaseous diffusion plant near the Andes resort town of Bariloche, which was publicly disclosed in 1983. The major nuclear project of Brazil was started by its Navy. Details were only revealed after the fall of the military regime in 1985. This project is at present the backbone of the Brazilian research and development of the full cycle of nuclear technologies. All the above mentioned projects were essentially maintained after the fall of the military regimes in the two countries. Argentina’s advanced technological projects, however, are bearing the effects of its ongoing economic crises. Its gas diffusion plant for uranium enrichment is now practically closed. In Brazil, the Navy’s original project – a uranium-235 enrichment plant based on the gas centrifuge technique – has become the basis for a commercial venture: the Resende facility for production of nuclear fuel.

Latin American countries have contributed to three major initiatives for nuclear disarmament. The Tlatelolco Treaty backs the oldest nuclear-weapon-free zone of the world and was set-up by Latin American countries. The negotiations on this treaty were led by Mexico its depository state since 1967 –, and its catalyst was the Cuban Missile Crisis of 1962. Another relevant Latin-American initiative took place in the 1980s at the peak of the Cold War when Argentina participated in the “six countries call” for negotiations between the ex-Soviet Union and the United States. Since June 1998, Brazil has been participating with six other countries in the New Agenda Coalition (NAC), a diplomatic coalition acting within the United Nations for the strengthening of the Non-Proliferation Treaty (NPT).² NAC’s major contribution was the negotiation of the well-known “13 practical steps” in the Final Document of the 2000 NPT Review Conference.³

Current Nuclear Issues Seen from Latin America

Latin American diplomacy is now facing contrasting expectations: after the NPT States parties’ approval of the 13 steps, the new US administration now prefers a unilateral “global order” over the trust and respect for international agreements. Five years after the 2000 NPT Review Conference, the nuclear weapon states discard the commitments of the Final Document. The “rule of international law” has come to be considered “not safe” by the US government in view of the terrorist attacks of September 11, 2001. The Bush administration opposes the Comprehensive Test Ban Treaty. The US Senate rejected it already in 1999, and globally, this 1996 treaty remains suspended. American critics say it limits the military options of the United States, including the possibility of resuming explosive tests of nuclear arms. Thus, the overall assessment of world affairs in Latin America is quite sober as is exemplified in the following commentary from a Brazilian journalist:⁴ “After the first Gulf War, a lot has was said about a new international order, but that slowly progressed into hollow words. All of a sudden, things were extraordinarily accelerated. Within a few months, the American leadership affected three essential pillars of the Western system: NATO, the European Union, and the United Nations. As a matter of fact, NATO had already lost its purpose a decade ago, Europe split over the Iraq war, and driven by the U.S. a severe process of erosion was already going in the UN institution. It was no longer possible to save these alliances and world institutions in decline. Bush’s role was thus limited to the last blow against something that was already falling apart.”

Recent Nuclear Issues in Brazil

During the 2002 presidential campaign, then-candidate Lula was invited to meet with representatives of the Brazilian armed forces. Asked about his posi-
tion in connection with the nuclear technologies, candidate Lula had the opportunity to comment about the main weakness of the NPT: its tacit recognition of the non-implementation of Article VI by the nuclear powers. President Lula’s wording, however, allowed the interpretation that he considered it unfair that only the five nuclear powers could have nuclear arsenals under the NPT. The official position of the Worker’s Party platform was one of explicit support for international treaties against weapons of mass destruction. After the elections, Brazilian officials in charge of finance and trade affairs also presented their position to the press and openly declared that any Brazilian initiative related to weapons’ development would be damaging to any prospects of improved international relations. However, concerns arose again in October 2003 when then Science and Technology Minister Roberto Amaral said Brazil would join the select group of nations capable of refining uranium via ultra-centrifugation and will acquire full capability of the entire spectrum of nuclear technology. These comments were not backed by President Lula. However, according to critics “it’s not the production of nuclear weapons that appears to concern world opinion but rather the timing of Brazil’s initiative to master these technologies.”

One should be aware that there is a strong nationalistic “wind” in Brazil, and that nationalistic leaders backed President Lula’s candidacy. Members of the political parties that had given open support to the Workers Party candidate were invited to join President Lula’s government. The left-wing parties still maintain their vision of nuclear power from the 1950s. This “vision” is shared by many Brazilian nationalistic groups outside the military – in particular the nuclear engineers! One should note that Brazil has the world’s fourth largest reserves of uranium, the raw material used in nuclear power plants and weaponry. The official position expressed by President Lula himself is that Brazil intends to expand its enrichment capacities to sell low-grade uranium to other nations. These facilities are legal under international treaties, but are subject to IAEA inspections. Brazilian critics doubt the soundness of this commercial venture. Moreover, there is a major splitting within the Brazilian government about the role of nuclear energy in the short-term planning to meet the energy needs of the country.

Thus, in order to understand the nuclear activities currently taking place in Brazil one must consider their political dimension. This is specially the case for the above mentioned Resende facility. Late last year, Brazil’s nuclear program was once again subject to international scrutiny. The main reason being that any IAEA inspection of nuclear facilities of the NPT signatories must now take place under the Additional Protocols, a protocol so far not recognized by Brazil. Recently, the Brazilian Defense Minister justified the nation’s right to secrecy, saying that this right should not signify an impediment to the inspections. Brazilian officials in charge of the Resende facility said the inspections were unnecessary and intrusive since Brazil formally abstained from nuclear weapon development in the 1990s. Quoting Sokolsky once again: “Brazil’s penchant for protecting its technology feeds expectations that it could be harboring secret nuclear ambitions.”

Conclusion

Since 1995, the Brazilian perspective on nuclear regime change has evolved inwards. For the Brazilian public opinion makers, the central issue is the preservation of Brazil’s technical achievements in this sector. The IAEA is viewed as a “foreign body” and the NPT as a “distant construct.” The Brazilian media is giving poor coverage of the international conferences on these matters and few press professionals are aware that Brazil will be chairing the 2005 Review Conference of the NPT.

In July 1987, in a drive initiated by the Brazilian Society for the Advancement of Science, more than 60,000 signatures were collected endorsing the statement “The construction, storage and transport of nuclear weapons are forbidden in Brazil.” This pledge and the signatures, cast in the format of a “popular petition,” were sent to the Brazilian Congress with the request that it be acknowledged and eventually included in the New Constitution of 1988. It is hard to believe that the campaign for the above-mentioned petition could have been successful under the current nuclear-power’s policies and the significant increase of the number of nations having atomic arsenals.

1 Beyond the NPT: A Nuclear-Weapon-Free World, published by the International Network of Engineers and Scientists Against Proliferation (INESAP): “If complete nuclear disarmament is to become a reality, and not remain just a Utopian dream, we need to describe in detail what a world free from nuclear weapons would look like; we need to be quite clear about our goals, and we need to devise a strategy which sets out the steps by which those goals can be reached.”

2 The New Agenda Coalition consists of Brazil, Egypt, Mexico, Ireland, New Zealand, South Africa, and Sweden. Slovenia left the coalition shortly after its creation.

3 In May of 2000, the NPT had its first five year review since the extension conference of 1995. Measured in diplomatic terms, the NAC had a major impact on the NPT Review. They succeeded in getting the inclusion of the following pledge in the conference’s final resolution: “an unequivocal undertaking by the nuclear-weapon States to accomplish the total elimination of their nuclear arsenals.” Additional pledges were made by the nuclear powers for the undertaking of thirteen practical steps to demonstrate compliance with the NPT.


6 The Additional Protocol is a series of safeguards strengthening measures set up in 1995 that could be taken within the existing authority of IAEA’s Board of Governors.

7 See footnote 5.

8 As a consequence of an official intervention, the petition was substituted by a statement declaring that nuclear energy should be used for peaceful purposes only.

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25 INESAP Information Bulletin No.25, April 2005
Making Weapons, Talking Peace
Resolving the Dilemma of Nuclear Negotiations in South Asia

Zia Mian, A. H. Nayyar, M. V. Ramana

It is talking time again. Hardly a day goes by without a report of Pakistani and Indian officials, foreign secretaries or foreign ministers meeting and talking. This a welcome respite from the past several years of tension interrupted by crises and threats of war. While talking is better than fighting, it is important to remember that India and Pakistan have met and talked many times since the 1999 Lahore summit, where the prime ministers claimed that they shared “a vision of peace and stability between their countries, and of progress and prosperity for their peoples.”

However, stripped of the rhetorical commitments to ‘peace and stability’, the Lahore agreements were little more than limited transparency measures. The goal then was to assure the international community that having tested their nuclear weapons, India and Pakistan would behave as ‘responsible’ nuclear weapons states. But what followed Lahore was not peace or stability but the Kargil war, the armed stand-off in 2002 after ‘jihadis’ attacked India’s parliament, spiralling military spending, missile test after missile test, and the consolidation of nuclear strategies.

If the current round of nuclear talks is to offer anything better than leaders and the public in India and Pakistan will have to get serious about changing their ways of thinking about nuclear weapons, and recognise the need for concrete measures that help slow the momentum towards ever larger and more destructive nuclear arsenals. This is necessary to set the stage for any kind of nuclear disarmament: unilateral, bilateral, regional or global. An inevitable part of this process will be to break the monopoly of the nuclear weapons community, the scientists, strategic thinkers and pundits, military forces, and bureaucrats who shape nuclear policy. They have brought us the bomb and now seek to keep it, because it keeps them.

**Challenging Nuclear Assumptions**

Leaders in Pakistan and India are of two minds when it comes to their nuclear arsenals. On the one hand, they recognise that these weapons cast a dark, potentially fatal shadow over the future of both countries. India’s new foreign minister Natwar Singh recently declared “To me personally, the most important thing on our agenda should be the nuclear dimension.”

General Musharraf claimed that “we have been saying let’s make south Asia a nuclear-free zone” and added that “If mutually there is an agreement of reduction of nuclear assets, Pakistan would be willing.” These are hopeful indications.

At the same time, officials and leaders on both sides seem bewitched by the power of the bomb. They each believe that the threat of massive destruction represented by their nuclear weapons is a form of protection, and so a force for good. Lost in this nuclear logic, they are forced to concede that the possession of nuclear weapons by the other state serves the same purpose. This is reflected in the joint statement released after the expert-level talks on nuclear confidence building measures held in New Delhi on June 19-20, which claimed: “Recognising that the nuclear capabilities of each other, which are based on their national security imperatives, constitute a factor for stability.”

This formulation was repeated in the statement after the meeting of the two foreign secretaries in New Delhi on June 27-28.

The idea that nuclear weapons are a ‘factor for stability’ flies in the face of both reason and experience. The incredible destructive power of nuclear weapons is meant to spawn fear in adversary states. But this fear also incites these states to seek the same weapons and produces a widening spiral of instability and escalation. It was fear of Nazi Germany acquiring nuclear weapons that led the US to initiate the Manhattan Project, and fear of a nuclear-armed US that led the Soviet Union to seek its weapons. The subsequent 40-year long superpower cold war is a history of hostility, crises and ever growing conventional and nuclear arsenals. Efforts at talks to reduce the nuclear threat always met with opposition from a chorus of strategic thinkers, policymakers and armed forces, who all saw in the bomb a source of power and advantage. Nuclear weapons have served to create stability in one area; they have ensured and protected a vast nuclear weapons complex. The enduring clout of these complexes is revealed by the persistence of thousands of nuclear weapons and large nuclear weapons laboratories with colossal budgets and numerous personnel in both the US and Russia, 15 years after the end of the cold war.

There is abundant evidence in South Asia that there is no stability to be found in the shadow of the bomb. India’s nuclear pursuits encouraged Pakistan to follow suit. India’s 1974 nuclear test further increased Pakistan’s determination to have the bomb. Pakistan’s acquisition of nuclear capability in the mid-1980s brought no stability. As the Indian government’s official Kargil Review Committee Report put it, “Pakistan’s progress towards nuclear weaponisation coincided with an increasingly assertive political posture towards India.” Events after the May 1998 nuclear tests bear this out. The Kargil war followed barely a year after the nuclear tests. It was the largest military engagement ever between two
nuclear armed countries; many hundreds of soldiers died on each side.

Nuclear weapons were central to the Kargil war. Benazir Bhutto, the former prime minister of Pakistan, has stated that in 1996 Pakistani military officers had presented her with plans for a Kargil-style operation, which she vetoed. After the nuclear tests, Pakistan’s political and military leaders were evidently convinced that the operation might be feasible after all. The nuclear shield was supposed to restrict any possible Indian response while the threat of escalation to a nuclear war would serve to raise international concern about the Kashmir dispute and, it was hoped, lead to rapid international mediation.

Crisis has followed crisis. A little over two years after the Kargil war, India and Pakistan were enmeshed in another military confrontation involving an estimated half a million troops, about two-thirds of them Indian, facing off across the border. According to Indian defence minister George Fernandes, the Indian military was ‘raring to go.’ He also warned Pakistan not to consider using nuclear weapons, saying: “We could take a strike, survive, and then hit back... Pakistan would be finished.”

Pakistan foreign minister Abdul Sattar was quoted as saying that his anxieties were ‘mounting not only by the day but by the hour.’

In May 2002, prime minister Vajpayee told front-line troops in Kashmir that the time had come for a ‘decisive fight’, adding, ‘we will win again.’ Soon after, an Indian army officer briefed a senior journalist about plans for a quick attack that would set back “Pakistan’s military capability by at least 30 years, pushing it into the military ‘dark ages,’” adding that “casualties in men and machines in such an operation will be high and the military has firmly told the politicians to prepare the nation for losses and delayed results, as fighting will be fierce.”

Details of the plans for attack, with a ‘D-day’ of June 15, 2002, have since been confirmed by the Indian Army chief.

It is in the face of such history that one must examine the recent peace process – and appreciate that it is of great importance that they succeed in making some real progress towards reducing the risk of nuclear war in the region.

Assessing the Talks

Reading the media hoopla about the talks, one may be pardoned for thinking that two countries had in fact made dramatic progress towards reducing nuclear risk. Sad to say, the aim, as in the case of the Lahore agreement, seemed more to portray themselves as ‘responsible’ nuclear weapons states. The agreements themselves amounted to little more than a step sideways.

The only ‘new’ measure is another hotline, this time linking the two foreign secretaries, through their respective foreign offices, “to prevent misunderstandings and reduce risks relevant to nuclear issues”. There are several hotlines already. J.N. Dixit, a former foreign secretary of India and newly appointed as national security adviser reports that in November 1990 prime ministers Chandrashekhar and Nawaz Sharif met during a SAARC Summit in Male, and “decided to establish a direct hotline. They also took a decision to activate the hotline between the offices of the foreign secretaries and the directors of military operations”. In Dixit’s judgment “hotline conversations between the director-generals of military operations remain routine and the prime ministerial hotline has seldom been used, as has the hotline between the two foreign secretaries.”

The war, near war and turmoil in the past five years certainly suggest that these lines of communication are not very satisfactory in preventing or defusing crises.

The other agreed measure that has been highlighted is the agreement to notify each other of upcoming missile tests. This was in fact agreed to in Lahore in 1999 and was part of the Memorandum of Understanding signed there. Since then, the two states have been informing each other about missile tests, of which there have been many. Now, five years later, they have simply agreed again that they will conclude such a notification agreement.

The missile test notification agreement, when it comes, will do nothing about limiting either state from continuing to test missiles with ever longer range, greater accuracy, and more destructive power. That this will happen is certain. No sooner were the talks over then General Musharraf announced proudly “We are conducting a missile test every second day. I give you important news that within two months Pakistan will conduct a big missile test.”

Within days after the talks, India tested its Agni missile. India’s new defence minister Pranab Mukherjee has said that the longer range Agni-III missile would be tested ‘as and when required’, and preparations to test it from a range in Orissa are reportedly underway.

Reducing Nuclear Danger

India and Pakistan have to go beyond just finding ways and means for officials to talk to each other about the risks of nuclear weapons, and agree on measures that will concretely reduce the nuclear danger. A little common sense shows there are some obvious things that they could do, if they want to do more than just build ‘confidence’ while their nuclear arsenals keep growing.

Both India and Pakistan have emphasised repeatedly that they seek only a ‘minimum’ nuclear arsenal. General Musharraf’s remarks about Pakistan’s willingness to consider a ‘reduction of nuclear assets’ makes clear that this threshold has already been crossed. This should be no surprise. Pakistan and India have been making the fissile material (the nuclear explosive) for their weapons as fast as they can for decades. They already have enough for several dozen nuclear weapons each.

The table shows the casualties that would be inflicted if they each used only five of their weapons against the other’s cities (assuming each weapon is about the same size as those tested in May 1998). A total of about three million deaths is predicted for these cities in India and Pakistan, with an additional 1.5 million severely injured. The experience of death and
India and Pakistan can inflict much more than this devastation, using only a fraction of their nuclear weapons stockpile. It is beyond any understanding why they continue to produce more fissile material for more nuclear weapons. The two countries should stop making more fissile material. And, no more of the existing fissile material stockpile should be turned into nuclear weapons. Each additional weapon could destroy yet another city.

The reluctance of India and Pakistan is hard to understand. Their joint statement says each state will refrain from nuclear testing “unless, in exercise of national sovereignty, it decides that extraordinary events have jeopardised its supreme interests”. This conditionality is already there in Article 9 of the CTBT, which allows a state to withdraw from the Treaty, and by implication carry out a nuclear test. Therefore, India and Pakistan would lose nothing by signing this Treaty.

By formally joining the Treaty, India and Pakistan would help ensure that the international community is better placed to restrain any nuclear weapons state or would-be nuclear state from carrying out a nuclear test. This was why the idea of a treaty banning all nuclear tests was floated in 1954 by prime minister Jawaharlal Nehru. Since then, over 2,000 nuclear tests have been conducted around the world. These made possible unimaginably destructive nuclear arsenals, killed and injured uncounted numbers of people through radioactive fallout and contaminated the environment for centuries to come. It was to stop this that the CTBT was crafted. Now, even though it is a signatory to the CTBT, US nuclear weapons laboratories and nuclear hawks are seeking new nuclear weapons for use against third world countries. They want to resume testing, perhaps in the next few years. If this is allowed to happen, nuclear weaponers and militaries in other nuclear weapons states, including in Pakistan and India, will surely push to follow the US lead. It is important to prevent a second age of nuclear weapons testing.

A natural corollary to the ban on nuclear weapons testing is a ban on flight testing of ballistic missiles. Such a ban would inhibit the development of longer range and more accurate, thereby more destructive, missiles. The furious pace of missile development in South Asia and the tit-for-tat testing programmes makes such a ban all the more urgent.

Despite the best laid plans and supposedly fool-proof technology, accidents do happen. This is reflected in the Lahore agreement, where the two governments committed to “reducing the risks of accidental or unauthorised use of nuclear weapons”. These risks are directly linked to the deployment of nuclear weapons; deployment might involve, for example, putting the weapons on ballistic missiles or keeping the weapons at military airbases close to planes that may carry them. If nuclear weapons are not given over to military forces and not kept ready to use, there is much less danger of them being used by whoever happens to have charge of them at that moment, or of them being involved in an accident. These are elementary safety measures. All India and Pakistan need do, at least as a start, is to announce that they will not deploy their nuclear weapons.

This idea has some support even among senior Pakistani policy-makers. Speaking recently in Beijing, Agha Shahi, a former foreign secretary and foreign minister, suggested that as part of a “nuclear restraint and a nuclear risk-reduction regime” for Pakistan and India, “it would be prudent in this situation to keep warheads unassembled and separated from missiles, not mounted for immediate firing.” This would be in keeping with India’s official posture of No First Use of nuclear weapons. There is no reason to keep nuclear weapons fully assembled and mounted on mis-

<table>
<thead>
<tr>
<th>City</th>
<th>Total Population within 5 km of Explosion</th>
<th>Killed</th>
<th>Severely Injured</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangalore</td>
<td>3,077,937</td>
<td>314,000</td>
<td>175,000</td>
</tr>
<tr>
<td>Bombay</td>
<td>3,143,284</td>
<td>477,000</td>
<td>229,000</td>
</tr>
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<td>Calcutta</td>
<td>3,520,344</td>
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<td>198,000</td>
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<td>Madras</td>
<td>3,252,628</td>
<td>364,000</td>
<td>196,000</td>
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<td>New Delhi</td>
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<td>Faisalabad</td>
<td>2,376,478</td>
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<td>Rawalpindi</td>
<td>1,589,828</td>
<td>184,000</td>
<td>97,000</td>
</tr>
</tbody>
</table>

It is clear that weapons like those tested in May 1998 are destructive enough to kill hundreds of thousands of people in any major subcontinental city. Nevertheless the nuclear weapons establishments in India and Pakistan, as in similar establishments in other countries with nuclear weapons, pursue research and development activities to make their nuclear weapons both more destructive and more compact. If the future is to offer something other than the paranoid logic of racing to build more and more lethal weapons, the two governments should call a halt to such activities.

One step towards curtailing new weapons development is a prohibition on explosive testing of nuclear weapons. In the recent meeting, India and Pakistan repeated their unilateral declarations to conduct no further nuclear weapons tests. But, neither seems willing to sign the Comprehensive Nuclear Test Ban Treaty (CTBT), the 1996 international agreement banning explosive nuclear weapons tests – which has been signed by all the other nuclear weapons states (US, Russia, Britain, France and China, as well as Israel), and by 166 other countries. The reluctance of India and Pakistan is hard to understand. Their joint statement says each state will refrain from nuclear testing “unless, in exercise of national sovereignty, it decides that extraordinary events have jeopardised its supreme interests”. This conditionality is already there in Article 9 of the CTBT, which allows a state to withdraw from the Treaty, and by implication carry out a nuclear test. Therefore, India and Pakistan would lose nothing by signing this Treaty.

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siles and ready to fire unless a state intends to launch a rapid nuclear attack.

As part of the Lahore agreements, India and Pakistan committed “to notify each other immediately in the event of any accidental, unauthorised or unexplained incident that could create the risk of a fallout with adverse consequences for both sides, or of an outbreak of a nuclear war between the two countries, as well as to adopt measures aimed at diminishing the possibility of such actions or incidents being misinterpreted by the other.” The new nuclear hotline is meant to address the first part of this agreement. The two states should go on and agree to draw up together a list of all the possible “accidental, unauthorised or unexplained” incidents that they would like the other side to tell them about. This would lay the basis for sharing descriptions of what measures each has taken to reduce the risks of possible accidents and unauthorised incidents. Talat Masood, a retired Pakistani Lieutenant-General, has proposed that India and Pakistan, committed to the Lahore Agreement, jointly conduct exercises in responding to nuclear accidents and share experience on safety issues.25

All the steps suggested here are no more than common sense. But this is often in short supply in all countries with nuclear weapons. Advice on nuclear issues in both India and Pakistan is dominated by the nuclear weapons complex, the military and the foreign ministries. Because they deal with nuclear weapons, this advice is shrouded in secrecy. Expert they may well be, infallible no one is. And, like all institutions, they inevitably have a vested interest in keeping their power, influence and funding, and seeking more.

It is these very agencies that have brought us to the point of having to worry about the risk of a nuclear war that might kill millions and of nuclear accidents. To find a way forward, governments in both countries would do well to seek out other perspectives, ask for second opinions, find people from outside the government establishments who can help develop new ideas, and encourage an informed and open public debate.

It will be no easy path from our present nuclear-armed confrontation to the “peace and stability, progress and prosperity” promised at Lahore and so far denied. We must walk it together with courage and conviction.


1 Lahore Summit Declaration; http://meaindia.nic.in/event/2001/07/14event01.htm#7.
16 Lahore Summit Memorandum of Understanding, from the website of India's Ministry of External Affairs; http://meaindia.nic.in/event/2001/07/14event01.htm#7.
17 Mike Collett-White, No slow down in Pakistani nuclear programme, Reuters, July 1, 2004.
20 A broader set of arms control measures in the context of the Lahore Agreement was proposed in Zia Mian and M.V. Ramana, Beyond Lahore: From Transparency to Arms Control, Economic and Political Weekly, April 17–24, 1999, pp. 938–42.
22 For an argument about the need for a comprehensive global missile control regime, including a ban on flight tests, see Andrew Lichterman, Zia Mian, M.V. Ramana and Jürgen Scheffran, Beyond Missile Defence, International Network of Engineers and Scientists Against Proliferation/Western States Legal Foundation Briefing Paper, March 2002; www.inesap.org/pdf/briefings/08_02.pdf.

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In INESAP Information Bulletin No.20, the three authors of this article and Matthew Kinzie published the article Nuclear War in South Asia, which described the impact a nuclear war would have on India and Pakistan. That article was adapted from Smitu Kothari and Zia Mian (eds.), Out of the Nuclear Shadow; Lokayan, Rainbow Press, and Zed Books, 2001, 400 pages, ISBN 1842770594, $ 27, 50.
From Obligation to Abolition
The Non-Proliferation Treaty and a Nuclear Weapons Convention

Alyn Ware

In the 21st Century, as the ever-expanding exchange of peoples, cultures, and trade across nations helps to ease nationalistic prejudices, and as the shibboleths of the Cold War subside, it is time to abolish nuclear weapons and make the world a safer place for all peoples.

Rt Hon Helen Clark, Prime Minister of New Zealand.

At the 1995 Non-Proliferation Treaty (NPT) Review and Extension Conference, over 150 non-governmental organisations released an appeal to States parties to the NPT urging them to implement their Article VI disarmament obligations by commencing negotiations on a nuclear weapons convention (NWC) which would provide for the abolition and elimination of nuclear weapons. Two years later, at the 1997 NPT Prep Com, a coalition of lawyers, scientists, and disarmament experts released a Model Nuclear Weapons Convention which outlined the legal, technical and political requirements for complete nuclear disarmament.

Despite considerable public and official support for a NWC, negotiations towards its conclusion have not commenced, let alone been concluded. However, a number of recent developments have opened possibilities to both promote and make progress towards a NWC. These include advances in verification technology, compliance procedures, and co-operative security mechanisms; changing international political and economic systems; increasing awareness of and attention to proliferation risks including those involving non-State actors; increasing engagement of key sectors of society including mayors and parliamentarians; and increased public support for abolition.

As such, there are greater opportunities to promote nuclear abolition at the 2005 NPT Review Conference. This could include, in particular, encouraging States parties to the NPT to give deeper consideration to the legal, technical, and political requirements for the elimination of nuclear weapons including the elements which would comprise a NWC – and to encourage the implementation of specific steps which might be possible in the current political climate.

Abolition as a Bridge Between Non-Proliferation and Disarmament

New Zealand Minister of Disarmament Marian Hobbs noted recently that “There appears to be a growing divide in the international community between those countries (including the nuclear weapon states) prepared to take stronger action – unilaterally or through coalitions – against potential proliferators, and those countries calling instead on the Nuclear Weapon States to lead by example and take greater steps towards disarming their own nuclear weapons.” She noted that “This split could be bridged, and progress made on both non-proliferation and disarmament fronts, by adopting an abolition framework, i.e. through advancing norms which further de-legitimise nuclear weapons regardless of who may possess or aspire to possess them, and further developing the mechanisms which prevent their acquisition and provide for their systematic and verified elimination.”

Abolition – More Than Just Disarmament

Abolish: Formally end existence of (custom, institution). Oxford English Dictionary

Nuclear abolition comprises a wider system than the physical or technical process of dismantling and eliminating nuclear weapons. It describes a process of prohibiting the development, acquisition, possession, transfer, use, and threat of use of nuclear weapons, but which also includes the elimination of the weapons themselves. Not only does this process encompass both non-proliferation and disarmament, but it also includes processes to de-legitimise nuclear weapons regardless of who possesses or seeks to possess them.

Thus, an abolition process is not necessarily halted by lack of progress in any one area – such as, for example, the continuing maintenance of large stockpiles of nuclear weapons by the NWS. Progress could instead be made in another area of abolition while preparing for the later possibility of progress on stockpiles. Such progress could be made domestically, regionally, bilaterally, plurilaterally, or multilaterally. Thus Hobbs notes that “Everyone can take steps forward to nuclear abolition, forward to world security.”
Weapons which affirmed that the gality of the Threat or Use of Nuclear Justice Advisory Opinion on the Le-
1. the 1996 International Court of
nuclear weapons include:
2. Developments since 1995 which have
Legal Norms
Developments since 1995 which have
International Mechanisms
Nuclear doctrines have been dev-
operation of international security
mechanisms which can address these
situations could help to remove any
perceived security requirement for
nuclear weapons.

Verification and Compliance
A key concern creating resistance by States to join disarmament agreements is whether or not it will be possible to verify whether other States are keeping
to their obligations. This is probably more important with nuclear weapons than most other weapons. If most States comply with nuclear disarmament obligations and eliminate their stockpiles, but one State cheats and retains a nuclear capability, there are concerns that that State could gain unmatched political power through nuclear blackmail. Trevor Findlay (Director of Verification Research, Training and Information Centre, VERTIC) believes that advances in verification technology are such that “An impressive and reliable verification system can, even on the basis of current knowledge, be constructed to verify with high, although not exactly quantifiable, certainty that all parties to a universal nuclear disarmament treaty are complying with their obligations.”

Patricia Lewis, Director of the UN Institute for Disarmament Research (UNIDIR), argues that the act of checking compliance not only provides information, but also creates interaction between military personnel of previously hostile countries. There will be opportunities to assess cap-
abilities with much greater confidence, building trust between States as they move to a situation in which they cannot annihilate each other. Indeed, she predicts that the confidence-building aspects could eventually be verification’s single and most important role: “We could move from a position of the threat of nuclear war as security to one of verification as security.”

Legal Norms
Developments since 1995 which have strengthened the legal norm against nuclear weapons include:
1. the 1996 International Court of Justice Advisory Opinion on the Legality of the Threat or Use of Nuclear Weapons which affirmed that the threat or use of nuclear weapons is generally contrary to international law,5
2. UN Security Council Resolution 11726 on the nuclear tests by India and Pakistan which affirmed “that the proliferation of all weapons of mass destruction constitutes a threat to international peace and security.”
3. UN Security Council Resolution 15402 on the non-proliferation of weapons of mass destruction which a) requires all States to take measures to prevent the proliferation of nuclear, chemical, and biological weapons, and b) introduces an element of individual, as well as State, responsibility by requiring States to take actions to prevent proliferation activities of non-State actors. While the later two developments deal primarily with the proliferation of nuclear weapons and only minimally with possession by NWS, they open up a possible wider application of the norm against nuclear weapons to the nuclear weapons policies and prac-
tices of the NWS themselves – a fact partially recognised in Resolution 1540 which encourages “all Member States to implement fully the disarmament treaties and agreements to which they are party.” In its report to the UN Security Council 1540 Commit-
tee on implementation of operative paragraph 1, New Zealand made the application of this norm to disarmament more explicit by stating that: “New Zealand’s strong and con-
sistent policy is that all weapons of mass destruction (WMD) should be eliminated, and that this elimination should be verified and enforced through robust legally binding multi-
lateral disarmament instruments. New Zealand provides no support whatsoever to any entity – whether State or non-State actor – attempting to develop, acquire, manufacture, possess, transport, transfer, or use WMD and their means of delivery.”

International Mechanisms
Nuclear doctrines have been dev-
opled in particular to deter or respond to a nuclear attack, attacks with other weapons of mass destruction, or acts of aggression with superior conven-
tional forces that could threaten the survival of the State. Thus, the devel-
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order to build confidence in a nuclear weapons free world.

**Legal, Technical and Political Requirements for a Nuclear Weapons Free World**

On 29 October 2004, Malaysia hosted a roundtable in New York at which they released a draft working paper for the 2005 NPT Review Conference entitled *Follow-up to the International Court of Justice Advisory Opinion on the Legality of the Threat or Use of Nuclear Weapons: Legal, technical and political elements required for the establishment and maintenance of a nuclear weapons free world.*

The paper calls for negotiations by States parties to the NPT and States not parties to the NPT which would lead to the conclusion of a nuclear weapons convention. As such it is the only official initiative at the 2005 NPT Review Conference which enunciates the goals of Abolition 2000, Mayors for Peace “2020 Vision,” and the overwhelming desire of the public, including in NWS, for a nuclear weapons convention. In proposing a non-discriminatory way to engage States not parties to the NPT, the paper provides the most realistic approach to making progress towards universality of NPT norms.

Most importantly however, the paper reflects an understanding that key legal, political and technical issues need to be addressed before some States will be ready to negotiate for complete nuclear disarmament. As such, the approach presented by Malaysia is not to wait in hope that such issues will be addressed by themselves, but rather to call on States to identify these issues, discuss possible elements or mechanisms that can address these issues, and take action to develop or implement such elements or mechanisms or undertake preparatory work for their development. As such, the Malaysia paper shuns ideology or criticism of States in favour of a very pragmatic approach to nuclear disarmament.

The paper refers to elements for a nuclear weapons free world which have already been developed or achieved. It also refers to commitments made on key disarmament steps such as those agreed at the 2000 NPT Review Conference. The paper notes other steps identified as necessary such as those proposed by the New Agenda Coalition, Canada, and Germany.

However, Malaysia indicates that these in themselves do not provide a comprehensive plan for the legal, technical and political requirements for the achievement and maintenance of a nuclear weapons free world, and that further consideration should therefore be given to those additional elements required. To start this process, Malaysia outlines some of the elements required and draws from the Model NWC.

Malaysia also provides a negotiating model which combines the positive aspects of both the step-by-step approach favoured by some of the NWS and their allies, and the more comprehensive approach favoured by the Non-Aligned Movement. The approach, which Malaysia calls a comprehensive-incremental approach, calls for the achievement of disarmament steps within a comprehensive disarmament framework.

“While it is important to concentrate international attention on concrete steps towards nuclear disarmament which are achievable in the short term, it is also important to simultaneously consider the requirements for a comprehensive nuclear disarmament regime in order to develop an international understanding of the final destination of nuclear disarmament steps. It can be difficult to construct a path to nuclear disarmament if we do not know more precisely what will be the end goal. Considering the elements of a nuclear disarmament regime at this stage could help give direction to intermediate steps and to overcome some of the roadblocks in the current disarmament fora.”

**Conclusion**

The 21st century has opened to new nuclear dangers including increased risks of proliferation to both States and non-State actors, as well as expanded nuclear doctrines from the NWS with new rationalisations for the threat or use of nuclear weapons.

The fundamental accord of the NPT, between the non-NWS who agreed not acquire nuclear weapons and the NWS who agreed to eliminate their arsenals, is being eroded on one side by the increasing proliferation risks and on the other by a lack of action on the part of the NWS to implement their disarmament obligations.

The divide between the non-NWS and the NWS (and some of their allies) is growing as the non-NWS become increasingly frustrated at the continuing (and expanding) nuclear doctrines of the NWS, while the NWS and their allies become more belligerent to prevent proliferation including through the threat and use of force. If not reversed, this trend threatens to further erode the non-proliferation regime and possibly lead to a catastrophic use of nuclear weapons.

Adopting an abolition approach – combining both non-proliferation and disarmament could help bridge this divide, and help pave the way for progress on both, culminating in the complete prohibition and elimination of nuclear weapons.

As Hobbs has noted “At the NPT Review Conference in May, we need to build on the 13 steps. We need to position the NPT into an abolition framework. At the moment we are in danger of wasting energy arguing which steps are more important and forgetting about the end goal that we agreed to – the end/abolition of nuclear weapons – in Article VI of the Treaty.”

A focus on abolition and the requirements to achieve a nuclear free world could indeed enhance the possibility for progress towards the fulfilment of the NPT goals and prevent it falling into disarray.

*A more in-depth exploration of many of the ideas in this paper can be found in: Alyn Ware, Kate Dewes, and Michael Powles, *Snaring the Sun: Opportunities to prevent nuclear weapons proliferation and advance nuclear disarmament through an abolition*
International Control of Tritium for Nuclear Nonproliferation and Disarmament

Author
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Key Features

- Explores the role of tritium in nuclear weapons programs
- Discusses opportunities for integrating tritium control into an international nonproliferation system
- Makes the case for carefully designed tritium control that will slow down and reverse nuclear proliferation

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1 Dealing with the civilian/military ambivalence of tritium.
2 Diversion path analysis.
3 Verification of an international tritium control agreement.
4 Technical assessment of an international tritium control agreement.
App A. World tritium facilities, inventories and production capabilities.

Audience
Analysts in nuclear non-proliferation and disarmament; think tanks; military planners; journalists; nuclear scientists and engineers; and planners for nuclear energy systems

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The NPT and a Nuclear Weapon Free Regime

Workshop Report

On October 29, 2004, the Permanent Mission of Malaysia to the United Nations and the International Association of Lawyers Against Nuclear Arms organized a roundtable and dinner on The NPT and a Nuclear Weapon Free Regime which was attended by approximately twenty-five government delegations, six parliamentarians and fifteen non-governmental experts.

The roundtable was held to encourage delegations to the 2005 Non-Proliferation Treaty (NPT) Review Conference to begin a process for considering and mapping the legal, technical and political elements required for complete nuclear disarmament. Such a process could stimulate progress by nuclear weapon states (NWS) and non-NWS on a range of unilateral, bilateral, pluri-lateral and multilateral measures for nuclear disarmament.

Malaysia used the opportunity to release a draft working paper to the 2005 NPT Review Conference, exploring the utility of a comprehensive-incremental approach to disarmament and outlining some of the requirements for the establishment and maintenance of a nuclear weapon free world.

Peter Weiss, Vice-President of the International Association of Lawyers Against Nuclear Arms and chair for the first session, called on governments to consider the very practical measures presented in the Model Nuclear Weapons Convention (Model NWC) to control nuclear weapons and fissile material and thus prevent the occurrence of a nuclear tragedy from the use of nuclear weapons by either a State or terrorist organization.

H.E. Datuk Rastam Mohd Isa, Malaysian Ambassador to the United Nations, noted that a key aim of the working paper released by Malaysia was to assist States parties to the NPT to develop, at the 2005 NPT Review Conference, an effective program for action encompassing and extending the practical disarmament steps agreed in 2000.

Hon. Paul Meyer, Permanent Representative of Canada to the United Nations in Geneva, identified some steps in which he believed progress could be made in the short term, including completion and implementation of the Trilateral Initiative, arrangements by all nuclear weapon states to place all fissile material under International Atomic Energy Agency (IAEA) verification, and the further development of verification capabilities. He also called for action to reduce the operational status of nuclear weapons.

Rebecca Johnson, nuclear analyst from the Acronym Institute for Disarmament Diplomacy, noted that current non-proliferation initiatives such as the measures called for in United Nations Security Council resolution 1540 and the Proliferation Security Initiative, focused on trying to keep nuclear weapons out of the ‘wrong’ hands. She believes that this approach is not sustainable as it implies a discriminatory norm outside of the parameters of international law. Such should apply equally to everybody. The only way to prevent the proliferation of nuclear weapons to the ‘wrong’ hands is to establish a universal norm against nuclear weapons, as envisaged in the nuclear weapons convention (NWC) approach.

Jürgen Scheffran, Senior Research Scientist at the University of Illinois, noted that the threat of acquisition or use of nuclear weapons arises from both capability and motivation, and that verifying both would enable a much greater degree of confidence.

Dr Scheffran referred to the Model NWC as providing a comprehensive mix of verification technologies and mechanisms for verification of both capability and intent. This included technical verification, preventive controls, organization verification, transparency and confidence building and societal verification. The latter has been identified by Josef Rotblat as possibly the most important element in the maintenance and verification of a nuclear weapons free world. For this reason it is important to build civil society including scientists, parliamentarians and non-governmental organizations (NGOs) into the disarmament negotiating process.

George Perkovich, from the Carnegie Endowment for International Peace, introduced a recent report on compliance with non-proliferation and disarmament obligations (Universal Compliance: A Strategy for Nuclear Security) which called on the nuclear weapon States, and especially the United States, to produce white papers indicating the procedures and technologies that would be required in order to verifiably eliminate their nuclear arsenals. He argued that probably the most important considerations in moving towards a nuclear weapons free world would be how to address the security concerns of States like Israel, Iran, India and Pakistan. A nuclear weapons regime would need to be able to meet their security needs without reliance on nuclear weapons.

Merav Datan, lawyer and a principal drafter of the Model NWC, emphasized the importance of steps towards both prohibition and elimination. She noted that a key benefit of the Model NWC was that, while it was not perfect, it demonstrated the feasibility of nuclear disarmament. Ms Datan noted that a value in the NWC approach was that it put the question of how to achieve nuclear disarmament before the question of whether, when or why nuclear disarmament should be achieved. Such an approach is both non-confrontational and practically oriented, and thus more likely to be able to engage the NWS in working collectively with non-nuclear weapon States on a common goal.

Ambassador Rastam concluded the roundtable by noting that Malaysia would continue to engage with delegations to expand and improve the working paper and build support for it so that it could become a useful contribution to the 2005 NPT Review Conference.

Legal, Technical and Political Elements Required for a Nuclear Weapons Free World

Draft Working Paper by Malaysia

The following text is a draft working paper to the 2005 Non-Proliferation Treaty Review Conference released by Malaysia under the title Follow-up to the International Court of Justice Advisory Opinion on the Legality of the Threat or Use of Nuclear Weapons. Legal, technical and political elements required for the establishment and maintenance of a nuclear weapons free world.

The purpose of this paper is to:
- build on the Working Paper submitted by Malaysia and Costa Rica to the 2000 NPT Review Conference Follow-Up to the International Court of Justice Advisory Opinion on the Legality of the Threat or Use of Nuclear Weapons (NPT/Conf2000/MC.1/SB.1/WP.4);
- re-affirm the obligation of States parties to the NPT to pursue negotiations leading to complete nuclear disarmament, and the unequivocal undertaking made in 2000 by all States parties to implement this obligation;
- urge the fulfillment of this obligation through the commencement of negotiations which would lead to the conclusion of a nuclear weapons convention – or a framework of mutually reinforcing instruments – prohibiting the development, testing, production, stockpiling, transfer, use and threat of use of nuclear weapons and providing for their elimination under strict and effective international control;
- continue to explore the legal, technical and political elements required for a nuclear weapons convention or framework of instruments, and integrate this exploration into the development of a program for action at the 2005 NPT Review Conference, encompassing and extending the practical steps agreed in 2000 for systematic and progressive efforts to implement Article VI of the Treaty.

The United Nations General Assembly has also adopted resolutions affirming that:
- The 2000 NPT Review Conference affirmed “an unequivocal undertaking by the nuclear weapon states to accomplish the total elimination of their nuclear arsenals leading to nuclear disarmament to which all States parties are committed under Article VI.”

The United Nations General Assembly has also adopted resolutions affirming that:
- The 1995 NPT Review Conference, Parties to the Treaty on the Non-Proliferation of Nuclear Weapons agreed to pursue systematic and progressive efforts to reduce nuclear weapons globally, with the ultimate goal of eliminating those weapons.

Background

(a) Obligation to Achieve the Elimination of Nuclear Weapons

At the 1995 NPT Review and Extension Conference, Parties to the Treaty on the Non-Proliferation of Nuclear Weapons agreed to pursue systematic and progressive efforts to reduce nuclear weapons globally, with the ultimate goal of eliminating those weapons.

On 8 July 1996, the International Court of Justice delivered an Advisory Opinion on the Legality of the Threat or Use of Nuclear Weapons, in which it concluded, inter alia, that “the threat or use of nuclear weapons would generally be contrary to the rules of international law applicable in armed conflict, and in particular the principles and rules of humanitarian law;” and that “There exists an obligation to pursue in good faith and bring to a conclusion negotiations leading to nuclear disarmament in all its aspects under strict and effective international control.”

It is significant that the ICJ opinion affirmed that the obligation to negotiate for nuclear disarmament requires:
- negotiations on complete nuclear disarmament, i.e. the complete abolition and elimination of nuclear weapons;
- negotiations to be not only pursued, but to be brought to a conclusion;
- international control of the disarmament process.

It is also significant that the ICJ did not confine the disarmament obligation only to States parties to the NPT, but rather affirmed that this is a universal and customary obligation.

At the 1995 NPT Review and Extension Conference, Parties to the Treaty on the Non-Proliferation of Nuclear Weapons agreed to pursue
underpinnings of a universal and multilaterally negotiated legally binding instrument or a framework encompassing a mutually reinforcing set of instruments. (A/53/77 Y adopted 4 December 1998 and A/57/59 adopted 22 November 2003, entitled Towards a nuclear-weapon-free world: the need for a new agenda)

The Non-Aligned Movement, at its XIII Summit from 20-25 February 2005, “emphasised the necessity to start negotiations on a phased programme for the complete elimination of nuclear weapons with a specified framework of time, including a Nuclear Weapons Convention.”

(c) Model Nuclear Weapons Convention

In 1997 Costa Rica submitted to the Secretary-General of the United Nations a Model Nuclear Weapons Convention drafted by an international consortium of lawyers, scientists and disarmament experts, setting forth the legal, technical and political issues that should be considered in order to obtain an actual nuclear weapons convention.

The Model Nuclear Weapons Convention was circulated as UN Doc A/C.1/52/7, along with the recommendation of Costa Rica that this be used to assist the deliberative process for the implementation of UN General Assembly resolutions entitled Follow-up to the advisory opinion of the International Court of Justice on the Legality of the Threat or Use of Nuclear Weapons.

(d) 2000 NPT Review Conference


The Working Paper:

i) Underlined the unanimous conclusion of the International Court of that there exists an obligation to pursue in good faith and bring to a conclusion negotiations leading to nuclear disarmament in all its aspects under strict and effective international control,

ii) Called on States Parties to commence multilateral negotiations leading to the conclusion of a nuclear weapons convention and to invite those States that have not acceded to the Treaty on the Non-Proliferation of Nuclear Weapons to join in such negotiations;

iii) Called on States Parties to agree to give consideration to the legal, technical and political elements required for a nuclear weapons convention or framework convention.

The Path Towards Nuclear Disarmament: Step-by-Step, Comprehensive or Incremental-Comprehensive

There are three general approaches towards achieving nuclear disarmament. The first, a step-by-step approach, entails negotiations on a limited number of initial steps towards nuclear disarmament, with additional steps being considered once the first steps are achieved. The step-by-step approach has achieved a number of concrete disarmament agreements. However, these have been limited in scope, have failed to illuminate the requirements necessary for the complete elimination of nuclear weapons, and have not brought the world much closer to the final goal of nuclear disarmament than when the NPT was adopted in 1970.

A divergent perspective calls for comprehensive negotiations on the complete prohibition and elimination of nuclear weapons. Most States are ready for such comprehensive negotiations, as evidenced by strong support for United Nations resolutions calling on the Conference on Disarmament to “commence negotiations on a phased program of nuclear disarmament leading to the eventual total elimination of nuclear weapons.” (United Nations General Assembly Resolution 58/56, adopted December 3, 2003). However, there is some opinion that a comprehensive approach could prevent progress due to the myriad of issues and disarmament requirements that would have to be addressed before any agreement could be reached.

In addition, the fact that some of the States possessing nuclear weapons do not yet accept comprehensive negotiations precludes the possibility of such an approach in the near future.

An alternative path forward, which combines the advantages of the first two approaches, has been described as incremental-comprehensive. Such an approach incorporates step-by-step measures within a comprehensive framework. This is an approach suggested – but not fully developed – by the program of action agreed at the 2000 NPT Review Conference.

While it is important to concentrate international attention on concrete steps towards nuclear disarmament which are achievable in the short term, it is also important to simultaneously consider the requirements for a comprehensive nuclear disarmament regime in order to develop an international understanding of the final destination of nuclear disarmament steps. It can be difficult to construct a path to nuclear disarmament if we do not know more precisely what will be the end goal. Considering the elements of a nuclear disarmament regime at this stage could help give direction to intermediate steps and to overcome some of the roadblocks in the current disarmament fora.

Thus, the further development of an incremental-comprehensive approach would assist in the implementation of the program of action agreed at the 2000 NPT Review Conference, and lead more quickly to the complete elimination of nuclear weapons. This can be best done by further exploitation of the legal, technical and political elements required for the establishment and maintenance of a nuclear weapons free world, and by the commencement of negotiations towards that end.

Consideration of the Legal, Technical and Political Elements Required for the Establishment and Maintenance of a Nuclear Weapons Free World

Consideration should be given at the 2005 NPT Review Conference to the legal, technical and political elements required for the establishment and maintenance of a nuclear weapons free world, with the aim to integrate
such thinking into the development of a program for action at the 2005 NPT Review Conference based on the practical steps agreed in 2000 for systematic and progressive efforts to implement Article VI of the Treaty. These elements may include:
a) Non-discriminatory general obligations, applicable to States and non-State actors, prohibiting the acquisition, development, testing, production, stockpiling, transfer, use and threat of use of nuclear weapons,
b) Interim control, protection and accounting of nuclear weapons and fissile material holdings,
c) Phases and steps for the systematic and progressive destruction of all nuclear warheads and their delivery vehicles,
d) Mechanisms for verifying the destruction of all nuclear weapons, including, inter alia:
   a. Agreements on data sharing with States and existing agencies;
   b. An international monitoring system comprising facilities and systems for monitoring by photography, radionuclide sampling, on-site and off-site sensors and other data collection systems;
   c. Consultation and clarification procedures;
   d. On-site inspections;
   e. A registry including information gained from State declarations, the international monitoring system, national technical means, inspections, other international organizations, non-governmental organizations and publicly available sources;
   f) Mechanisms for ensuring compliance including, inter alia;
      a. Technical assistance in destruction of nuclear weapons, delivery systems and facilities
      b. Procedures for national implementation
      c. Dispute resolution procedures
   d. Penalties for non-compliance
   e. Recourse to the UN Security Council, UN General Assembly and International Court of Justice for further action
f) An international organisation to coordinate verification, implementation and enforcement under strict and effective international control.

Negotiations Towards a Nuclear Weapons Convention or a Framework of Instruments for the Complete Abolition and Elimination of Nuclear Weapons

For nuclear disarmament to occur, security for all will need to be maintained and enhanced. Thus, there are a number of political issues, in addition to those outlined above, that will need to be addressed. These include, inter alia, building confidence in each of the phased disarmament steps in order to proceed to the next steps, how to diminish the role of nuclear weapons in security doctrines pending nuclear abolition, building regional and international security without nuclear deterrence, development of security assurances, achieving a balance between transparency and protection of sensitive information, the role of societal verification, how to build individual responsibility and protection into the disarmament process while respecting State sovereignty, and how to deal with delivery systems and dual use materials – particularly plutonium and highly enriched uranium.

In addition there are a number of economic and environmental issues which will need to be addressed including the possible need for financial assistance for disarmament and the harmonizing of environmental standards for destroying weapons systems and disposing of fissile materials.

The best way to address these issues and to make progress towards complete nuclear disarmament is to commence negotiations within an incremental-comprehensive framework. Such an approach would allow for all relevant issues to be raised and addressed, and would also facilitate the completion of disarmament steps in areas where agreement can be reached within a short to medium time-frame. More difficult issues requiring more complex arrangements would be resolved through continuing negotiations and achieved in subsequent steps. This is what is envisaged in the call for the commencement of negotiations leading to the conclusion of a nuclear weapons convention or a framework of instruments for the complete abolition and elimination of nuclear weapons.

Recommendations

States Parties agree to a program of action based on the program agreed at the 2000 NPT Review Conference and the legal, technical and political elements outlined in this paper required for the establishment and maintenance of a nuclear weapons free world;

States Parties agree to give further consideration to the legal, technical and political elements required for a nuclear weapons convention or a framework of instruments;

States Parties agree to commence multilateral negotiations leading to the conclusion of a nuclear weapons convention and invite those States that have not acceded to the Treaty on the Non-Proliferation of Nuclear Weapons to join in such negotiations.

CTBT a Dead Letter?

Kyodo News reported on April 6, 2005, about a US administration official outline of the US negotiations strategy for the Non-Proliferation Treaty Review (NPT) Conference to be held in New York in May.

The official noted that the US will refuse any mentioning in a final conference document of the need for an early entry into forced of the Comprehensive Test Ban Treaty, which was negotiated in 1996 as part of the “deal” to get the NPT extended in 1995. “CTBT is a dead letter,” the official is quoted as saying. “Obviously we cannot be party to a political declaration that calls on us to take action” while it urges “all signatories of the CTBT to bring the treaty into force.”

The US delegation will also reject “irreversible” reduction of nuclear weapons, pointing to the growing military power of China and its efforts to modernize missiles. Verification measures for a Fissile Material Cutoff Treaty are viewed as another problem by the US Administration, who is reluctant to permit international inspectors access to its own nuclear facilities.
How Not to Think About Nuclear Weapons

Or: The Elephant in the Closet

Peter Weiss

In a recent article James Surowiecki, the business columnist of The New Yorker, reported that people who work in the insurance industry don’t like to think about really big disasters, like tsunamis, for two main reasons: (1) they are too painful to think about and (2) it’s too difficult to figure out what to do about them. This describes, rather accurately, the current state of the world’s involvement with the nuclear weapons issue.

There have been times, to be sure, when this issue held the attention of significant numbers of people; enough, one would have thought, to bring about significant changes in the way the issue was approached. At the very beginning of the Nuclear Age there was the Baruch Plan, which founderd on being mistaken for a plan for world government. It is worth recalling its author’s opening words in his address to the Atomic Energy Commission of the United Nations:

“We are here to make a choice between the quick and the dead. That is our business.

Behind the black portent of the new atomic age lies a hope which, seized upon with faith, can work our salvation. If we fail, then we have damned every man to be the slave of Fear. Let us not deceive ourselves: We must elect World Peace or World Destruction.”

In 1962, at the height of the cold war there was the Cuban Missile Crisis, later described by one of its participants, historian Arthur Schlesinger, as the most dangerous moment in human history.

But the end of the Cold War – which shows signs of reviving following the frosty exchange between Presidents Bush and Putin in Bratislava on February 24, 2005 – has lulled world opinion into a state of resigned acceptance. How I Learned to Stop Worrying and Love the Bomb, the prescient subtitle of Dr. Strangilove, has evidently become the mantra of the new age, at least in the nuclear weapon states and their allies, with only one qualification: Keep the thing out of the hands of terrorists.

Throughout this period the diplomats have been busy cooking up their alphabet soup of multilateral and bilateral treaties aimed at reiniging the nuclear beast, some in force, some not yet or no longer, including AT, PTBT, OST, NPT, ABM, SALT I and II, TTBT, START I, II and III, CTBT, and the various Nuclear Free Zone Treaties, as well as, lately, in the anti-treaty age inaugurated by the United States, Security Council Resolution 1540 and PSI. Has this assemblage of hard-negotiated agreements served to reduce the nuclear danger? Probably, to some extent, but at the same time it has served to contribute to the feeling that something is being done about nuclear weapons and that the nuclear weapon states are honoring their NPT Article VI and ICJ obligation to negotiate in good faith for total nuclear disarmament, which, as we know, they have not the slightest intention of doing.

In the meantime, the Bush administration has used the image of the mushroom cloud over Manhattan, in the immortal words of Condoleezza Rice, to undermine the whole structure of international law and to stand the United Nations Charter on its head. The concept of self-defense in the Charter, an instrument that was to save future generations from the scourge of war, has been stretched beyond all recognition and legitimacy to justify military action based upon the perception – or misperception – of some danger in the indeterminate future. Iran and North Korea are not to be bombed or invaded just yet, but “all options are on the table.” Other countries “must” give up their nuclear ambitions, but the United States and the other nuclear powers need not give up their nuclear possessions, because the situation has changed since the NPT was enacted. In a frightening analogy to the rendition of detainees to countries where they will be tortured, the American President has announced that he would not be greatly disturbed if another country took out Iran’s nuclear weapon sites.

It stands to reason that so long as the nuclear weapon states hold on to their nukes as guarantors of their security, there will always be other countries that will seek to acquire nukes for the same reason or for simple old-fashioned blackmail. It stands to reason that so long as no serious effort is made to corral “loose nukes”, or to end the production of the base materials from which nukes are made, the danger of nuclear weapons falling into the hands of terrorists will be ever present and, incidentally, will not be derrable by the weapons possessed by the nuclear weapon states. But reason is in short supply in the councils of the nuclear weapon states. Where it occasionally raises its timid head, as in certain initiatives by members of the US Congress, it is quickly put down again. “For to him who has will more be given; and from him who has not, even more will be taken away.”

In this situation, what is our brave band of brothers and sisters to do, those of us who remain committed to the clear vision of the absolute necessity of ridding the world of “the ultimate evil?” Let me suggest a few things:

1. Let us not settle for crumbs from the table, but keep our eyes on the prize. “Back to Basics,” as Xanthe Hall from IPPNW Germany puts it. Nobody wants to see the nuclear Non-Proliferation Treaty fall apart,
but to put our wisdom and energy at the service of this goal to the detri-
ment of the goal of abolition is to play the game of the nuclear powers; they
would like nothing better.

2. The US has decided that treaties are too cumbersome an in-
strument for international lawmaking in the 21st century and has opted in-
stead for lawmaking through the Se-
curity Council, as in Resolution 1540. But the promise of Article VI of the
NPT will never be fulfilled without a treaty like those governing chemical
and biological weapons. The model Nuclear Weapons Convention, a
joint project of INESAP, IALANA and IPPNW, is an excellent begin-
ning for the negotiation of such a treaty. It has been on the table since April
1997. It is obviously not being offered on a take-it-or-leave-it basis, but
rather as a demonstration that such a convention is not too difficult to
achieve from either a legal, politi-
cal, or technical point of view. It is the product of three years of consultation
and role playing by a group of legal and technical experts. It says to the
nuclear weapon states, “Here, start with this, or start with your own
draft, but start!”

3. The best place for such a ne-
gotiation would obviously be the
moribund, but revived, Conference
on Disarmament, but there are other
possibilities, e.g. a special conference
established by the UN General As-
sembly, or an NPT amendment con-
ference, or, as a last resort, an Ottawa-
style process. But the failure of the
nuclear weapon states to agree to even
some sort of beginning is a moral and
legal scandal, and the hypocrisy un-
derlying this point needs to be driven
home to the world community.

4. History moves in strange
ways its wonders to perform. One year
two state solution for Israel/Palestine
seems out of the question; the next
year a clear majority of Israelis as well
as American Jews favors it. At the
beginning of the Vietnam war, most
Americans believed in it and those who
didn’t were regarded as traitors. A few
years later, the chorus of anti-war voice-
es drowned out the pro-war voices by
far. A recently published book de-
scribes how twelve men in a printing
shop started the anti-slavery move-
ment. We have such men and women among
us. They can be found in, inter alia,
Abolition 2000, the Mayors for Peace,
IALANA, IPPNW, the Middle Pow-
ers Initiative, the Nuclear Age Peace
Foundation and last but not least INESAP, which has played a crucial
role in the abolition movement through its unrivaled technical expert-
ise combined with its moral commit-
ment. No one knows exactly what
puts such movements over the top. All we know is that if they keep moving
toward a goal whose time has come, they will eventually reach that goal.

1 The Baruch Plan, presented to the United
Nations Atomic Energy Commission on
the table since June 14, 1946. www.nuclearfiles.org/
redocuments/1946/460614-baruch.html.
2 [footnote added by editor] AT=Antarctic
Treaty; PTBT=Partial Test Ban Treaty;
OST=Outer Space Treaty; NPT=Non-Pro-
 liferation Treaty; ABM=Anti-Ballistic Mis-
sile Treaty; SALT=Strategic Arms Limita-
tion Treaty; TTBT=Threshold Test Ban
Treaty; START=Strategic Arms Reduction
Treaty; CTBT=Comprehensive Test Ban
Treaty; PSI=Proliferation Security Initiative;
ICJ=International Court of Justice.
4 Nuclear weapons were so characterized by
Mohammed Bedjaoui, then the President of
the International Court of Justice, in his
separate statement appended to the ICJ Ad-
visory Opinion of 8 July 1996 on the Lega-
 lity of the Threat or Use of Nuclear Weapons;
5 Model Nuclear Weapons Convention;
www.lcnp.org/mnwconvention.htm. Of-
cial Arabic, Chinese, French, Russian, and
Spanish translations are available at
www.inesap.org/publ_rnw.htm. An intro-
duction into and background information on
the mNWCon is contained in: IALANA,
INESAP, and IPPNW (eds.), Security and
Survival. The Case for a NuclearWeapons
Convention, 1999; www.inesap.org/books/
security.htm. [the editor]
6 [footnote added by editor] INESAP=In-
national Network of Engineers and Scientists
Against Proliferation; IALANA=Interna-
tional Association of Lawyers Against
Nuclear Arms; IPPNW=International Physi-
cians for the Prevention of Nuclear War.
7 Adam Hochschild, Bury the Chains,
The Creation of the Abolition 2000 Network

Colin Archer

The nature of the extreme destruction caused by nuclear weapons – and also their enormous economic and political costs – means it is perhaps inevitable that the struggle against them should give rise to fundamentalist or absolutist positions. Abolition 2000, a ‘global network for the elimination of nuclear weapons,’ is proud to display such a badge, and for once, many of us feel comfortable adhering to such a grouping. As the Japanese say, “humanity cannot co-exist with nuclear weapons”.

Precursors

The Abolition 2000 network was created by the confluence of a number of streams:

1. Towards a Nuclear Weapons-Free World – An International Coalition for Non-Proliferation and Disarmament was formed at an IPB seminar in Geneva in 1993 by four internationals: the International Peace Bureau (IPB), the International Association of Lawyers Against Nuclear Arms (IALANA), the International Network of Engineers and Scientists (INES), and the International Physicians for the Prevention of Nuclear War (IPPNW). By early 1995 its Founding Declaration had attracted 71 endorsing groups in 20 countries, in addition to the affiliates of the founding federations, who together had members in around 100 nations.

2. The World Campaign for Abolition of Nuclear Weapons was set up by the Nuclear Age Peace Foundation, based in California. Their Citizens Pledge was circulating rapidly around the movement and had received over 250 signatures.

3. The World Court Project had been launched in Geneva in 1992 by three of the above groups: IPB, IALANA and IPPNW, and by 1995 was well on the way to achieving its primary success: a strong condemnation of nuclear weapons by the International Court of Justice (ICJ). This grouping, by the nature of its task which required a resolution to be passed by one of the UN organs (as it turned out, the General Assembly itself), had a strong network of support and endorsement all over the world.

4. INESAP had set up a study group which published an influential work entitled Beyond the NPT, a compilation of articles by key figures in the Abolition movement. This later developed into the Model Nuclear Weapons Convention (mNWC), thanks to the work of the NWC working group, bringing together the combined expertise of lawyers, scientists, and others.

5. In the early 1990s there had been an intense effort at national and international levels to achieve a Comprehensive Nuclear Test Ban Treaty (CTBT), which had involved the creation of a number of national coalitions, and a European Test Ban Coalition that later turned into Abolition 2000 Europe.

6. During the whole process a key role was played by leaders of national anti-nuclear organisations: Campaign for Nuclear Disarmament (Britain), Movement de la Paix (France), IPPNW Germany, Gensuikyo and Gensuikin (Japan), Western States Legal Foundation (USA), Lawyers’ Committee on Nuclear Policy (USA), Economists Allied Against the Arms Race (USA), Nuclear Age Peace Foundation (USA), and others. Thus, when the key players from non-governmental organizations came together at the Non-Proliferation Treaty (NPT) Review and Extension Conference – and later that year in the Hague – they were able to pool together the vast majority of the world’s active abolitionist forces. Politically, it was just the right moment. For the most part, the ‘arms control’ groupings – largely think-tanks based in capitals (and also some US membership-based groups such as Peace Action) – remained outside the network, in part because they did not share the Abolitionist positions on the extension of the NPT. “This not only dissipated the movement’s strength, but led to a sense of betrayal on the part of the Abolitionists, who viewed the NPT supporters as overly cozy with the US government”.

The April 1995 NPT Review and Extension Conference

Gathered at the conference in New York, activists rapidly formed what became known as the Abolition Caucus. This came together partly in reaction to a text drawn up by former Ambassador Jonathan Dean, a well-known figure at NPT gatherings. Feeling that this text did not go far enough, an alternative document was put together, which gradually grew into the Founding Statement of the Abolition Caucus. Contrary to the Dean position, it took a hard line against indefinite extension – seeing this as a essentially a ploy by the nuclear weapons states to maintain their arsenals on a permanent basis. It demanded a secret ballot so that the smaller states would not be intimidated by the US and the other big powers. More importantly, the statement also called for the conclusion by the year 2000 of an international treaty requiring the phased elimination of nuclear weapons worldwide. According to the press release put out at the time, over 200 groups endorsed the Statement. Within a month there were 400.

In parallel with the conference, a large Citizens Assembly was held, away from the conference site, to make the connection between the proliferation of nuclear weapons and the proliferation of handguns and other small arms creating havoc in (especially US) cities. While the event generated a lot of participation and energy, it (perhaps unsurprisingly) did not manage to create an ongoing cam-
painging link between the two types of weapons issues.

In the end the Treaty was indeed extended indefinitely. It became apparent that there was a substantial majority of states in favour of such an outcome, and the ingenious solution proposed by conference President Jayantha Dhanapala (a consensus resolution noting the majority opinion) was adopted.

The Summer of 1995

Several important developments took place over the ensuing months, causing the issue to ‘hot up’. The announcement of a nuclear test by China, and then the declaration by President Chirac in June that France would be resuming nuclear testing at Moruroa in September let loose a powerful global wave of anger that did more than anything else that year to bring nuclear issues back into the forefront of public awareness. In addition, the media coverage given to the 50th anniversary of the bombing of Hiroshima and Nagasaki reminded the world of the movement’s origin and of the high cost of inaction on this issue. Paradoxically, the row that broke out between anti-nuclear campaigners, veterans and others over the withdrawal of a commemorative ‘Hiroshima’ exhibition at the prestigious Smithsonian Institute in Washington, probably did more to re-focus US opinion on the nuclear danger than if the exhibition had been allowed to proceed on the original basis.

A Marriage of Networks

The meeting to follow up the Caucus activity at the NPT conference, planned for Geneva, was switched to the Hague in November when it became clear that there would be oral hearings at the ICJ at that time in relation to the ‘World Court Project’ resolution that had been approved by the UN General Assembly. It was here that Abolition 2000 was officially founded. One of the key participants spoke of it as a ‘marriage’ of the different precursor networks, the Caucus at the Extension Conference having been the ‘engagement’ phase. By this time there were several hundred endorsers. The grouping was given its official title: Abolition 2000: a Global Network for the Elimination of Nuclear Weapons. The network secretariat was hosted by the Atomic Mirror who also organised the Abolition Summit in Tahiti/Moorea in January 1997. The office was later transferred to the Nuclear Age Peace Foundation and since 2002 has been housed at Global Resource and Action Centre on the Environment (GRACE) in New York. The detailed work of the abolition effort has taken place – and still does today – in the Working Groups, of which there are currently thirteen.

Later Developments

The network saw further growth at the time of the publication of the report drawn up by the 1996 Canberra Commission – an expert grouping set up by the Australian Government which recommended a comprehensive set of steps towards nuclear abolition, many of which were later echoed in the ‘13 practical steps’ agreed by States Parties at the 2000 NPT Review Conference. This was followed in December 1996 by a powerful statement by 61 active and retired generals and admirals, outlining a similar strong position. Just as the NWC group drew in non-Abolition 2000 people, so the Middle Powers Initiative (MPI) – set up in 1997 to lobby the medium-size states with influence on the big powers had its own separate identity and programme. While sharing both the long-term vision of Abolition 2000 and indeed some of the key abolitionist organisations and individuals, it developed its own image and contact with high-level decision-makers such as Sen. Alan Cranston (USA) and former US President Jimmy Carter.4 MPI played an important role in supporting the emergence of the New Agenda Coalition of states. MPI later merged with the Global Security Institute.5

The Information Supermarket

The period just described coincided with the exponential growth in the use of email and the creation of websites on the internet. This revolutionary shift in the pattern of communication had many effects, extending networks, accelerating discussion and information sharing, but also leading to a certain dispersal of energies. Peace advocates must now compete for attention in an immense information supermarket, in which each cause – no matter how critical for the survival of the planet is on an equal basis with all the others. As activists gather for the 2005 NPT Review Conference – under dark clouds labelled ‘Iran’, ‘North Korea’ and ‘mini-nukes’ – the members of Abolition 2000 know they have to attract, and hold, the attention of millions among the general public. Otherwise there will be little chance of successfully pressuring the nuclear decision-makers into taking the bold steps necessary for the world to finally put aside permanently this most ultimate of threats.

4 Wittner, p. 477.
5 www.gainstitute.org/mpi.
6 Wittner, pp. 476-477.

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Abolition 2000 Report Card for 2004

“As Time Goes By” – Making the Case for Love In a Time of Fear
An Annual Assessment of Our Nuclear World

Janet Bloomfield and Pamela S. Meidell

The Fundamental Things Apply:
Moonlight and Love Songs
Never Out of Date

Everyone who hears the words “Play it again, Sam!” knows that what Ilsa is asking Sam, the piano player, to play is As Time Goes By. It’s “their” song, Ilsa’s and Rick’s, from the joyous days when they were in love in Paris. But all was not as it seemed in Paris. Their world turned inside out, and in another time, another place – Casablanca, to be precise – the characters return to play out their new roles. The story goes that during the filming of Casablanca even Humphrey Bogart and Ingrid Bergman didn’t know the ending of the film until they were handed the scripts just before they were to go in front of the cameras. Just like them, we don’t know the outcome of the nuclear scenarios currently being played out on our planet. But we do know that next spring in New York at the United Nations, we will have an opportunity to rewrite our scripts and transcend our roles, and possibly even embark on the “beginning of … beautiful friendships….” between nation states, their diplomats, and their citizens in such various capacities as local elected officials (mayors), and non-governmental organizations (NGOs) and civil society organizations (CSOs).

In May 2005, the world’s governments and citizen representatives from around the planet will gather in New York for the Review Conference of the Nuclear Non-Proliferation Treaty (NPT).1 This meeting will take place in the midst of the 60th anniversary year of the beginning of the Nuclear Age, the atomic bombings of Hiroshima and Nagasaki, and the founding of the United Nations. The United Nations has also declared 2005

“International Year of Physics” to mark the centenary of Albert Einstein’s Annus Mirabilis (miracle year), in which a young patent clerk in Bern, Switzerland introduced the famous formula E=mc², as part of the special theory of relativity.2 This theory forever changed humanity’s view of time and space, and provided one of the key intellectual building blocks for the creation of nuclear weapons. As we approach the year 2005, the time is ripe to reflect and assess where we have come from, where we are, and where we are heading.

To go back to the beginning, we have to go back to a song. The Chumash people, native to the Central Coast of California, home to the US nuclear missile-testing center (Van denberg Air Force Base) and Diablo Nuclear Power Station, say that the world began with a song. According to Pilulaw Khus, Medicine Elder of the Bear Clan of the Chumash Nation, “A long time ago, to begin with, there was a movement in the atmosphere, and that movement was very small. Then it began to build. It built from a particle into a wave and began to circle the earth. The wave began to take on substance. That wave became a song, and it was the most beautiful song. It circled the earth and all things came into being. As time went by, people began to move away from the song.”3

With our report this year, we will use a song, As Time Goes By, from the movie Casablanca, to look at the state of our nuclear world, with the hope that we can return to the beautiful song that circles our earth. We invite our readers to stretch their imaginations, in the spirit of Albert Einstein when he said, “I am enough of an artist to draw freely upon my imagination. Imagination is more important than knowledge. Knowledge is limited. Imagination encircles the world.”4

You Must Remember This: A Case of Do or Die

In our 2003 report Here There Be Dragons,5 we ended with this appeal: “Unless a breakthrough takes place soon in disarmament, we will face an acceleration of aggressive nuclear postures and an increase in the number of states acquiring nuclear weapons. The consequences will be disastrous for all of us. What can be done to concentrate minds and generate political will? Setting a deadline helped create the momentum for a successful conclusion to the Comprehensive Test Ban Treaty negotiations in 1996. Time is not on our side with regard to the development and spread of nuclear weapons. By setting deadlines for the implementation of the 13 points6 agreed at the 2000 NPT Review Conference, time could become our ally.”

What has happened since this same time last year? The events of the last twelve months have, sadly, only confirmed that the world has become increasingly unstable and insecure. The US has continued its aggressive nuclear posture, and several states have acquired or are closer to acquiring nuclear weapons. Korea has remained out of the NPT, bilateral and multilateral talks have broken down as of this writing, and the world now assumes that North Korea has at least several nuclear weapons. The skirmish between Iran, the International Atomic Energy Agency (IAEA), the US, and the Western European powers of Britain, France, and Germany continues to play out on the world stage. Iran says it wants to use its prerogative under the NPT to de-
velop nuclear power, while the ever-watching countries mentioned above fear that Iran is using the nuclear power option as cover to develop nuclear weapons. These events plus war in Iraq show us that we need a new approach. What has gone wrong? What can we do to turn around?

We propose a thought experiment a la Einstein: to travel back in time to 1990, to the end of the Cold War, hailed as such a marvelous opportunity to put our nuclear toys away forever. Then we will pause in the present to assess the current state of our world. Then we propose traveling forward to the year 2020, to entertain various scenarios that could result from our current situation. We will then return to the present with the wisdom of our travels, and propose next steps we can take to create a nuclear free world.

As Time Goes By: A Return to the End of the Cold War

To go back in time to 1990 is to return to the exhilaration surrounding the fall of the Berlin Wall and the joyous hopes for peace in the planet’s peoples. One of the architects of those hopes was Mikhail Gorbachev, the original practical nuclear abolitionist. A few years earlier, in 1987, he had proclaimed in Moscow, at a summit for a nuclear-free world:7

“We rejected the right of the leadership of any country, be it the USSR, the USA or any other country, to pass a death sentence on mankind. We are not judges and billions of people are not criminals to be punished. So the nuclear guillotine must be taken apart. The nuclear powers must overstep their nuclear shadow and enter into a nuclear-free world, thus ending politics’ isolation from the general ethical stands of humanity.

“In view of the growing danger of a new spiral in the arms race and of the drastic aggravation of regional and so-called global problems, we must waste no more time trying to outplay each other and to gain unilateral advantage. The stake in such a game is too high – the survival of humanity. Therefore, it is now important to take the crucial factor of time into account.”

In 1990, three years after this speech, the fourth NPT Review Conference ended in disarray in Geneva without adopting a “final declaration” reaffirming the countries’ common commitment to the NPT. Mexico, resisting US pressure, held out for a pledge on the Comprehensive Test Ban Treaty that was not forthcoming. Politicians from the nuclear weapons states did not heed Gorbachev’s advice and still played nuclear hardball at a moment when the door was wide open to diminish the world’s nuclear arsenals.

Five years later, in 1995, the NPT was extended indefinitely and unconditionally. Some governments, NGOs and experts advocated a limited ten- to twenty-five year extension to increase the pressure for implementation, but the nuclear weapons states exerted their own enormous pressure for the other option. In 2000, the first NPT Review Conference of the 21st century gave us the renowned “13 points” and the “unequivocal undertaking” of the nuclear weapons states to get rid of their nuclear arsenals, in an outcome that was widely welcomed as positive. Since 2000, as we all know, a new administration has taken power in Washington, and terrorists have struck the cultural/financial and political capitals of the United States. The world has witnessed new US policies of preemptive first use of nuclear weapons against non nuclear weapons states,8 a green light for development of new, more “useable” nuclear weapons, wars in Afghanistan and Iraq, and a declaration of a global “war on terror.”

Clearly, the promises and opportunities of the end of the Cold War lie tattered at our collective feet.9 But the thinking that produced the Cold War still permeates our halls of power and even our citizen initiatives. We all have difficulty emerging from the old bi-polar mindset.

It’s Still The Same Old Story: From Political Will to Political Willingness in Today’s Nuclear World

Today, we find ourselves in an era of globalization, terrorism and pre-emp-
Business as usual will not suffice. In an oral addition to her prepared remarks, Ambassador Paulette Bethel of the Bahamas, speaking on behalf of the Caribbean Community (CARICOM) at the NPT Preparatory Committee in May 2004, referred to the plans of a number of states to maintain their nuclear arsenals for at least another 50 years. She looked ahead and saw that, if nothing were done, the NPT will still be a treaty waiting to be fulfilled on its 100th anniversary in 2068! In the world of business, in domestic politics, in military planning and in major public projects, such as the Olympics, such tardiness would lead to bankruptcy, regime change, disciplinary measures and unemployment for those involved. Imagine for a moment if members of the Athens Olympics organizing committee had said, “Well, we might put on the Games in 2004, but we might also do it in 2007. We might have to be careful and wait until perhaps 2014. Putting the pressure of a deadline on us will make it very difficult for us to do our job.” If the original members of the Manhattan Project had shared this sense of delay and perpetually put-off deadlines, perhaps we wouldn’t be facing the nuclear dangers we face today. The citizens of the world deserve a greater sense of urgency from their political officials, as well as fuller implementation of promises made on their behalf. Ultimately, treaties such as the NPT belong to the people, and their needs and motivations should be at the forefront of implementation.  


At the local level, elected officials are working with their citizens to take responsibility for a nuclear free future. The Mayors for Peace Emergency Campaign sets out a vision, calling for the full implementation of the NPT through a Nuclear Weapons Convention (NWC) by 2020, fifteen years from now. The campaign, called 2020 Vision, uses the symbol of clear lenses to replace the lenses melted in a pair of spectacles damaged by the atomic bombing of Hiroshima in 1945. The Mayors’ powerful, yet apt symbol, and call for clarity is refreshing amidst the muddy rhetoric of the current global political climate. Mayors for Peace is a fast-growing network of mayors and other local elected officials, currently linking over 600 cities in over 100 countries around the world. They speak for their citizens: the people who live in cities, the main targets for nuclear weapons. As Mayor Gabino Aguirre of Santa Paula, California says, “In any war, it is cities and the people living in them that suffer. As Hiroshima and Nagasaki attest, this suffering becomes total destruction when nuclear weapons are involved. To protect their citizens’ lives, it is incumbent on all mayors to make every effort to prevent war and eliminate nuclear weapons.”

The Mayors for Peace (and their citizens) recognize that the time is now ripe for full implementation of the NPT. The negotiation of Nuclear Weapons Convention offers a path and timeline to follow to make the Mayors’ vision a reality. A model of this treaty, in draft form, is already available for use by the world community. In November 17, 1997, Costa Rica introduced to the United Nations a draft treaty, called a Model NWC that includes all of these elements.

**As Time Goes By: A Timeline for Nuclear Abolition**

Enacting a Nuclear Weapons Convention is the best way to set deadlines for implementation of the “13 points” agreed at the 2000 NPT Review Conference, and thus to fully implement the NPT. In the visionary Model NWC circulated at the United Nations, we have all the strategy, goals, and timelines we need to eliminate nuclear weapons from our beautiful planet. The laying out of such a timeline helps to generate the political will and willingness to make it happen. When this draft treaty was first unveiled in the Dag Hammarskjöld Library at the United Nations in New York on April 17, 1997, we listened in awe as the drafters cited the litany of what would happen each year as we moved toward the total abolition of nuclear weapons. It sounded something like this:

- 2005: agree to open negotiations on a NWC  
- 2008: complete negotiations on a NWC  
- 2009: parliaments, congresses and diets ratify the NWC in country capitals around the world with appropriate ceremonies  
- 2010: NWC enters into force, becoming the law of the planet  
- 2011–2020: begin and complete the elimination of nuclear weapons, which includes the following steps: make public declarations of all nuclear weapons, material, facilities, and delivery vehicles; remove targeting coordinates and navigational information from all nuclear weapon delivery systems; disable and deal with all nuclear weapons and delivery vehicles; designate for decommissioning and conversion or conversion all nuclear weapons testing, research, and production facilities; stop producing proscribed nuclear material; stop all nuclear activities; stop producing nuclear weapons components and equipment; stop funding for nuclear weapons research; submit plans for fully implementing all obligations of the NWC.

If we can imagine it, we can do it. Einstein teaches us this great lesson, which we need to learn over and over again. All great enterprises require planning, and this timeline gives us a detailed mental map to guide us as we set out together on the road to a nuclear-free world.

**The Fundamental Things Apply: Wise as Serpents, Gentle as Doves**

How do we cultivate the political willingness to bring NPT countries together to create a safer world for all of us? Where can we find the strength, wisdom and positive energy we need to create a sustainable future? If we think a Nuclear Weapons Convention is a naïve dream, given the world we live in, we need only look to the example of Mikhail Gorbachev – the first statesman on the world stage to believe that the abolition of nuclear weapons was an achievable goal. On September 23, 2004, former President...
Gorbachev addressed a press conference in London to launch the Weapons of Mass Destruction Awareness Program.19

During the press conference, the BBC correspondent asked President Gorbachev: “Isn’t it naïve to think that we can abolish nuclear weapons, given the current world situation?”

Mr. Gorbachev replied: “I’ve been accused on many occasions of being naïve. On January 15, 1986, when I first called for the elimination of nuclear weapons by the year 2000, there were two reactions: one, this is propaganda; two, this is an illusion. But let me remind you. We did eliminate two full classes of nuclear weapons. We need to continue to reduce nuclear weapons drastically, with the goal of complete abolition. We need to put forward the issue of eliminating all weapons of mass destruction. With respect to global terrorism, nuclear weapons should of course be safeguarded and protected from theft, but ultimately they must be eliminated. Again, you may accuse me of being naïve. But I am not stupid. I believe what I say, and I know what I am talking about.”

Later that evening, President Gorbachev offered an eloquent, precise analysis and prescription that encouraged us to fulfill the promises enshrined in the NPT, and finish the work he had begun with US President Reagan in the 1980s. We appeal to our political leaders and representatives to open their minds and hearts and hear its wise message.20

A Fight for Love and Glory: As Time Goes By

Political leaders of the countries bound by Nuclear Weapons Free Zone (NWFZ) treaties do not need to be convinced of this approach. Virtually the entire Southern Hemisphere of our planet is covered by one NWFZ treaty or another.21 In fact, Brazil and Aotearoa/New Zealand have called for the creation of a Southern Hemisphere NWFZ treaty, uniting the current zones around the planet. We also welcome the initiative of Mexico, in calling for an international Conference of the Parties to Nuclear Weapons Free Zones treaties. Such a conference has never been convened before, and would bring together over 100 countries from the “Majority World,”22 none of them nuclear weapons states. If such a conference could take place before the NPT Review Conference in May 2005, it would give the countries with the most experience of living without nuclear weapons the opportunity to discuss, strategize and make decisions that may bring us all closer to a nuclear-free planet.

By holding such a conference, the members of NWFZs demonstrate their political willingness to move ahead in ways that have not been possible in other diplomatic arenas such as the Conference on Disarmament in Geneva, preparatory meetings and review conferences of the NPT, and even the First Committee of the United Nations itself.23 The world’s Nuclear Weapons Free Zones form the heart of the untold success story of the road to a nuclear-free world; they are one of our best hopes for bringing it into being. NWFZs are preventive disarmament measures that can be negotiated by regional bodies as a way of taking action independent of the will of the nuclear weapons states.24 At a time when people and governments of nearly every persuasion look for better ways to be safe and create the conditions for their children and societies to flourish, the citizens and governments of the world’s NWFZs have much to teach us. Collectively, they are ensuring genuine security for their communities by putting the needs that support life at the top of their priorities, and dedicating the resources of their environments and labs to meeting those needs. As our theme song says, “And no matter what the progress, Or what may yet be proved, The simple facts of life are such, They cannot be removed.”

The governments of NWFZ countries don’t need to protect their countries and regions with technologically flawed missile defense “shields.” They already have the best “shields” in the world: agreements of trust and cooperation with their regional neighbors, and the legally secured promises of the nuclear weapons countries not to attack them with nuclear weapons. By virtue of the treaties themselves, the entire southern hemisphere is under a “missile defense shield,” mandated and guaranteed by the nuclear weapons states themselves!!

The kind of political willingness exemplified in NWFZ treaties (which we can envision being extended to embrace the policy exchanges between nations) appeared recently on the front page of the New York Times.25 The article opens with Jorge Castaneda, former Foreign Minister of Mexico, noting President Bush’s change in demeanor from charming to brusque after the September 11 attacks, with the implied message to allies that the US needed their nonnegotiable support. The article continues: “Mexico’s hesitant stance at the United Nations on the war in Iraq became a source of tension. Yet Mr. Castaneda said, ‘I was never asked, ‘What is it you need in order to be more cooperative with us? What can we do to help?’”

We suggest that the asking of such questions would contribute greatly to the creation of the political willingness that we advocate.26 We suggest that this kind of approach will do more to meet the needs of the world’s governments and peoples for security and sovereignty than the current “war on terror.”

A Case of Do or Die: As Time Goes By

We all carry an urgent responsibility in the coming months to educate and engage the public about the crisis facing the NPT, and the need to work together to save, strengthen and implement it. The people of the world, led by the Mayors for Peace and the citizen groups of Abolition Now, propose that their governments put the NPT Review Conference in May 2005 at the top of their agendas, and that the governments send Heads of State to attend the important opening days. The stakes are incredibly high. In this matter, we are not engaging in an academic exercise in diplomacy and “policy-wonking” but in matters of life and death.27 The outcome of May’s meeting will shape the future of our
world. We cannot allow the NPT regime to unravel. We cannot allow more and more countries to acquire nuclear weapons while existing nuclear weapons countries develop new systems and strategies for their use.  

Hearts Full of Passion – Jealousy and Hate: Through a Lens Clearly or Through a Glass Darkly

While the Mayors for Peace, leaders of Nuclear Weapons Free Zones, and citizens throughout the world organize and plan to avert the dissolution of the NPT and to create the conditions for a nuclear-free world, political and military planners in the nuclear weapons states state the nuclear ante in their preparations for grimmer realities. The clear vision of the Mayors for Peace Emergency Campaign, culminating in the total elimination of nuclear weapons by 2020, contrasts starkly with the updated National Security Strategy of the United States. Despite legal pledges (enshrined in the NWFZ treaties, among others) and decades of an implicit policy not to use nuclear weapons against non nuclear weapons states, the US declares its option of preemptive war by stating: “we will not hesitate to act alone, if necessary, to exercise our right of self defense by acting preemptively.” Unfortunately, the world has witnessed the consequences of the implementation of this strategy in the war in Iraq. Russian President Vladimir Putin, in the aftermath of the terrible terrorist slayings in Beslan, invoked this “right” to act preemptively, demonstrating that the domino theory is alive and well in the nuclear capitals of our world.

We cannot be safe unless everyone is safe; and no one is safe in a world with nuclear weapons. Nightmare scenarios of spiraling accusations and attacks in the diplomatic arenas of our world, and more visceral and bloody attacks on the ground, only shrink our hearts and make us more afraid. They do not address our genuine concerns for security, the meeting of our basic needs for food, clothing, shelter, and education, and a clean, healthy environment in which to live and share with all of life.

As Time Goes By

As the Old Testament Proverbs say, “Where there is no vision, the people perish.” But which vision will it be? We have the opportunity to choose a future that enhances life for everyone on the planet. Nuclear weapons do not enhance that life. We can choose to be dominated by ever increasing weapons systems deployed on land, sea, in the sky and in outer space. Or we can run the film backwards, and watch the exploding mushroom clouds collapse back into nothingness.

In honor of the Hibakusha, the aging survivors of the atomic bombings of Hiroshima and Nagasaki, we offer this vision of what is possible next May. Under the blossoming cherry trees next to the East River at United Nations Headquarters in New York, the heads of state of all NPT member states, starting with the nuclear weapons states, file one by one to a table dusted with cherry blossoms. On the table rests a document laying out the promise to commence negotiations on a Nuclear Weapons Convention, thus fulfilling the promise of Article Six of the NPT. Each president or prime minister, in front of the rolling cameras of the world’s press, signs the paper and hands the pen to the next person in line. The signing ceremony takes a long time. But all the witnesses watch quietly, letting the breezes caress them and carry the cherry blossoms over them.

We have called on ourselves to meet great challenges in the past: to abolish slavery, to send a man to the moon, to eradicate smallpox. It is within our power to abolish nuclear weapons and dismantle the last atomic bomb. Since we began our report with a song, we give the last line to a singer: Christian singer, Michael W. Smith, told the following story at a recent concert:

When Bono (of U2) shared his new album title, How to Dismantle an Atomic Bomb, with Smith, Bono asked Smith, “Do you know how to dismantle an atomic bomb?” When Smith said, “No,” Bono answered his own question: “Love. With love.”

Or, as Sam, the piano player, sings it, “The world will always welcome lovers/As time goes by.”


1 The NPT was adopted in 1968, and entered into force in 1970. Since then, countries that are part of the NPT regime, gather every 5 years to review the treaty and determine whether its agreements are being fulfilled. For a primer on the NPT, see Here There Be Dragons, October 24, 2003, p. 2, at www.atomicmirror.org/cards.html. Reprinted in INESAP Information Bulletin No. 23.
2 In 1905, Einstein’s Annus Mirabilis, or miracle year, the scientist published three of his most important papers and completed most of the work for his doctoral degree, which he received in 1906. Einstein’s three papers dealt with the light quantum hypothesis, Brownian motion, and special relativity.
3 See www-reachingcriticalwillorg-social-truthcommissionpdf.
4 Imagination inspires many of the initiatives underway as part of the Annus Mirabilis. For example, the UK Institute of Physics has commissioned a new choreographic work from the Rambert Dance Company to be based on physics and Einstein’s theories, which will debut in May 2005. See http://plus.maths.org/issue26/news/Einstein/.
5 See Here There Be Dragons, op. cit.
7 See www.comecleanorguk/articlesphparticleID=47.
8 See www.whitehousegov/msc/nss3html.html.
9 See The Furies are Mad as Hell, April 26, 2004, p. 2 at www.atomicmirrororgpoliticalhtml.
10 See www.atomicmirrororgcards.html.
12 See Here There Be Dragons, op. cit.
13 See wwwabolition2002orgnow/mayors.html.
14 See the Mayors for Peace video (with 2, 5, 45 minutes versions), available at wwwabolition2002orgnow/resources.htmlvideo.
15 Dr. Gabino Aguirre was the only US mayor who participated in the Mayors for Peace international delegation to the NPT Preparatory Committee meeting in April 2004.
16 A companion citizen-based campaign, Abolition Now, works collaboratively with the Mayors for Peace initiative. See wwwabolitionnoworgfor resources and links.
17 UN document A/C.1/52/7 For the complete text, please see wwwlcnporgmwwindexhtm. Translations into the official UN language are available at wwwINESAPorgpubLmwwhtml.
18 By definition, a Nuclear Weapons Convention is an international treaty, or package of
agreements, achieved through negotiations by all relevant countries, which would prohibit the development, testing, production, stockpiling, transfer, use and threat of use of nuclear weapons, and would provide a phased plan for their complete elimination. The NWC would include procedures for verifying compliance, clarifying or resolving disputes relating to these obligations, and measures to enforce the treaty obligations. It would provide a non-discriminatory approach to nuclear disarmament, which would apply equally to nuclear weapons countries, nuclear capable countries, non-nuclear countries, and non-state actors (i.e., terrorists) equally.

19 The essential proposals of the WMD Awareness Program are (1) to create a global inventory of all WMD and their production sites, and (2) to oversee an international guardianship for all WMD sites. See www.comeclean.org.uk and www.joannamacy.net/html/nuclear.html for more on Nuclear Guardianship.


21 Currently, NWFZ treaties cover nearly half the globe, and include most of the global Southern Hemisphere: the first landmark Treaty of Tlatelolco (Latin America and the Caribbean), the model for all later NWFZ treaties; Treaty of Bangkok (Southeast Asia); Treaty of Pelindaba (Africa). Mongolia is a declared NWFZ. NWFZs in the Middle East, South Asia, Northeast Asia, and Central Europe are currently under discussion at the UN and in respective regions. The Central Asian countries of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan may be the next region to join this illustrious roster.

22 The term "majority world," coined at the end of the Cold War, is commonly used in academic circles to describe the 80% of the world population who are not part of the North American system.

23 The First Committee of the United Nations considers matters related to Disarmament and International Security. See www.reachingcriticalwill.org for further information about its regular meetings each fall during October and November.

24 See The Majority Opinion, op. cit.


26 We are indebted to Marshall Rosenberg’s questions of Nonviolent Communication. See www.cnvc.org for an amplification of the four modes of observing, feeling/valuing, needing, requesting.

27 Each nuclear weapon in the arsenals of the nuclear weapons countries today average a destructive force equal to seven to 40 times the power of the atomic weapons that destroyed Hiroshima and Nagasaki. Some nuclear weapons have even greater destructive force. An average-sized nuclear weapon (around eight times the size of the Hiroshima bomb) would immediately kill everything within a radius of several square miles. The radiation exposure would continue to injure and kill people over a longer period of time and over a greater geographic area. The area of radiation exposure would depend upon prevailing winds, and could spread across and beyond continents.

28 No less an authority than former CIA Director, John Deutch has proclaimed: “We live in a Trident world.” The US has 18 Trident submarines, 10 in the Pacific, 8 in the Atlantic. The UK has 4 Trident submarines. How lethal is a Trident nuclear submarine? Each one can carry 128 nuclear warheads (16 missiles with 8 warheads each). Each warhead has an explosive power of 100 kilotons, or seven and a half times the power of the first atomic bomb dropped on Hiroshima in 1945 (13 kilotons). Ten Trident submarines (1 British and 9 US) are continuously on submerged patrol, in both the Atlantic and the Pacific Oceans, carrying the equivalent of approximately 10,000 Hiroshimas.

29 www.whitehouse.gov/nsc/nts.html.

30 Proverbs 29:18.

31 Article 6 states: “Each of the Parties to the Treaty undertakes to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament, and on a treaty on general and complete disarmament under strict and effective international control.” The International Court of Justice Advisory Opinion on the Threat or Use of Nuclear Weapons (July 6, 1996) obligates the nuclear weapons states to complete such negotiations, not just pursue them.


Today Is Not a Good Day For War

by David Krieger

Today Is Not a Good Day for War is a remarkable collection of peace poems that spans a period of more than 35 years. Archbishop Emeritus Desmond Tutu writes, “These poems touch a deep chord of hope in the human spirit. They inspire us to believe that peace is not an impossible dream.”

In the poems, David Krieger weaves together threads of hope and dreams for a world that is just for all. Tatatoshi Akiba, Mayor of Hiroshima, says that Today Is Not a Good Day for War “speaks in the language of peace and captures Hiroshima's spirit of hope.” Today Is Not a Good Day for War articulates the experience of those who have suffered most at the hand of war. The author perhaps says it best in his poem Promises of Peace, in which he writes:

"There is no beauty in war, nor decency, nor/wisdom. There is only force and blind obedience./Bombs fall, children die and generals are celebrated./In the public square new names, new sacrifice./Promises of peace give way to war."

This collection speaks to the soul of present and future generations, challenging everyone to remember their humanity. “This is poetry out of the heart zone by a great man of hope,” says author and trial lawyer Gerry Spence. He continues, “It returns us to the house of love where we revisit the destiny of man.”

Janet Bloomfield (left) and Pamela Meidell (right) with Sir Joseph Rotblat.

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Pamela S. Meidell is the Director of the Atomic Mirror and chair of the Disarmament Task Force of the Fellowship of Reconciliation; pamela@atomicmirror.org.

Both have been involved in efforts to create a nuclear-free world, including Abolition 2000, since the 1980s.

In the Spirit of Einstein
Scientists Advancing Nuclear Weapons Abolition

David Krieger

In 1955, fifty years ago and ten years after the harsh inception of the Nuclear Age at Hiroshima and Nagasaki, Bertrand Russell and Albert Einstein issued an appeal, known as the Russell-Einstein Manifesto. It is the last public document signed by Einstein before his death. In addition to Russell and Einstein, the document was signed by nine other prominent scientists. The appeal warned that powerful new nuclear weapons raised the possibility of "universal death" in an all-out war, and called for the renunciation of war itself. "Here, then, is the problem which we present to you, stark and dreadful and inescapable: Shall we put an end to the human race; or shall mankind renounce war?" The appeal concluded: "Remember your humanity and forget the rest. If you can do so, the way lies open to a new Paradise; if you cannot, there lies before you the risk of universal death."1

Over the ensuing decades of the Cold War and beyond it, many scientists and citizens throughout the world have grown complacent in the face of continuing nuclear dangers. The Cold War may have ended in the early 1990s, but nuclear dangers to humanity have not abated. In some respects, the dangers have increased. Among the scientists who have banded together to educate the public and offer constructive solutions to the nuclear dangers that threaten humanity are those who are or have been associated with the Pugwash Conferences on Science and World Affairs (Pugwash) and the International Network of Engineers and Scientists for Global Responsibility (INESAP).

Many scientists have been involved in both organizations. Pugwash, which grew directly from the Russell-Einstein Manifesto, began in 1957 and has tended to work in more closed circles of scientists in the hopes of being viewed by governments as more trustworthy. Pugwash shared the 1995 Nobel Peace Prize with its founder, Sir Joseph Rotblat. INESAP, by contrast, which was established at a large scientific meeting in Berlin in 1991, has been far more open to interactions with other civil society organizations and with the general public.

One of the principal aims of INESAP has been to achieve the abolition of nuclear weapons. This aim has been carried out by an extraordinarily dedicated group of scientists, engineers, and experts in the INES project, the International Network of Scientists and Engineers Against Proliferation (INESAP). In the remainder of this article, I will discuss INESAP's activities that have sought to move beyond the Non-Proliferation Treaty and other efforts to halt proliferation and to achieve the total elimination of nuclear weapons.

INESAP was formed in 1993 by three young German scientists: Wolfgang Liebert, Martin Kalinowski, and Jürgen Scheffran. From its inception, the network focused on the central issue of the Nuclear Age: achieving total nuclear disarmament. The principal objectives of INESAP are "to promote nuclear disarmament, to tighten existing arms control and non-proliferation regimes, [and] to implement unconventional approaches to curbing the proliferation of weapons of mass destruction and to controlling the transfer of related technology."

The founding conference of INESAP took place in Germany in August 1993, and was entitled, "Against Proliferation: Towards General Disarmament." Some 50 scientists, engineers and other experts from 20 countries participated. In 1994, INESAP established a Study Group on non-proliferation, called "Beyond the NPT," referring to the nuclear Non-Proliferation Treaty (NPT). The work of the Study Group led to the publication of a document in early 1995, Beyond the NPT: A Nuclear-Weapon-Free World.2 The document was prepared by some 50 authors from 17 countries, including soon-to-be Nobel Peace Laureate Joseph Rotblat.

Among the conclusions of this study were that the Non-Proliferation Treaty was insufficient to control nuclear proliferation, and that the 1995 Review and Extension Conference of this treaty should be followed by multilateral negotiations to achieve a Nuclear Weapons Convention. The document proposed that the parties to the treaty, along with the few states still outside the treaty, should begin immediate negotiations on a Nuclear Weapons Convention, a framework treaty for the abolition of nuclear weapons. The Executive Summary of Beyond the NPT stated, "In its Final Document the NPT Review and Extension Conference should, in its call for decisive steps towards a NFWF [nuclear weapons-free world], include a mandate for the Conference on Disarmament to start negotiations on a Nuclear Weapons Convention (NWC). The pattern has to be that which has already been set by the Biological Weapons Convention (BWC) and the Chemical Weapons Convention (CWC) – a total ban."3

The 1995 Non-Proliferation Treaty Review and Extension Conference was held at the United Nations headquarters in New York. It was one of the most important meetings in the then 25-year history of the treaty and may turn out to be one of the significant events of the Nuclear Age, with broad implications for the future of civilization. At issue during the conference was whether the treaty should be extended indefinitely or for periods of time. The United States and other nuclear weapons states were strong supporters of indefinite exten-
sion, their goal being to prevent nuclear proliferation while maintaining the two-tier structure of nuclear “haves” and “have-nots.” Many civil society organizations, along with some non-nuclear weapons states, argued against indefinite extension on the basis that it would be like giving a blank check to parties (the nuclear weapons states) who were notorious for overdrawing their accounts and could not be trusted to keep their promises.

The essential bargain of the NPT was that non-nuclear weapons states would not develop or otherwise acquire nuclear weapons, and the nuclear weapons states would cease the nuclear arms race and engage in good faith negotiations for nuclear disarmament. From the perspective of the non-nuclear weapons states, the treaty was never meant to establish permanent nuclear double standards, making nuclear weapons acceptable for the small minority while prohibiting them to the vast majority.

INESAP was a leader among the civil society organizations at the 1995 NPT Review and Extension Conference pressuring the point that preventing proliferation was not sufficient and that it was necessary to move expeditiously toward a nuclear weapons-free world. In cooperation with other leading international organizations, INESAP sponsored a two-day forum on the abolition of nuclear weapons, based upon its study Beyond the NPT. The INESAP forum provided an opportunity to present a variety of proposals on how to attain a nuclear weapons-free world and for civil society representatives from around the world to debate strategies for moving forward.

The NPT Review and Extension Conference ended with a victory for the nuclear weapons states and a sound defeat for humanity. The treaty was extended indefinitely with no further requirements that the nuclear weapons states fulfill their obligations under the treaty to achieve nuclear disarmament. Having achieved the indefinite extension of the treaty, the nuclear weapons states showed no inclination to proceed with negotiations for a treaty to ban nuclear weapons, as INESAP had proposed.

The outcome of the NPT Review and Extension Conference created a strong reaction by civil society organizations and an increased determination among them to work for the abolition of nuclear weapons. INESAP and other civil society groups coalesced to form Abolition 2000, “a global network for the abolition of nuclear weapons,” which has now grown to over 2,000 organizations and municipalities throughout the world.

In 1996, a year after the conclusion of the NPT Review and Extension Conference, civil society organizations played a significant role in bringing the issue of the legality of the threat or use of nuclear weapons to the International Court of Justice (ICJ), the world’s highest court. The ICJ issued an opinion in which the court unanimously declared: “There exists an obligation to pursue in good faith and bring to a conclusion negotiations leading to nuclear disarmament in all its aspects under strict and effective international control.”

By 1997, INESAP, along with two other important international organizations – the International Association of Lawyers Against Nuclear Arms (IALANA) and the International Physicians for the Prevention of Nuclear War (IPPNW) – put forward a comprehensive text for a Model Nuclear Weapons Convention. The text, relying heavily on the technical information provided by INESAP, provided for a system of societal and technical verification that would make it possible for the nuclear weapons states to fulfill their obligations under international law for the total elimination of their nuclear arsenals. This would not only make the world safer, but would be the only truly effective way to assure against nuclear proliferation. The Model Nuclear Weapons Convention was introduced to the United Nations as a discussion paper by Costa Rica in 1997.

Since then, INESAP has continued its efforts to promote a Nuclear Weapons Convention. In a 1999 Briefing Paper (No. 7/1999), it explored the question, “Has the time come for the Nuclear Weapons Convention?” During that same year, INESAP continued its collaboration with IALANA and IPPNW in producing a book: Security and Survival: The Case for a Nuclear Weapons Convention. In the year 2000, INESAP put out an edited book on Global Elimination of Nuclear Weapons. The book, emphasizing scientific expertise, provides analysis of the deadlock in achieving progress on the elimination of nuclear weapons and on the means of overcoming the obstacles.

The Model Nuclear Weapons Convention has provided a basic tool for the global nuclear abolition movement. It has been used over the years by Abolition 2000 and its constituent organizations as an example of how countries, if they had the political will to do so, could proceed toward the elimination of nuclear weapons. Most recently, the model convention has been used by the Mayors for Peace, led by the mayors of Hiroshima and Nagasaki, in their Emergency Campaign to Ban Nuclear Weapons, the 2020 Vision. This campaign calls for negotiations on a Nuclear Weapons Convention to commence in 2005, to be completed by 2010, and for the elimination of nuclear weapons by the year 2020.

In 2000, INESAP organized a workshop entitled “Abolition of Nuclear Weapons” at the Stockholm Congress of the International Network of Engineers and Scientists for Global Responsibility. Intensive discussions at this meeting gave rise to a new INESAP program, initiated in cooperation with the Nuclear Age Peace Foundation, to explore the control and elimination of missile technologies for warlike purposes. The project, Moving Beyond Missile Defense, has held four international conferences and two workshops over the past five years, in Santa Barbara, Shanghai, Berlin, and Hiroshima, focusing on regional and global issues of nuclear disarmament, missile control, and prevention of space weaponization.

Einstein warned, “The splitting of the atom has changed everything save our modes of thinking, and thus we drift toward unparalleled catastrophe.” The scientists, engineers and other experts associated with INESAP have worked to bring about such a change in thinking. They have exem-
plified a commitment to social responsibility by raising their voices to warn of continuing dangers and by using their scientific and technical expertise to propose solutions to the gravest danger confronting humanity. They carry on in the tradition of truth and courage exemplified by Albert Einstein.

[Footnotes added by the editor.]


Role of Science and Technology in the Context of International Security and Disarmament


The General Assembly,

Recognizing that scientific and technological developments can have both civilian and military applications and that progress in science and technology for civilian applications needs to be maintained and encouraged,

Concerned that military applications of scientific and technological developments can contribute significantly to the improvement and upgrading of advanced weapons systems and, in particular, weapons of mass destruction,

Aware of the need to follow closely the scientific and technological developments that may have a negative impact on international security and disarmament, and to channel scientific and technological developments for beneficial purposes,

Cognizant that international transfers of dual-use as well as high-technology products, services and know-how for peaceful purposes are important for the economic and social development of States,

Also cognizant of the need to regulate such transfers of dual-use goods and technologies and high technology with military applications through multilaterally negotiated, universally applicable, non-discriminatory guidelines,

Expressing its concern about the growing proliferation of ad hoc and exclusive export control regimes and arrangements for dual-use goods and technologies, which tend to impede the economic and social development of developing countries,

Recalling that in the Final Document of the Thirteenth Conference of Heads of State or Government of Non-Aligned Countries, held in Kuala Lumpur from 20 to 25 February 2003, and in the Final Document of the Fourteenth Ministerial Conference of the Movement of Non-Aligned Countries, held in Durban, South Africa, from 17 to 19 August 2004, it was again noted with concern that undue restrictions on exports to developing countries of material, equipment and technology for peaceful purposes persisted,

Emphasizing that internationally negotiated guidelines for the transfer of high technology with military applications should take into account the legitimate defence requirements of all States and the requirements for the maintenance of international peace and security, while ensuring that access to high-technology products and services and know-how for peaceful purposes is not denied,

1. Affirms that scientific and technological progress should be used for the benefit of all mankind to promote the sustainable economic and social development of all States and to safeguard international security, and that international cooperation in the use of science and technology through the transfer and exchange of technological know-how for peaceful purposes should be promoted;
2. Invites Member States to undertake additional efforts to apply science and technology for disarmament-related purposes and to make disarmament-related technologies available to interested States;
3. Urges Member States to undertake multilateral negotiations with the participation of all interested States in order to establish universally acceptable, non-discriminatory guidelines for international transfers of dual-use goods and technologies and high technology with military applications;
4. Encourages United Nations bodies to contribute, within existing mandates, to promoting the application of science and technology for peaceful purposes;
5. Decides to include in the provisional agenda of its sixtieth session the item entitled “Role of science and technology in the context of international security and disarmament.”

1 A/57/759-S/2003/332, annex I.
Scientists and Nuclear Weapons

Where do we go from here?

by Joseph Rotblat

Abolition 2000 UK publishes an occasional series of papers on defense and disarmament issues in memory of Frank Blackaby. The fifth such Blackaby Paper, published in December 2004, was written by Joseph Rotblat, once a member of the Manhattan team that built the bomb and the only one to leave that team before the nuclear bombings of Hiroshima and Nagasaki occurred.

The paper has been deliberately timed to be available well in advance of the 2005 Review Conference on the Non-Proliferation Treaty, which is to be held in May 2005 in New York.

The paper has six chapters, and the first one, entitled A Problem: the responsibility of science and scientists is quote in here in full to make you want read more:

"Should scientists accept responsibility for the human and environmental consequences of their research? Those questions did not arise in the distant past, because there hardly were such consequences. Science had no role in the day-to-day life of people, or with a few exceptions, such as Archimedes and Leonardo da Vinci, in the security of states. Science was largely the pursuit of gentlemen of leisure.

The tremendous advances in pure science, particularly in physics, during the first part of the 20th century, and in biology, during the second half, have completely changed the relation between science and society. Science has become a dominant element in our lives. It has brought great improvements in the quality of life, but also grave perils: pollution of the environment, squandering of vital resources, increase in transmittable diseases, and above all, a threat to the very existence of the human species on this planet through the development of nuclear weapons.

Many thousands of scientists are still employed in Los Alamos or Livermore in the USA, Chelyabinsk or Arzamas in Russia, and Aldermaston in the UK. These establishments do pure and applied research for specific purposes, purposes that I see as the negation of scientific pursuit: the development of new, or improvement of old weapons of mass destruction. Among these thousands there may be some scientists who are motivated by considerations of national security.

The vast majority, however, have no such motivation; in the past they were lured into this work by the siren call of rapid advancement and unlimited opportunity. Work in such laboratories is not only a terrible waste of scientific endeavour but a perversion of the noble calling of science. It should not be tolerated.

I would like to see endorsement of this by the scientific community. I will go further and suggest that the scientific community should demand the elimination of nuclear weapons and, in the first instance, request that the five acknowledged nuclear powers honour their obligations under the Nuclear Non-Proliferation Treaty. 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. The problem is how this is to be achieved."

The other chapters deal with The Past, The Present, The immediate future, The flawed doctrine of extended deterrence, and The longer term future. The paper is rounded of with biographical details and a bibliography.

Joseph Rotblat, co-signer of the famous Russell-Einstein Manifesto of 1955 that contains the sentence “Remember your humanity, and forget the rest,” ends his article with an appeal for moral objections to nuclear weapons in order to create a nuclear weapon free world:

"The strongest argument for creation of a nuclear-weapon-free world should be based upon the moral objections to nuclear weapons. The use of nuclear weapons, and even the threat of using them, is generally viewed as highly immoral; a moral stand is completely incompatible with readiness to push the nuclear button. If the United States and its allies are to lead a campaign based on moral principle, then they must renounce any use of weapons of mass destruction; and implement a policy of their total abolition to which all are committed legally.

A campaign for abolition based on moral principles will be seen as a fanciful dream by many. But 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.

Arguments based on equity and morality may not cut ice with hardened politicians, but they can appeal to the common citizen.

If we can bring to the notice of the general public the grave dangers inherent in the continuation of current policies, while 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.

A colossal effort will be required, a sustained collective campaign by IPPNW, PSR, Pugwash, the International Network of Engineers and Scientists for Global Responsibility (INES), Abolition 2000, and many kindred organisations.

I hope that we shall all find the courage and the will to embark on this great task, to restore sanity in our policies, humanity in our actions, and a sense of belonging to the human race.”

Soldiers in the Laboratory
Military Involvement in Science and Technology – and Some Alternatives

Scientists for Global Responsibility

Military technology has contributed centrally to the shaping of the world in which we live. The economic and political dominance of the industrialized countries is in part the legacy of innovations in military technology in Europe and later in the USA. The power and range of military activities is, in a variety of ways, closely linked with the expertise of scientists, engineers and technologists engaged in or funded by the military sector.

The main purpose of this Report is to document the power and influence of the military in the governance and direction of science, engineering and technology in the UK over the past fifteen years. A great deal of the discussion is concerned with the implications for research and development (R&D). We find, however, that teaching, including at the postgraduate level, and public attitudes are also both influenced in various ways by military involvement with, and support of science, engineering and technology (SET).

The report also examines whether some reallocation of the resources that the military currently devotes to weapons-related SET would contribute better to the goals of peace, social justice and environmental sustainability. In exploring this issue, we consider the argument that the concept of security can be more broadly defined, so as to include measures to forestall many of the pressing challenges facing the world today, such as climate change and a range of poverty-related issues.

It should be noted that a lack of openness in this area, often unrelated to national security concerns, has hampered attempts to gather information in some areas.

Background – the Science World and the Military World

During the last fifteen years, wealth creation has become the major driving force for investment in science, engineering and technology (SET), as exemplified by the UK’s ten year science and innovation investment strategy published in 2004. This commercial agenda has led to a plethora of R&D partnerships and funding initiatives, which in turn frame the directions and priorities of the research itself. This agenda also underpins significant involvement from the military sector.

Profound global changes have affected military and security issues over this period. The advent of the ‘War on Terror’ has reversed the drop in military expenditure that followed the end of the Cold War. Global military expenditure in 2003 stood at a massive US$956 billion, with the USA accounting for over 40 per cent of this. The UK is also a major military power, and is the world’s third largest military spender.

An increasing emphasis on high technology weaponry among the wealthier countries is contributing to a narrow approach to dealing with security issues. Currently, the Ministry of Defence (MoD) only spends approximately 6 per cent of its budget on conflict prevention. Meanwhile, there is growing evidence that the international arms trade is contributing to conflict and exacerbating human rights problems and poverty.

Military Involvement with Science, Engineering and Technology

Our investigation has uncovered a wide range of information about military involvement with SET. Such involvement is concentrated in a fairly small number of countries, with the USA dominating. For example, in the European Union, the UK, France, Spain and Germany accounted for 97 per cent of the total government military research budget in 2000. The UK itself is the world’s second largest funder of military SET. In 2003/04, the military spent approximately £2.7 billion on UK R&D. £2.6 billion of this finance came from the MoD – 30 per cent of the total public R&D budget. Furthermore 40 per cent of government R&D personnel are employed by the MoD. The procurement of advanced weapons technology is also a major component of state expenditure, with the UK Defence Procurement Agency spending approximately £6 billion a year on military equipment.

A small number of military corporations in the UK exert a largely invisible influence on the government. Through a complex array of advisory committees and lobby groups, they have a significant voice in the funding and shaping of the research agenda. Lockheed Martin and BAE Systems – two of the largest military corporations in the world – have a major presence in the weapons laboratories of the UK and USA. They also support work across many disciplines and fields within science, engineering and technology for military objectives.

In addition, the military sector supports emerging technologies such as space technology and the nanotechnologies, enjoying a large-scale effect on the direction of their development.

A number of new multi-million pound collaborations between the military sector and the universities have been created in the UK in the last few years. The three main initiatives are Defence Technology Centres, Towers of Excellence, and Defence and Aerospace Research Partnerships. All reflect a narrow technological approach to security issues.
Science and Technology and a Broad Global Security Agenda

The world today faces a range of social and environmental problems, many of which have an impact on security. Poverty, lack of access to basic resources such as clean water and sanitation, and global climate change represent urgent problems. Furthermore, unsustainable levels of resource consumption by the industrialised world can contribute to a range of international problems, at times including conflict.

Our investigations show that SET programmes in conflict prevention, poverty alleviation, and environmental protection often yield clear benefits for relatively little cost, yet these areas get a fraction of the budget allocated to military technology. Disarmament and peacebuilding initiatives also tend to be smaller scale. Equally, R&D budgets for renewable energy technologies, essential to tackle the threat of climate change, are dwarfed by budgets for the development of weapons technology.

Principal Conclusions

There are seven main conclusions which have arisen as a result of the research undertaken for this Report concerning the military influences on SET. These can be summarised as:

1. The military sector, especially in the UK and USA, has a very large and disproportionate effect on science, engineering and technology. The UK-US ‘special relationship’ (largely based on a 1958 treaty, which was renewed in 2004) further drives military R&D which has profound social and ethical implications.

2. Current military thinking is based predominantly upon the idea of security through the superiority of military force, and marginalises broader concepts of security based on social justice and environmental sustainability. This affects which areas in SET are funded by the military.

3. The UK government policies which have shaped SET over recent decades have moved commercial priorities centre stage, and military corporations have played a large part in this process.

4. Military and commercial pressures compromise openness and accountability in SET, for example, through the use and overuse of commercial confidentiality and national security arguments. This can stifle debate and dissent over ethical issues in SET. In general, public scrutiny of SET in the UK, including its funding and direction, is weak.

5. Military support of emerging technologies such as the nanotechnologies is high (especially in the USA). This imposes barriers to full public scrutiny of these technologies and colours the public perception of the potential usefulness of such technologies.

6. Technology transfer from military-supported R&D to civilian use is a complex and expensive route which has, to a large extent, been disappointing in view of the massive investments involved.

7. Areas such as peace-building and sustainable development are currently underfunded, and would benefit substantially from an expansion of SET expertise paid for by a reallocation of proportions of military budgets. Furthermore, we make eight additional conclusions:

8. Global security today faces more challenges from terrorist groups than from nation states. However, the use of essentially Cold War-type strategies and technologies (and the R&D that supports them) in the industrialised countries does not significantly address these needs.

9. Globally, military spending on equipment procurement and R&D not only can divert resources from, for example, health or poverty alleviation programmes, but can also contribute to arms proliferation and refugee crises globally.

10. A broader interpretation of security is called for which takes account of global issues such as climate change, resource depletion, loss of biodiversity and an array of human health problems. Some redirection of the global ‘defence’ burden to under-funded areas (many with a SET component) such as renewable energy and climate change mitigation would significantly assist in the development of these areas.

11. The development of a new generation of nuclear weapons, by US and probably UK weapons laboratories, is likely to compromise security through the undermining of the Nuclear Non-Proliferation Treaty. Nuclear weapons create a climate of fear and send a strong message to other countries who do not yet have them that possession of nuclear weapons is a desirable and acceptable security objective. Furthermore, new, so-called ‘bunker-buster’, low-yield nuclear weapons are likely to blur the distinction between conventional and nuclear war.

12. Areas such as space science and the biosciences have become ‘militarised’ in the USA. This has influenced, and potentially downgraded, the priority given to other areas such as research to produce low cost therapeutic agents, energy efficiency and strategies for urgent climate change amelioration. These effects originating within the USA ramify across the world essentially because of the country’s pivotal role in SET.

13. A number of consortia have been launched over the past three years in the UK which involve the military corporations, government departments and the universities. These forms of collaboration have a largely military agenda for research. Such an agenda has not been sufficiently scrutinised for its social and ethical implications.

14. Intellectual property rights and patents are highly contentious areas within university-industry collaboration, especially given the new consortia involving the military corporations, and clear guidelines need to be implemented to safeguard individual and public utility.

15. There is a pressing need for a much wider public debate over the direction which science, engineering and technology is taking in the UK (as currently laid out in the 2004–2014 Investment Strategy), taking particular account of the role of the military sector.

Recommendations

Based on the extensive evidence which we have assembled in this Re-
port, we make a series of recommendations which address the concerns we have identified. They are divided into three groups according to the audience to which they are addressed: the UK government; professional scientific and engineering institutions and publishers; and individual scientists and engineers.

**Recommendations to the UK Government**

1. Devote more resources to implementing a far more inclusive concept of security within policy. Such a broadened concept would place social justice, peace and environmental sustainability at the centre of considerations of security. Such an approach would lead to the Ministry of Defence relying to a much lesser extent on the development and implementation of military technology and the use of force, and a much greater support where SET and other activities can contribute to peacebuilding and non-violent conflict resolution.

2. Restrict military involvement with R&D of emerging technologies. Ministry of Defence funding for emerging technologies such as nanotechnology should be less than ten per cent of that from civil public funds. Military involvement should not restrict full public scrutiny of such areas. The UK government should call on the USA and others to follow suit.

3. Enact procedures to make Ministry of Defence funding of R&D far more transparent and open to public scrutiny. Organisations receiving MoD funding whether directly or indirectly (eg through the Defence Science and Technology Laboratory or QnetiQ) should be required to publicly acknowledge the source, its extent and purpose.

4. Devote more resources to implementing a far more inclusive concept of security within policy. Such a broadened concept would place social justice, peace and environmental sustainability at the centre of considerations of security. Such an approach would lead to the Ministry of Defence relying to a much lesser extent on the development and implementation of military technology and the use of force, and a much greater support where SET and other activities can contribute to peacebuilding and non-violent conflict resolution.

5. Conduct a full and transparent review of the 1958 Agreement for Cooperation on the Uses of Atomic Energy for Mutual Defence Purposes (renewed in 2004) and all other military agreements between the USA and the UK. Such agreements are a powerful driver of new nuclear and other military technologies and have not received full Parliamentary scrutiny or public discussion.

6. Cease all scientific and technical work related to the design and development of new nuclear weapons. Call on the USA and other nuclear powers to do the same. As a signatory to the Nuclear Non-Proliferation Treaty, the UK has agreed to pursue global nuclear disarmament, yet it is making little effort to do so. The UK government should be leading international efforts to make rapid progress in this area.

**Recommendations to Professional Bodies, Scientific and Engineering Institutions and Publishers**

7. Require all academic papers and reports based on work funded by the military (whether government or corporate) to publicly acknowledge this funding and its scale.

8. Strengthen or initiate professional ethical codes to encompass the problems of professional involvement with the military and its current narrow interpretation of the concept of security.

9. Reduce or eliminate financial ties with the military at least until the adoption of the policies recommended above (1 to 6).

10. Lobby for the above changes in government policy.

**Recommendations to Individual Scientists and Engineers**

11. Educate yourself about any military interest in your field of work and in your institution. Examine whether it is more likely to encourage security policies focused on the use of military force, or security policies based on, for example, the tackling of the root causes of conflict.

Either

12. Engage with military interests to try to encourage a shift in the way they use the work to a more holistic security perspective.

Or

13. Avoid working with the military altogether and choose a scientific/engineering post which provides civil benefits to society, for example, by helping to address social and/or environmental problems.

14. Support lobbying for the above changes in government policy.

15. Encourage discussion of these issues in your institution and within the appropriate committees or boards of your professional associations.

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China’s Policy of Plutonium Recycling
What’s the Rationale?

Hui Zhang

Lately, China’s nuclear industry is entering a new round of fast development. China pursues reprocessing of civilian spent fuel and recycling the plutonium thus gained in mixed-oxide (MOX) fuel for light-water reactors (LWR) and in fast breeder reactors. At a time when plutonium recycling programs are being phased out worldwide, this paper will examine whether plutonium recycling makes sense for China, taking into account economic costs, nuclear energy security, and environmental aspects.

China’s Policy of Plutonium Recycling Programs

China decided to build nuclear power reactors in the mid-1980s. China’s first power reactor became operational in 1991. By 2004, China has nine reactors in operation at five nuclear power plant sites (with an installed capacity of about 7,010 MWe). These reactors account for about 2.3% electricity generation. Two more pressurized water reactors (PWR) will be in operation by 2005, and then the total installed capacity will be about 9,130 MWe. Because of recent electricity shortages in some provinces, in July 2004 China quickly approved to build four 1-GWe PWRs at Guangdong and Zhejiang. Now, China is considering to built another two 1-GWe PWRs at Guangdong. All these reactors are to be in operation by 2010. China officially plans to increase its nuclear capacity to 36 GWe (about 4% of its total electricity generation) by 2020.

To meet the long-term expansion of its nuclear power program, China adopted a policy of reprocessing and plutonium recycling in the mid-1980s. China plans to reuse the plutonium in LWR MOX fuel and fast breeder reactor fuel. According to the proponents of plutonium recycling, the major motivations for China’s push are the following: China needs to separate plutonium to conserve its limited uranium resources for its growing nuclear power program; it provides energy security; and it increases the safety of nuclear waste disposal.1

In July 1997, China began construction of a multi-purpose reprocessing pilot plant at the Lanzhou nuclear complex. This plant has an initial production capacity of 50 t heavy metal per year (tHM/a) and will later provide a capacity of 100 tHM/a. This plant began reception of spent fuel from the Daya Bay reactors in September 2003, and it is ready to reprocess. Commissioning of commercial reprocessing plant (800 tHM/a) is planned around 2020 at the Lanzhou nuclear complex. Recently, a Centralized Wet Storage Facility (CWSF) – with a capacity of 550 t HM spent fuel – has been build next to the pilot reprocessing plant. Since 1985, China has been investigating the disposal of high-level waste (HLW) from reprocessing. Now the Beishan area in Gansu has been pre-selected for deep geological disposal of HLW.

In May 2000, China started construction of the 25 MWe (65MWt) China Experimental Fast Reactor (CEFR). It is a sodium-cooled experimental fast reactor, located about 40 km from Beijing city. It was scheduled to be in commission by 2005. Because delivery of the main reactor vessel is delayed, this breeder is rescheduled to come into operation around 2007. An experimental MOX fuel facility (with a capacity of 500 kg/a) is projected. And a 600 MWe Prototype Fast Breeder Reactor is planned to be built by 2015.2

Economic Costs

Since China is focusing on economic development, the economic costs of plutonium recycling should be an important factor in the ongoing debate over the approaches to the management of spent nuclear fuel and the nuclear fuel cycle. The world is realizing that reprocessing and plutonium recycling is more expensive than a once-through cycle with direct disposal of spent fuel at least for the next several decades. Is China’s plutonium recycling rational in view of the economic costs?

As a case study, a comparison of the cost of reprocessing for MOX fuel fabrication with direct disposal of spent fuel is examined. Based on the projection of China’s spent fuel generation and the spent fuel storage capacity of the CWSF, it can be concluded that China needs no additional storage by 2020.3 After 2020, China would have three options for its spent fuel: reprocessing, direct disposal and interim storage. As a reference scenario, the following is assumed:

1) Reprocessing for MOX: After 2020, additional PWR spent fuel is reprocessed for PWR MOX fuels. After production, the vitrified high-level waste (VHHLW) will be stored for 25 years prior to final disposal (i.e., about 40 years after the spent fuel is discharged from reactors. China proposes to dispose of VHHLW around 2050 at a prospecting site in Northwest China.)

2) Direct disposal: After the spent fuel is transferred from the at-reactor pools, it is stored for 25 years before disposal. Estimates for the reference scenario show that, at a discount rate of 5%, the cost of reprocessing for the MOX fuel option would be about three times higher than that of the direct disposal option.4 In the analysis, the current average value for the unit price of uranium purchases, reprocessing, MOX fabrication, etc. are used. However, even across a wide range of different
assumptions concerning the specific prices for reprocessing and MOX fabrication services, uranium prices would have to increase several times for plutonium recycling to become economically competitive.

Similarly, the costs of recycling plutonium in breeders using current technology, which is dependent on the capital costs of breeders (generally much higher than that of LWR) and on the costs of fabricating and reprocessing breeder fuel and the like, would be much higher than that of the direct disposal option. For example, a new report of Harvard University shows that reprocessing and recycling plutonium in fast-neutron reactors with an additional capital cost, compared to new LWRs, of US$ 35/We installed will not be economically competitive with a once-through cycle in LWRs until the price of uranium reaches some US$ 300/kgU, given the central estimates of the other parameters. It means that the uranium prices (current price around US$ 35/kgU) would have to increase over eight times for the breeder option to be economically competitive. This is very unlikely in the foreseeable future.

**Nuclear Energy Security**

One major motivation for plutonium recycling advocates in China is nuclear energy security. They argue that to continually supply its long-term expanding nuclear power base with its own limited uranium resources, China needs plutonium recycling in order to save uranium. However, such an argument could only make sense if China’s energy supply became much more dependent on nuclear energy and if worldwide uranium resources were much more expensive and would be used up soon. But this is not likely in the foreseeable future.

While China could use up its own currently-proven uranium resources (about 70,000 MTU=metric tons uranium) within a few decades under its current proposed nuclear power program, nuclear energy security would depend on world-wide uranium markets rather than domestic uranium resources, as shown by some countries, including South Korea, that do not have their own uranium production but in spite of this develop nuclear power plants. Unlike the common perception in the 1960s-70s that natural uranium was a scarce resource and breeder reactors had to be developed, now it turns out that natural uranium is abundant, cheap, and available worldwide. A recent estimate suggests that the total amount of uranium recoverable at price below US$ 130/kgU (still much less than the price at which recycling would be economic) is likely about 33-100 MTU, which would supply nuclear energy systems – at the current uranium consumption rate – for hundreds of years. In practice, the amount of recoverable uranium would increase as the uranium price gets higher. Moreover, for the case of nuclear growth in the future, it is estimated that uranium resources at an acceptable price would continue to supply the power reactors with once-through cycles throughout the 21st century, and if the uranium (45 billion MTU) in the oceans is recovered, it will support the nuclear energy system for many centuries.

Furthermore, unlike oil and natural gas that have a fairly limited geographic availability, with, for instance, the Middle East and the Russian Federation controlling about 70% of world crude oil and natural gas reserves, uranium suppliers in the world market are diverse geographically and politically, and unlikely to collude to raise prices or limit supplies. In practice, China is following a policy of “two resources, two markets” (domestic and international) to meet its natural uranium demands.

If disruption of the uranium supply becomes a concern, China can establish a “strategic” uranium stockpile which would be inexpensive to buy and easy to store. This would be a much cheaper strategy than reprocessing and recycling. In addition, the energy systems based on plutonium recycling would aggravate the concerns of energy supply disruption, since such systems are more complex and error-prone than the once-through systems, and therefore could lead to a shutdown of nuclear power. For example, the sodium-cooled breeders are more accident-prone for the following reasons: sodium burns on contact with air; sodium reacts violently with water; and sodium is opaque, which makes fault detection much more difficult. Experience demonstrated that sodium-cooled systems suffer serious disruption even in the event of relatively minor failures. Some lessons could be learned from the experience with the French Superphenix breeder reactor. Since it went into commercial operation in 1987, it suffered a series of accidents including sodium leaks and the roof caving in. Before it was permanently closed down in 1997, this breeder stayed shut down for most of its lifetime. Besides breeders themselves, reliable operation of the other associated facilities including reprocessing and fuel fabrication plants would be more difficult and costly than in the case of once-through PWRs. This is because large quantities of unirradiated plutonium will exist in those facilities, which increases radiological hazards, criticality risks, and security threats. Consequently, the increased possibility of accident or terrorist incidents involving plutonium recycling would has a negative impact on energy security.

**Environment Aspects**

Proponents of plutonium recycling argue that it can significantly reduce the long-term hazard of buried high-level wastes. However, there remain some questions about this argument. In conventional reprocessing, while about 99.5% of plutonium and uranium is separated, most of the minor actinides (americium, neptunium, and curium) will end up in the HLW together with the fission product. These long-live minor actinides and fission products (I-129, Tc-99) would contribute significantly to the long-term hazard of reprocessing HLW or spent fuels. On the very long term (10^5 to 10^6 years), e.g., Np-237, Tc-99 and I-129 constitute the most critical radionuclides. In addition, in the case of recycling plutonium for the MOX/LWR option, the peak dose rate is estimated to increase slightly based on the higher inventory of the dominant actinide isotopes.
To reduce the concern of long-term hazard issues, the ambitious proposals of Partitioning and Transmutation (P&T) have been launched, which aims for chemical separation and neutron transmutation of all non-uranium, long-lived radioactive isotopes in spent fuel. While current P&T programs focus on removing and destroying all those actinides from spent fuel, performance assessments of the proposed repository sites at Yucca Mountain in the U.S. and at Olkiluoto in Finland show that long-lived fission products, such as Tc-99 and I-129, are more important than most actinides as sources of long-term exposure risk. And P&T studies have yet to show that this technology can deal effectively with these fission products. Moreover, no technology is yet available to completely remove all these actinides, and any such systems currently under consideration would significantly increase the economic costs of nuclear energy.

Moreover, the short-term costs of P&T activities will be significant. It is believed that plutonium reprocessing and recycling will increase workers’ and public radiation exposure and increase the accident risk. In addition, it will generate additional categories of waste that increase the waste management burden. Consequently, the nuclear decision-makers should balance the long-term benefits of waste partitioning and transmutation with the increased short-term health, safety, environmental, and security risks involved. Based on a recent MIT study, it seems unlikely that on the basis of waste management considerations alone the benefits of advanced fuel cycle schemes featuring waste partitioning and transmutation will outweigh the attendant risks and costs. In addition, many experts within the scientific and technical community feel highly confident that the geological disposal approach is capable of safely isolating the waste from the biosphere for as long as it poses significant risks. In practice, the U.S. is planning to deposit about 63,000 MT of spent fuel in the Yucca Mountain repository.

Finally, the international community has long been concerned about the increasing proliferation and terrorist risks by plutonium recycling systems. China’s plutonium recycling policy could have an impact in this respect. For example, the civil use of plutonium in one country can serve as encouragement or an excuse for its use in other countries, thereby encouraging nuclear proliferation. Conversely, if China does not pursue reprocessing and recycling, this could set a good example for other countries that are contemplating reprocessing. All of these factors, as discussed above, show that China has no convincing rationale for pursuing plutonium recycling in the foreseeable future. While the debates on permanent options for management and disposal of spent fuel and nuclear waste are still continuing worldwide, it would be highly desirable for China to choose an interim storage option (e.g. designed for many decades) instead of rushing reprocessing and recycling. Thus China would leave all options open and gain time for technology to develop further and choices to become clearer. It is shown that that interim storage of spent fuel offers a safe, flexible, and cost-effective near-term approach to spent fuel management. The interim storage approach would give China a substantial opportunity to carefully develop a long-term policy for the nuclear fuel cycle.

1 See, e.g. Renkai Zhao et al., The Energy Technology Area Research Progress of the National 863 Programme, The Atomic Energy Press, Beijing, 2001; Mi Xu, The Role of the Nuclear Power in China, Presentation at the Conference of International Engineering, November 2000, Beijing, China.
4 Ibid.
5 Matthew Bunn et al., The Economics of Reprocessing vs. Direct Disposal of Spent Nuclear Fuel, Managing the Atom Project, Belfer Center for Science & International Affairs, Harvard University, December 2003.
6 See details in footnote 5. Also, based on the 2001 Red Book, the world uranium requirements in 2001 were roughly 64,000 tU, thus the amount of uranium at 33-100 MTU would supply nuclear power (at the current uranium consumption rate) for over 500 years. See: Uranium 2001: Resources, Production, and Demand, OECD Nuclear Energy Agency and International Atomic Energy Agency, Paris, France, 2002.
7 E.g. the Red Book takes the recoverable price of uranium in the oceans at about US$ 320/kgU, which is less than the breakeven price (about US$ 340/kgU) for plutonium recycling. See Uranium 2001: Resources, Production, and Demand, op. cit.
12 See footnote 10.
Proliferation Risks of Spallation Neutron Sources

Matthias Englert

The acquisition of Nuclear Weapon Usable Materials (NWUM) is, metaphorically speaking, the eye of a needle through which any state or sub-state actor must go before they can construct a nuclear weapon. The material side is therefore one of the most effective ways to restrict access to nuclear weapons or close it altogether. The relevant NWUM in the context of horizontal proliferation are uranium (U-233, U-235) and plutonium (all isotopes, in particular Pu-239).

In advanced weapons programs (vertical proliferation), tritium is also important to build so-called “boosted” designs that enhance the efficiency of a nuclear bomb.

Two pathways to acquisition of NWUM can be identified. On the one hand, there are huge existing civilian and military stockpiles of highly enriched uranium (U-235) and plutonium. On the other hand, an actor could use already existing or potential future technologies to produce NWUM. Since plutonium, U-233, and tritium can be produced by neutron reactions, all neutron-producing technologies (including spallation neutron sources, SNS) are capable of producing these materials in principle.

One strategy to prevent access to sensitive production technologies would be international control of existing technologies and an early analysis of new or novel technologies which could facilitate or open new paths to access weapon materials. An example of the latter is an investigation of proliferation risks associated with SNS. The question is what quantities of NWUM can be produced within a specific time with a specific technology? And what would concrete production scenarios look like?

If the quantitative approach shows that a SNS is sensitive to the proliferation of NWUM, the ideal goal would be to develop alternative, proliferation-resistant SNS designs, which would permit only civilian use. Less ideally, the design would prolong the time needed to divert or produce NWUM considerably and increase the expenditure for an actor. It appears realistic to analyze spallation technologies, sensitive plant parts and parameters, materials, as well as purposes of use, in order to build international control mechanisms for such facilities and export controls.

How much NWUM is needed?

To answer the question of whether a technology is sensitive to proliferation requires a quantitative definition. First of all, the mass which is necessary to build one nuclear weapon should be considered significant. This mass depends on the technological capability of the actor and on the explosive force of the weapon. An actor with a low technical capability would need 4-5 kg Pu-239 to build a small weapon with a yield of 5-10 kilotons.1

In order to assess the proliferation risks of SNS, it is useful to look at production rates, because not only the mass but also the time required for production plays a significant role. For this article, a maximum production time of 10 years and a minimum mass of 5 kg Pu-239 were chosen as reasonable extremes. Accordingly, facilities with a minimum production rate of 500 g/y Pu-239 should be considered sensitive.

It is obvious that this threshold is arbitrary and could be defined differently. Reactor Safeguards of the International Atomic Energy Agency (IAEA), for instance, are activated at a production rate of 100 g/y Pu. However, this would correspond to a production time of 50 years in order to produce enough plutonium for one nuclear weapon. In the opinion of the author the value of 500 g/y Pu-239 gives a conservative, practical, and adequate threshold for a first assessment.

Spallation Neutron Sources

In a SNS, protons are accelerated to energies of several hundreds of mega-electron-volts or several giga-electron-volts GeV (for protons, 1 GeV corresponds to 87 percent of the speed of light). At the end of the accelerator, the protons hit a heavy metal target. The reaction of the incident proton with the nucleons of an atomic nucleus in the target material can be described in terms of an elastic particle-particle collision (intranuclear cascade). The energy of the proton (~GeV) is high compared with the binding energy of one nucleon in the atomic nucleus (~8 MeV). An incident proton can therefore knock out or spall off several nucleons from the nucleus.

As a result, the atomic nucleus is highly excited and evaporates neutrons (and other particles) to relax to a less excited state. The nucleus cools down. The incident proton or a spalled particle can have enough energy to cause one or several spallation reactions in other nuclei (intranuclear cascade).

In fissile materials, the evaporated neutrons cause additional nuclear fissions, which increase the number of produced neutrons further.

The neutron yield, that is the number of neutrons produced per proton, is one of the most important parameters of a SNS and depends on the energy which the incident particle projects on the material, the geometry of the target, and other parameters. A value of 40 neutrons per proton is typical (target is a cylinder, natural uranium, R=5 cm, L=60 cm, 1 GeV protons). The flux of the neutron source (neutrons/(cm²s)) an essential parameter of the performance of a SNS depends in turn directly on the neutron yield and on the current of the accelerator (the number of the protons in the beam per unit of time).
Linear accelerators (LINAC), cyclotrons, or synchrotrons are usually used for the acceleration of the protons. Typical accelerator parameters used in existing SNS are currents of 0.5–1.8 mA and energies of 0.5–1.5 GeV. The energy of the incident particle is directly connected to the dimension of the facility the higher the energy, the bigger the accelerator. A linear accelerator is typically several hundreds of meters long. Cyclotrons are considerably more compact and have a diameter of several meters up to 20 m. The current of an accelerator is (together with other parameters) an indication for the technical sophistication of the accelerator.

**SNS the Neutron Source of the Future?**

The proliferation risks of SNS have so far been considered marginal, therefore no SNS specific safeguards and control mechanisms are in force. Plutonium was and is produced almost exclusively in reactors, the proliferation risks of which are widely known and very well examined. Accordingly, whole range of safeguards as well as export controls exist for reactors. The production of plutonium in SNS, in contrast, was regarded as a technical challenge because of its use of high current, high energy accelerators. It is also a cost-intensive process as compared to reactor production. Presently, there are only about ten SNS facilities in operation.

I will argue that this picture of the proliferation risks of SNS can change because of four different but interconnected arguments regarding the future of accelerators generally and of SNS facilities specifically:

1. *The technological dynamics of the accelerator evolution* in the last 20 years led to an increase of accelerator currents by a factor of 10. While in the 1980s cutting-edge accelerators for SNS had currents of several 100 µA, today accelerators with currents of 1-2 mA are in operation and for the low-energy range already commercially available, a further increase of accelerator currents up to 10 mA in the next 10-20 years can be assumed, and the operation of prototypes (LINAC-RFQ) with up to 100 mA has already been successfully demonstrated.

In assessing the proliferation risks of SNS, a current of several hundred µA can be considered a conservative assumption. 1-2 mA is the current of state-of-the-art machines and 2-10 mA would be a progressive assumption for an accelerator current.

2. Due to the dynamics in the accelerator development, SNS will complement and/or replace the role of accelerators for the generation of neutrons for scientific purposes. This in turn affects positively the dynamics of accelerator development. The achievable neutron peak fluxes of SNS are already higher than those of reactors. Although the average neutron flux of reactors is still superior to spallation sources, SNS have considerable potential for future developments in neutron performance.

3. Since the 1990s, *new plans* for the generation of electricity with accelerator driven systems (subcritical reactors, etc.) and for the transmutation of radioactive waste experienced new impetus, although such interest is restricted to research and design so far. But if any state were to launch a program to build such a plant, this will surely have a heavy impact on the development and commercialization of spallation and accelerator technology.

4. There is an increasing interest in the development of accelerators for industrial and medical applications and for the commercialization of accelerator technology.

These four points indicate that there is potential for the spread of scientific and commercial accelerators and SNS facilities, as well as for their improvement. Additionally, the presence of nuclear safeguards on other relevant processes make the potential use of SNS to produce NWUM very attractive to an actor wanting access to NWUM. This is a path which is technically and economically challenging, but offers the possibility of producing NWUM without immediately alerting international attention.

Whether this picture of the dynamic development of accelerators and SNS becomes reality in the future remains yet to be seen, but it seems very appropriate to investigate the proliferation potential and risk of SNS. Before looking in more detail at possible scenarios and actors, we should answer some quantitative questions first.

**Plutonium Production with SNS**

Even with rough approximations it can be shown that a significant production of plutonium in the kilogram range is a possibility with a SNS. However, in order to assess more concrete and realistic production scenarios, it is necessary to look in more detail at the impact of relevant SNS parameters on the production rate. These are, among others, the current of the accelerator, the energy of the incident particle, the target dimensions, the beam profile, the burnup of the target, and the energy deposition. A simple cylindrical geometry (respectively a sphere) was used for the investigation of the parameter dependencies and their influence on the plutonium production, as well as for the determination of the simulation error in comparison with experiments. To simulate the proton bombardment of natural uranium and the neutron transport, the MCNPX computer code was used.

The results presented below are limited to a few selected parameters and should give an impression of what conclusions can be drawn from such a parameter study using mathematical methods. The following underlying assumptions were made for all calculations:

1. The influence of the burnup is neglected, except for the investigation of the burnup itself. This corresponds to the assumption that the produced plutonium is continuously extracted from the target.
2. A continuous current in the accelerator was assumed.
3. The production rates were calculated for a continuous current without beam interruptions through maintenance, target replacement, etc., which typically occur during the operation of a SNS (i.e. a duty factor of 100 % is assumed). Depending on the reliability and the maintenance periods of a specific SNS, the values must be adapted.
**Maximum production:** Figure 1 shows the annual plutonium production in a quasi-infinite sphere of natural uranium with an isotropic proton point source in the centre in dependence of the proton energy. The simulation in an infinite sphere indicates the maximum attainable production rate by direct bombardment of a uranium target under the simplifying assumptions (above), since no neutron losses occur through the surfaces and every neutron will be captured. With a 5 MW (1 GeV, 5 mA) beam, a maximum production of 32.24 kg Pu-239 per year is possible. This corresponds to a very big SNS facility and a progressive assumption for the beam current. The dashed lines indicate the production for a proton current of 1 mA (moderate) and 10 mA (progressive). It can be seen that above 400 MeV the production rate depends linearly on the proton energy. As the current is directly proportional to the number of protons bombarding the target, the production rate depends linearly on the current as well.

**Energy deposition:** Energy deposition does not have any direct influence on the production rates, but it determines the geometry and dimensions of the target in large part, and therefore limits the accelerator beam usable with a certain geometry. This means the energy deposition limits the achievable production rates. In reality, the usage of a compact uranium cylinder is not possible, as the energy deposited by a beam of several hundreds of kilowatts (or even MW) will melt such a target. However, the problems of heat transportation are solvable in principle (with specific limits of course) by using more complex geometries with sophisticated cooling techniques. It can be shown that the error of using compact cylindrical geometries in the computer simulation is not very big in comparison with real target constructions.

**Burnup:** With regard to the production of NWUM, it has to be pointed out that the explicit calculation of the burnup in the simulation shows that after 500 days burnup (1 GeV protons, 5 mA current, cylinder of natural uranium, R=60 cm, L=60 cm) the plutonium produced consists of 99% pure Pu-239, which is ideal for building nuclear weapons.

**Energy, current and target dimensions:** Energy, current, target geometry, and the dimensions of the target determine the production rates to a large extent. The energy of the protons determines the size of the accelerator. Typical sizes are several hundreds of meters length for linear accelerators (LINACs) and 2-20 m for circular accelerators (cyclotrons). As indicated above, the current at energies above 150 MeV can give an impression of the technical sophistication of the accelerator and of the target design.

Table 1 shows the necessary energies of the protons and the currents of the accelerator bombarding the base face of a natural uranium cylinder to produce Pu-239 at a constant rate of 500 g/y, 2 kg/y, and 5 kg/y Pu-239. The more current, the less energy is necessary to achieve the constant production rate and vice versa. Low current and low energy can be compensated through enlargement of the cylindrical target (and with that the minimization of neutron losses through the surfaces).\(^7\)

Even with moderate currents of 1 mA (state-of-the-art technology) and protons with an energy of 428 MeV bombarding a mass of 2.2 t U-238, more than the significance threshold of 500 g/y Pu-239 is produced. It should be pointed out that a mass of 2.2 t natural uranium is low compared to the uranium inventory of a small reactor core.

If one takes into account that the currents of accelerators could reach 10 mA or several 10ths of mA in the next 10-20 years (progressive assumption), a significant production of NWUM could be reached with very small SNS facilities, even with an non-optimized cylindrical target.\(^8\)

### Realistic Scenarios

As mentioned above, the use of cylindrical geometries is suitable for analytical purposes, for the investigation of the dependencies of the relevant parameters, and for the validation of the simulation model. With relatively simple geometrical changes, the production rates could be increased. Investigating the direct proton bombardment of uranium does not cover those cases in which the neutron producing target does not consist of uranium but of another heavy metal and where the target is spatially separated from the breeding blanket in which the plutonium is produced. In such scenarios, the neutrons could also be moderated before reaching the plutonium-breeding uranium blanket. This
possibility involves all kinds of subcritical reactor designs.

Realistic scenarios involving a SNS for the production of plutonium depend considerably on the intentions of an actor and the initial purpose of the facility. The actors could be states, e.g., members of the NPT, trying to cheat and get clandestine access to NWUM.

**Classification of Production Scenarios**

In order to categorize the great number of possibilities to produce plutonium with a SNS, a rough classification was developed following two simple criteria: The plant is 1) a converted research neutron source, or 2) particularly designed for the production of plutonium.

The first point refers to a state that might build a civilian research facility which will not only be used for scientific research but also to covertly produce NWUM. A historic reference might be the first research reactor delivered to India in 1955, which led to the “peaceful” explosion in 1974. The second point refers to a state trying to produce NWUM in a completely clandestine program. A historic reference might be the calutron program of Iraq, which was discovered in 1991 after the first Gulf War. The second classification is of technical nature.

a) The neutron producing target is identical with the breeding blanket where plutonium is generated, or
b) the neutron producing target is spatially separated from the plutonium producing breeding blanket.

Detailed calculations were not carried out for all scenarios since some can easily be excluded with rough estimates or have already been investigated by other authors (see below).

The combination chosen for this study therefore leads to four main scenarios (1a, 1b, 2a, 2b):

1. A converted neutron source: 1a: The target material is uranium and is used for the production of NWUM. Example:

   1a-1 Research spallation neutron source with a uranium target.

   1a-2 Research spallation neutron source with a uranium beam dump.

2. SNS specifically designed for the production of NWUM: 2a: Target and blanket identical. Example: Small (commercial) cyclotron accelerator facility, which can be camouflaged.

   2b: Target and blanket separated. Example:

   2b-1 Spallation target to produce neutrons surrounded with a uranium mantle.

   2b-2 All kinds of moderated facilities, especially subcritical reactors driven by a spallation target.

**Scenario Likelihood**

At this point it is necessary to explicitly state, that the author does not presume, investigate, or fear a military use of existing research facilities like the Swiss Spallation Neutron Source SINQ at the Paul Scherrer Institute, Switzerland, or the pulsed neutron and muon source ISIS at the Rutherford Appleton Institute in Great Britain. These facilities are as examples for the examination of hypothetical proliferation scenarios because there exists vast experience in the operation of these SNS and data is publicly available in abundance.

1a-1: In a research neutron source, a uranium target could be installed and used for plutonium production. Using the results for the cylindrical geometry, approximations for existing facilities give production rates of 90-360 g/y Pu-239 for SINQ (1.8 mA, 590 MeV, 17x17x50 cm, rod bundle target) and 16-64 g/y for ISIS (0.2 mA, 800 MeV, cm 11x11x32 plate target). Bigger target dimensions or a higher energy or current would increase the production. Scenarios of converted research SNS using a uranium target are relevant for high beam currents and/or energies, as the target dimensions are usually small to get high neutron leakage currents from the target surfaces for scientific research.

1a-2: In every accelerator there is a beam dump for the maintenance and construction of the plant which could be used for plutonium production.

Detailed calculation of a MCNPX model for the planned 500 kW European Spallation Source (ESS) beam dump result in a production of 353 g Pu-239 per year. The beam dump is very relevant if covert production of NWUM in a research SNS is considered. The calculated 353 g/y 239-Pu of course is below the threshold, but a change in geometry to get higher production rates is within the realm of possibility, as well as the construction of a beam dump for higher beam powers or with better cooling mechanisms. A beam dump constructed from uranium for the full 5 MW beams of the ESS would produce 3.53 kg 239-Pu per year, and better designs are both possible and feasible.

1b-1: This scenario is unlikely as the irradiation positions are usually very small. As it is possible to build targets with big irradiation positions in the moderator this question should be investigated in more detail. But production rates will be small even for very large SNS, except if huge masses of materials can be irradiated.

1b-2: This scenario is very unlikely as neutron flux is orders of magnitude too low to reach the production threshold.

2a: An actor could construct one or several small covered production facilities with a small accelerator, e.g., small cyclotrons. The production rates of the cylindrical geometry can be used in order to estimate production rates. Even with an accelerator with a current of 1 mA and an energy around 400 MeV a production rate of more than 500 g/y is possible. With simple measures like a reflector mantle and a beam hitting the centre of a target instead of the base, the production rate can be doubled as compared to the simple cylindrical geometry (i.e. roughly doubled production rates in Table 1 except for low energies).
Conclusion

The investigation of the general case of a cylinder clearly showed that significant production of NWUM with SNS is possible and maximum production rates up to 30 kg or more are possible with the parameters of state-of-the-art SNS, which are however still very big and expensive. Lower, but still significant, production rates can be achieved even with moderate accelerator parameters.

The investigations of the cylindrical geometry also showed that the isotopic composition of the produced plutonium is very suitable for nuclear weapons. Additionally, the mass of uranium needed as source material is very low in comparison with reactors, and both natural uranium and depleted uranium can be used as source material.

Due to the high dependency of the production rate on all the discussed parameters it is difficult to make general statements for production in real facilities, except that a significant production is possible. To quantify the potential production, it is necessary to consider the concrete design of a facility.

The classification of scenarios in this study tried to consider as many scenarios as possible. But this classification is still very rough in this study. It caused difficulties and should be improved for future investigations.

From all scenarios, only scenario 1-b2, the utilization of a beam hole, is negligible. For all other scenarios, the possibility to produce nuclear weapon relevant material (Pu-239) in significant quantities (500 g/y) exists, in some scenarios (2a, 2b) even with relatively small accelerator facilities. These scenarios, with facilities designed for the purpose of plutonium production, are also those with the largest proliferation potential in the view of the author. These scenarios do not only have a great flexibility for different designs; the use of very small and cheap accelerators (possibly in greater number) is also possible and many of the components needed are already or will be commercially available.

Together with existing dynamics in the development of accelerator technologies and SNS which can be expected in the next years and decades, the quantitative results show that it is essential to closely monitor such future developments.

Recapitulating, the danger of proliferation from SNS is perhaps not an immediate but is an impending danger, depending on the future development of the technology. Since the technology is just beginning to become commercially available and the spread of this technology has only just started, it is possible, while we still have enough time, to implement control mechanisms (proliferation-resistant design, safeguards, export controls, etc.) in the early stages of such developments to assure exclusively peaceful uses of spallation neutron sources.

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2 E.g. the CYCLOTRON 30 of the company IBA in Belgium (30 MeV, room sized); www.iba-worldwide.com.
7 Another alternative to maximize the production rate is the change of the target geometry approaching the ideal form of an infinite sphere with a point source in the centre.
8 An actor could also use several small accelerators.
9 The ESS Beam Dump is made from copper. To replace the copper with uranium, like we did for our rough estimates, would not work in reality because of thermal problems.
The European Union (EU) is increasingly showing a new independent stance on Foreign Policy issues as the logic of its industrial and economic integration plays out in the international arena. Already the EU has taken a distinct and independent approach to both the Israel-Palestinian conflict and the nuclear crisis in Iran. Now it has broken ranks over the Korean Peninsula, fed-up and concerned with the failure to resolve the ongoing crisis in North Korea.

The Europeans are stepping in. This week the European Parliament (EP) passed a comprehensive resolution on the Non-Proliferation Treaty (NPT) and nuclear arms in North Korea and in Iran that reflects this new stance. Firstly, the EP urges the recommencement of the supply of Heavy Fuel Oil (HFO) to North Korea in exchange for a verified freezing of the Yongbyong Heavy-Water reactor, capable of producing weapons-grade plutonium, to avoid further deterioration of the current situation. At the same time it is calling for the European Council and Commission to offer to pay for these HFO supplies. Secondly, it urges the Council of Ministers to reconsider paying four million Euro of suspension costs for KEDO (Korea Energy Development Organization) to South Korea in order to ensure the continued existence of an organization that could play a key role in delivering energy supplies during a settlement process. Thirdly, it demands that the Commission and Council request EU participation in future “Six Party Talks” making it clear that the EU will in future adopt a “No Say, No Pay” principle in respect of the Korean Peninsula. Having already placed over 500 million (US$ 650 million) of humanitarian and development aid into the North, it is no longer willing to be seen merely as a ‘cash cow.’ This view was backed in the debate by the Luxembourg Presidency and follows a line initially enunciated by Javier Solana’s representatives last month in the Parliament’s Foreign Affairs Committee.

Fourthly, it urges North Korea to rejoin the NPT, to return to the “Six Party Talks” and to allow the resumption of negotiations.

Finally the Parliament finds US claims that North Korea has an ongoing HEU (Highly Enriched Uranium) Programme unsubstantiated as it also does of the allegations that North Korea provided HEU to Libya, thus calling for its Foreign Affairs Committee to hold a public hearing to evaluate the evidence. “Once bitten, twice shy” is the consequence of US claims of Iraq’s possession of Weapons of Mass Destruction.

The world order is changing; the European Union like China is emerging as a significant global power economically with the Euro challenging the dollar as the global currency (even prior to the latest enlargement from 15 to 25 the EU’s economy was bigger than that of the US). Speaking at Stanford University earlier this month, former foreign policy advisor, Zbigniew Brezenzski, pointed out that the EU along with the US, China, Japan and India will be the major powers in the new emerging global order. Having three Asian countries out of the five major players, he stressed the importance of engaging with the New Asia.

How will those already in play respond? Some may claim that statements by North Korea welcoming the EU’s involvement and participation are merely polite, inoffensive small talk not intended to be taken seriously but this is belied by the facts. First, there have been a spate of pro-EU articles appearing on Rodong Sinmun, the daily newspaper of the Central Committee of the Korean Workers Party, since 2001. Of 128 EU-related articles between 2001 and 2004, a majority praised Europe’s independent counter-US stance, emphasized its increasing economic power and the expansion of its influence, and heralded its autonomous regional integration. Rodong Sinmun portrays the EU as the only superpower that can check and balance US hegemony and American unilateral exercise of military power. North Korea’s perception of the EU is well reflected in articles entitled The EU becomes a new challenge to the US unilateralism; Escalating frictions (disagreements) between Europe and the US; The European economy (Euro) dominating over that of the US; Europe, strongly opposing to unilateral power play of the US; and so forth. Concurrently, North Korea has pursued active engagement with the EU establishing diplomatic relations with 24 out of 25 EU member states (exception being France). Given the facts, it is not necessary to read between the lines just not to be blind to recognise North Korea’s genuine commitment to engagement with the European Union based on its perception of the EU’s emerging role on the world stage.

The Republic of Korea has publicly welcomed the prospect of EU involvement, while China wishes to go further and engage in bilateral discussions with the EU on its new policy towards the North. Russia will follow the majority. The problem is with Japan and the US. In Japan, opinion is split with the hardliners in the Liberal Democratic Party seeing North Korea as a convenient excuse to justify the abandonment of the Peace Constitution and, therefore, not wanting a quick solution until the crisis has catalysed this transformation of Japan into what its advocates call a “normal” country. The US expects EU’s financial commitment, but not participation, with the neo-cons conceiving that EU participation would change the balance of forces within the talks inexorably towards critical engagement rather than confrontation. The question is whether the EU’s offer paints the US into a corner or whether it triggers a breakthrough. Will US fundamentalists outmanoeuvre the realists who favour a diplomatic rather than military solution? Only time will tell.

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Editor’s comment: The following article was written in February 2005. Since then, the author’s activities resulted in major public discussions and a host of questions being raised on the issue. The parliamentary decision-making has as a consequence been postponed to April, and the time limit set in the US-Italian Memorandum of Understanding has been extended by one months – it seems that the third proposal in this paper has been taken seriously by the political decision-makers.

The German Government intends to participate in the missile defense system MEADS (Medium Extended Air Defense System), which is designed to ward off airplanes, helicopters, cruise missiles as well as tactical ballistic missiles with a range of up to 1,000 km. The role of MEADS is to protect soldiers on international operations as well as to defend German territory.

When used in combination with the improved Patriot missile and about 300 of the newest Patriot (PAC-3) systems yet to be purchased, the Bundeswehr (German armed forces) is confident of its ability to meet all current and future security challenges and remedy existing shortcomings. According to current plans, these two systems will become the core elements of German ground-based extended air defense after 2012.

The Budgetary Committee (Haushaltsausschuss) of the Bundestag (German parliament) will deal with MEADS in early 2005. German participation in development, procurement, and deployment of this trilateral arms project between the US, Germany, and Italy, which started in the mid-1990s, must be discussed and voted upon in parliament. The governments of Italy and the United States signed the required Memorandum of Understanding (MoU) at the end of September 2004 and have now begun development of the system. The German government can sign the MoU within six month if the Bundestag gives the green light by March 2005.

Thus far, MEADS has been an issue dealt with mainly in the parliamentary Defense Committee (Verteidigungsausschuss), which convenes behind closed doors. On November 10, 2003, this committee decided to establish a Rapporteur Group “Bodengebundene Luftverteidigung” (ground-based air defense). MEADS was the focus of attention in this group’s discussions, that were attended by seven parliamentarians, one civil officer, and five air force officers from the German Ministry of Defense. The MoD officials drafted a Working Paper which was then turned into a virtually identical Final Report issued by the seven parliamentarians. They thereby accepted the Working Paper unanimously almost word for word. The Rapporteur Group consequently advised the Defense Committee on October 19, 2004, that Germany should participate in the MEADS program, including development and deployment. The committee in turn passed the Final Report unanimously on November 10, 2004.

Both documents estimate the German share in development to be in the order of US$ 1 billion (995 million). However, there is no publicly accessible data available on the number of systems to be obtained or the unit prices. Neither the Working Paper nor the Final Report contain any relevant information. Depending on the method of assessment and the sys-
tem scope, MEADS can easily turn out to be a two-digit billion euro project.

The defense ministry’s Working Paper and the Final Report by the seven members of parliament, respectively, present the military arguments in favour of this tri-national arms project. This report analyzes the arguments outlined in those documents and in the light of the inaccuracies and inconsistencies revealed, the claims that cannot be sustained, and the lack of transparency shown reaches the following conclusions: The Working Paper/Final Report are insufficient and inadequate as a basis for reaching a decision in the upcoming debates and votes in the Bundestag. Taken as a whole, both, the paper and the report, urgently require greater precision, more information, and further clarification.

Nine Concerns

The nine central points of concern are summarized below:

1. **Inadequate instrument for risk/threat assessment** (2.1). As to their military assessment, the central terms “risk” and “(potential) threat” are used synonymously in both documents. The effect of drawing a distinction between threats and risks makes a remarkable difference to any adequate threat assessment, as this distinction considerably reduces the number of states which represent a potential missile danger to Germany.

2. **Inconsistent argumentation for the military necessity of this arms project** (2.2). MEADS is designed to repel missiles with a range of up to 1,000 km. However, both documents identify missiles with a range of over 1,000 km as the future potential threat, against which this arms project would not be able to offer protection.

3. **Unclear and for the most part unconvincing military goals for MEADS** (2.3). Both documents stress the importance of this project for the protection of soldiers. At the same time, they give the impression that this system can also be used against terrorist attacks, which are usually carried out without early warning. It is misleading to assume that MEADS could protect German territory against terrorism, which is the view put forward in the two documents. In this respect, both the authors from the defense ministry and the parliamentarians fall short of the goals set out in unreleased documents. These documents outline just highly selective protection of outstanding objects. Neither document addresses one of the main weaknesses in the argumentation for MEADS: within a range of 1,000 km, the range for which the system could offer protection, Germany is only surrounded by friendly countries. The effectiveness of protecting soldiers in international operations is indicated as merely “basic protection”. Neither document answers any of these urgent questions, and they do not address any of the required scenarios.

4. **Biased description of the technical capability of MEADS, while not taking into consideration the experience with Patriot missiles during the last Iraq war** (2.4). The air force officers portray the technical capability of defense systems in the terminal phase of incoming missiles as a “textbook” situation they list problems and offer solutions accordingly. The “real technicians” from the arms industry, on the other hand, present the same facts from a problem-oriented and cautiously optimistic viewpoint, and see them as extreme challenges to tactical defense systems. It is of strategic as well as of political significance for the German discussion on MEADS that both documents do not consider the results achieved by the U.S. with Patriot missiles in the last Iraq war.

5. **Questionable character of MEADS as a role model for transatlantic cooperation projects and for the German arms industry** (2.5). The assessment of this project as a European-American success story depends on the standards applied. Compromises were recently reached in negotiations between the U.S. and the European contractors.

6. **Assessing this project in terms of the original and subsequent demands put forward by the Europeans (as the author of this report does), the result is less positive. One can hardly claim that the MEADS program is still about the common development of a joint arms project. Despite considerable European resistance, the U.S. successfully insisted on employing its PAC-3 weapon for MEADS. The United States has not even fulfilled the significantly weaker European request to grant access to PAC-3 data**.

7. **In order to have any positive effect on the German arms industry, exact quantification is required of all aspects of the development process. This is even more true with respect to the financial expenditures needed during the deployment phase and to the total national economic burden.**

8. **Unsustained claims for a multilateral arms project** (2.6). MEADS has remained a tri-national project. No other NATO country seems to be interested in project participation. There can hardly be a more distinct piece of evidence of the lacking attractiveness of this arms project in military, economic, and technological terms. Such a negative result must not be ignored in parliamentary discussion.

9. **MEADS poses problems for arms control in the context of the overall architecture of missile defense** (2.7). The contradictory goals and perspectives which exist between the European and American contractors are not only evident in economic and technical terms, but also in conceptual terms. Germany regards MEADS as a system in itself. The U.S., however, views it as one component in a comprehensive “Missile Defense” configuration that also includes technically more sophisticated and, in terms of arms control, more problematic plans for a global and regional defense shield. This suggests that a follow-up program to MEADS to be used against missiles of longer range will become necessary sooner or later. That armament perspective is included in both documents.

MEADS is an unnecessary and hardly effective signal to Washington on the easing of political tension (2.8). This political argument, constructed in both documents, rests on the claim that MEADS is the only major transatlantic arms cooperation project. This claim is false, as there exist at least two other large military pro-
First proposal: The Budgetary Committee and parliament should thoroughly review the military argumentation put forward by the defense ministry, initiate a discussion process at the earliest possible, and increase its own analytical resources for the independent evaluation of government submissions on a mid- and long-term basis. Decisions on major arms projects require broad legitimization which is not present in the case of MEADS. Deliberations and consultations took place almost exclusively behind closed doors. It is advisable to involve the public, e.g. at an international expert hearing. Taking into account the almost identical documents, as a mid- to long-term goal parliament should expand its mechanisms for employing specialists in order to do justice to its checks and balances function.

Second proposal: The Budgetary Committee and parliament should give priority to the examination of all aspects of the MEADS program as well as to the related foreign policy questions and take the time needed to do this thoroughly. Parliamentarians should regard March 2005 as a guiding principle but not as a “must.” It takes more time to get answers to a number of questions. The Bundestag should not leave control over the issue to the government.

Third proposal: Both the Budgetary Committee and the Bundestag should give priority to the examination of all aspects of the MEADS program as well as to the related foreign policy questions and take the time needed to do this thoroughly. Parliamentarians should regard March 2005 as a guiding principle but not as a “must.” It takes more time to get answers to a number of questions. The Bundestag should not leave control over the issue to the government.

Parliamentarians should only vote in favour of German participation in the development of MEADS if the concerns posed by the Federal Accounting Office are resolved: Can the demand be fulfilled “in the scheduled capability, time, and (particularly) cost frame”? A great number of military, security, technological, alliance, and arms control aspects have to be taken into consideration, which were insufficiently dealt with by the defense ministry and the rapporteur group.


Japan’s Policy on Missile Defense Deployment

Keiko Nakamura

On December 19, 2003, the government of Japan (GoJ) officially announced its plans to acquire and deploy U.S.-made Patriot Advanced Capability-3 (PAC-3) and Standard Missile-3 (SM-3) systems and to achieve initial operational capability for both systems. For many people, this was rather a surprise: since the beginning of the Japan-U.S. cooperative research program on missile defense (MD) initiated merely five years before this announcement, the GoJ had repeatedly emphasized that technical research meant neither development nor deployment of the MD system in the country.

The government was unable to sufficiently explain the reasons for its decision to make a single big leap from “research only” to actual deployment of the MD system. In fact, substantial debates on this matter have not taken place in the Japanese parliament (Diet), and there was no public participation in the consultation or decision-making process worthy of mention. While most citizens have no clue whether the polity changes of the GoJ are appropriate, the deployment of MD systems in Japan has become a fait accompli.

The Japanese MD decision even lead to certain fatal transformations in fundamental Japanese national defense policies within a relatively short period of time.

U.S.-Japan Joint Research

In December 1998, the Japan Security Council approved to undertake a cooperative research program on sea-based missile defense with the United States. In the following year, on August 16, the two countries signed a pact to pursue joint research on MD technology. Exchanging a memorandum of understanding (MoU), they formally agreed to conduct research on four SM-3 components to be developed for the Navy Theater Wide Defense (NTWD, now renamed as Aegis Ballistic Missile Defense), an upper tier sea-based system of theater missile defense (TMD). The four components being developed with the purpose of improving the performance of SM-3 consist of the following:

1) lightweight nose cone for the interceptor missile to protect it from air friction;
2) stage-two rocket engine located in the middle of the three-stage missile;
3) advanced kinetic warhead designed to destroy target missiles by direct impact; and
4) two-color infrared sensor to identify and track the target using infrared rays.

It should be noted that the aforementioned MoU has not been made available to the public; thus, the whole picture of the Japan-U.S. pact on missile defense has yet to be revealed.

What actually triggered the decision was a missile test in the Democratic People’s Republic of Korea (DPRK) in the year before the agreement. In August 1998, the DPRK launched a Taepodong-1, a medium-range missile, whose third stage flew over Japan and landed in the Pacific Ocean. Despite previous concerns about the missile threat in the region, this particular test firing ignited grave concern in the Japanese public, highlighting the country’s perceived vulnerability to ballistic missile attacks. Subsequently, instigated by sensational media reports accentuating the DPRK threat, national sentiments against the missile threat have grown and pushed the MD issue to the center of a policy debate in the political scene in Japan.

Since the launch of the joint program, however, the GoJ has trodden warily with any reference to a possible transition from research toward the development/deployment phases. Governmental officials repeatedly emphasized that there is a clear-cut line between “research” and the two other phases, and the move forward from “research” would be decided on separately after extensive considerations on the “technical feasibility” and “modalities for the future defense of Japan.” It is also true that, as early as 2002, Shigeru Ishiba, Japan’s former Defense Agency Director-General, was quoted with a remark on his belief that Japan should pursue the project with a view to advancing to the development and deployment stages. Nonetheless, the then-Chief Cabinet
Secretary Yasuo Fukuda immediately rebuffed Ishiba’s remark, saying “What Japan’s defense posture ought to be like will be decided after due consideration.”

**Introduction of the U.S. Missile Defense System**

While the Japan-U.S. joint research framework was still ongoing, on December 19, 2003, the GoJ declared its decision to additionally purchase U.S.-developed MD systems so that Japan can field its own initial missile defense. This move was extremely questionable. As mentioned earlier, the GoJ, which had maintained strong reservations about moving on to further project states, leaped toward “procurement/deployment” in one big step, thus effectively preventing any initiatives to inhibit the government from making such a move.

Projected to be deployed from 2007, the planned system is a multi-layered missile defense with an estimated cost of ¥1 trillion (ca. US$9.3 billion). It comprises the following two components: the first involves Japan’s acquisition of SM-3 missiles that can be fired from Japan’s four Aegis destroyers to defend against short- and medium-range missiles in the mid-course flight trajectory phase. The second consists of ground-to-air PAC-3 missiles. In addition, the Japanese plan involves some improvement of battle management, command, control, communications and intelligence capabilities of both of the sea- and ground-based MD systems, including the introduction of land-based FPS-XX radar systems, which can advance early warning capabilities. In FY 2004, approx. ¥106.8 billion (almost US$1 billion) of the Japanese defense budget are allocated to missile defense.

**U.S. Pressure**

The Japanese administration justifies the introduction of the U.S.-made MD systems by emphasizing the systems’ technical reliability, its suitability for Japan’s “purely defensive” posture, as well as the outstanding cost-effectiveness because an existing system already utilized by Japan’s Self-Defense Forces would be integrated into the new system.  

It seems that the Japanese decision was taken under considerable pressure from the U.S. government. Since the administration of George W. Bush announced in December 2002 that it would field a rudimentary MD system, the U.S. has been pressing Japan to make an early decision on MD on a number of occasions. For example, in June 2003, U.S. missile defense chief Lt. Gen. Ronald Kadish told Shigeru Ishiba that the U.S. government wanted to secure closer cooperation from Japan on its planned MD shield and that the U.S. combination of an Aegis ship-based interception system and the Patriot ground-to-air system would be useful to Japan. It is fair to conclude that the GoJ’s decision on introducing the U.S.-made MD system is not based on the system’s necessity and effectiveness for Japan’s national defense, but that political decision was taken under the U.S. pressure.

**Test Flights Planned**

Against this backdrop, the Japan-U.S. joint research scheme has proceeded unrestrained with no further checks and balances in sight. The two governments agreed to conduct two joint tests of SM-3 missiles in September 2005 and February 2006, using the lightweight nose cone provided by Japan. The tests, which are to be launched from an Aegis destroyer off Hawaii, are supposed to involve the interception of a target missile. According to the U.S. Department of Defense, the FY 2004 budget for the preparation for these two tests amounted to approximately US$54 million. Reportedly, the Defense Agency of Japan intends to cover part of these cost, ca. ¥20 billion (ca. US$185 million), which exceeds the total amount of ¥15 billion for the past five-year joint research program. Although Japan’s entire budget allocated to the joint research, which includes the flight tests, has not yet been officially announced, it is fair to assume that the amount has been drastically increased.

While SM-3, as is explained earlier, would be deployed to intercept incoming missiles during their mid-course phase, it is reported that the U.S. Department of Defense seeks to improve its capability to also counter strategic ballistic missiles, possibly in the boost phase. It is thought that the U.S. government intends to use Japanese technology to develop missiles with a longer range and better interception capabilities, which is would be contrary to Japan’s official posture – collective defense is prohibited under the Japanese Constitution.

Moreover, in addition to the aforementioned purchase of four SM-3 packages, an extension of research under the cooperative research scheme is an issue. Since 2004, some remarks by both Japanese and U.S. officials about the possibility that the two countries conduct joint research to develop an Airborne Laser (ABL) were reported. The ABL, still severely behind the Department of Defense’s original development schedule, is also expected to have the capability to intercept strategic ballistic missile and to be eventually improved to shoot down all ranges of ballistic missiles in their boost phase. It is needless to mention that Japanese participation in the joint ABL research will put the country’s “defensive defense policy” at risk.

**Easing the Export Ban**

In line with the ever-expanding joint research program, the GoJ has “successfully” paved the way to move on toward development/deployment by easing its long-standing ban on arms exports. On December 10, 2004, the very day when the Japanese Cabinet adopted new defense guidelines which affirm much closer defense cooperation with the United States, Chief Cabinet Secretary Hiroyuki Hosoda stated that Japan would allow exceptions to its arms export ban for exports to the U.S., enabling the country to sell MD-related products jointly developed with the U.S.

For decades, Japan had maintained a policy that prevents the nation from engaging in joint development and production of weapons with any foreign country. This was based
on the 1967 “three principals on the export of weapons,” which were originally set to ban exports of weapons to the communist bloc, nations under U.N. embargo, and countries involved in, or on the verge of being involved in, conflicts. In 1976, more restrictions were added, and, since then, the government had effectively banned exports of weapons to all countries. The GoJ decided in 1983 to allow technological transfers to the U.S. as an exception of the ban. However, the U.S.-Japan joint research on MD was actually confined within the framework set by the ban, and the GoJ had repeatedly asserted this point.

The GoJ viewed the export ban as an obvious hindrance in advancing joint research scheme to any further phases, because, under the three principles, it was permitted only to transfer the technology to the U.S., and export of components was regarded as an apparent violation. Not to mention strong pressure from the U.S., some Japanese governmental officials, as well as the defense industry participating in the joint research program, had repeatedly pushed the administration to review the export ban. Actually, the decision to ease the ban chiefly stems from a report submitted by Prime Minister Koizumi’s advisory Council on Security and Defense Capabilities that recommended conducting a review of the ban. In addition, within the Japanese Defense Agency and the ruling party, the Liberal Democratic Party (LDP), there had been increasing voices to call on a more drastic review of the ban in order to enable joint production of weapons with other nations as well.

Japan-U.S. Joint Scheme Moving into a New Phase

Japan’s decision to relax its export ban led to a new MD agreement between the two countries. On December 14, 2004, less than a week after the release of the new defense guidelines and Chief Cabinet Secretary’s announcement, Japan and the U.S. signed a pact allowing “comprehensive cooperation” on smoother transfers of MD-related technologies. Then, on December 17, 2004, a MoU was exchanged between Japan’s Defense Agency Director-General Yoshinori Ono and U.S. Ambassador Howard Baker, which specifies the details of this agreement. According to Director-General Ono’s remarks to the press and an outline of the MoU released by the Defense Agency, the MoU includes operational arrangements regarding information- and cost-sharing on MD by the two countries, as well as the creation of a high-level panel to handle bilateral coordination. Ono said that an annex to the MoU would be drawn up for further cooperation on development and production details. Ono stated clearly that the Japan-U.S. joint research would move on to joint production, and indicated the possibility that two schemes – deployment of U.S.-made MD systems and the joint development/production of another system – would be merged into one overall scheme, saying that “This is the demand of the times.”

A closer alliance between Japan and the U.S. on MD, with a view on moving toward joint development/production stages, was reaffirmed at the U.S.-Japan Security Consultative Committee (SCC), the so-called two-plus-two, held in Washington D.C. on February 19, 2005. A joint statement by the defense and foreign ministers of the two countries appreciates two “achievements” in MD cooperation, namely Japan’s decision to introduce MD systems and its easing of the export ban. The statement says “the Ministers reaffirmed their commitment to close cooperation on policy and operational matters and to advancing U.S.-Japan cooperative research in BMD systems, with a view to possible cooperative development.”

As mentioned earlier, substantial debates on the propriety of missile defense itself are entirely missing in the Japan’s political scene. Whereas there have been growing voices from experts to question the effectiveness of the missile interception capability, the GoJ has consistently stated that the establishment of a MD system is the sole, irreplaceable defense measure to protect Japanese citizens from incoming ballistic missile attacks, as well as contributing to the maintenance of regional security. Indeed, on December 15, 2004, the day after the Japan-U.S. pact was signed, U.S. Missile Defense Agency announced that its flight test of the ground-based mid-course missile defense system ended in failure, indicating another setback of the U.S. MD plan. Although critics speak elsewhere on the (lack of) technical feasibility of the MD system, little debate took place in the Diet. After the U.S. attempted the second test and failed on February 14, 2005, a Japanese government official reportedly said that the failure would not affect the Japanese plan, because the system Japan planned to introduce is “different” from the one the U.S. just tested.

Regional Security Concerns

The advancement of the joint research program, introduction of the U.S.-made MD systems, and the subsequent relaxation of the long-lasting export ban have been criticized, in particular, by non-governmental organizations and other experts, both at domestic and international levels. Chief issues include legal matters related to Japan’s inability to participate in collective defense, the MD system’s ineffectiveness and extraordinary cost burden for the taxpayers, and security concerns raised by neighboring countries. In particular, the negative impact upon peace and security in Northeast...
Asia, as well as in the rest of the world, is indeed a grave concern. The GoJ emphasizes that the MD system will be strictly used for defensive purposes and should not be regarded as a threat to neighboring countries; however, there have been growing voices from other nations in the region criticizing the Japanese pursuit of an MD plan, as this implies much closer integration into U.S. strategic policy. China, for example, has been vocal about its opposition to Japan’s MD program. Moreover, many experts warn that the Japanese MD deployment of could provoke the DPRK to bolster its missile capabilities, thus igniting new arms races in the region. It should be recalled that Japan, with its military alliance with the U.S., has already long posed an overwhelming military threat to the region. Therefore, adding its own missile defense capability could never be viewed as solely defensive.

Undermining its bygone diplomatic efforts in the field of confidence building in Northeast Asia, the GoJ is about to make a fatal mistake, retrogressing the peace and security of the region. If Japan wishes to stick to its fundamental policy of a “defensive defense” posture, the government should, instead of pursuing a missile defense plan, take a concrete step to initiate and develop cooperative security frameworks in this region.

Verification Yearbook 2004
by Trevor Findlay (ed.)

Annually, the London-based Verification Research, Training and Information Centre publishes its Verification Yearbook. Edited by Trevor Findlay, the publication is another example of the broad scope of VERTIC’s work.

“Effective verification is crucial for the successful implementation of any functional arms control and disarmament agreement,” states Rogelio Pfirter in his Preface. International debates show how much that is true.

The Chemical Weapons Convention of 1993 is an example of the trust that can be placed in a treaty bolstered by refined verification measures. Sophisticated verifiability is also a feature of the Comprehensive Nuclear Test Ban Treaty: almost perfectly verifiable – and since seven years adhered to –, although not yet in force.

The Verification Yearbook 2004 continues VERTIC’s wide-ranging annual coverage of verification developments and trends in arms control and disarmament, the environment and other fields. The Yearbook contains 11 chapters analyzing the topics below:

- Preface – Rogelio Pfirter
- Introduction: the state of play of verification – Trevor Findlay
- Effective CTBT verification: the evidence accumulates – David Hafe meister
- Improving CWC implementation: the OPCW Action Plan – Lisa Tabassi and Scott Spence
- The lessons of UNSCOM and UNMOVIC – Trevor Findlay
- Verifying Libya’s nuclear disarmament – Jack Boureston and Yana Feldman
- Iran and nuclear safeguards: establishing the facts and seeking compliance – Wyn Q. Bowen
- Small arms: monitoring the UN action programme – Helen Hughes
- Monitoring greenhouse gases – Larry MacFaul
- International systems for monitoring and verifying fisheries agreements – Judith Swan
- Intelligence, verification and Iraq’s WMD – Brian Jones
- Monitoring human rights treaties – Patricia Watt


Diplomacy and the NPT
by Jayantha Dhanapala with Randy Rydell

Freshly arrived from the printing press of the United Nations Institute for Disarmament Research (UNIDIR): Multilateral Diplomacy and the NPT: An Insider’s Account. The author, Jayantha Dhanapala, serves as the UN Under-Secretary-General for Disarmament Affairs from 1998 to 2003. In 1995, he chaired the Non-Proliferation Treaty (NPT) Review and Extensions Conference. Both positions qualify him to comment on and describe in detail the process leading to the indefinite extension of the NPT in 1995, preparations for the conference, group positions at the conference, the “package” deal achieved at the conference, and the challenges that derive from the conference result. An overview of the NPT as a treaty regime and notes on the road ahead round up Dhanapala’s personal review. The book also contains key documents and some URLs.

6 Japan Times, February 19, 2005.
Missile Defence as a Step Toward War in Space

David Webb

The use of space by the world's military is now well established and has become indispensable for the United States. During "Operation Iraqi Freedom," US satellite information allowed a military response in minutes rather than the hours or days it had taken previously. In a typical battle situation, the US military now relies on space-based weather prediction systems (the Defence Meteorological Support Program), military communications satellites (MILSTAR – to communicate from command centres and between troops), early warning satellites (to provide information on missile launches) and military Global Positioning System (GPS) satellites to allow troops and vehicles to navigate and to quickly and accurately specify targets and guide "smart" bombs and unmanned aerial vehicles (UAVs).

The US deployed 6,600 GPS-guided munitions and over 100,000 Precision Lightweight GPS Receivers in the Iraq War. The U.S. military was using ten times the satellite capacity that it used in the Gulf War of 1991. Nine days before the start of the war, a new US Defense Satellite Communications System was installed to interconnect U.S. military forces on land, sea, and air with the Pentagon, the White House, the State Department and U.S. Strategic Command. Over 100 military satellites supported the U.S. and U.K. war effort including 27 GPS satellites and around 24 communications satellites for command and control and to give warning of missile attack. There were also weather forecasting, TV and other space systems in operation and Director of Space Operations, Maj. Gen. Judd Blaisdel, estimated that 33,600 people at 36 sites around the world were involved in space-war activities.

Of course, the US is not alone in its use of space for military purposes. Russia has a number of military satellite programmes with five types of short-lifetime imaging reconnaissance satellite which can be launched for topographic and mapping information and two series of electronic intelligence (ELINT) satellites. There are also four types of Russian dedicated military communications satellites, with some 24 being launched since 1997 (although not all are still functioning). Russia also has a number of navigation satellites and a dual-use Global National Satellite System (Glonas) similar to GPS. The Russian armed forces are to be fitted with Glonass receivers next year. There are also Russian ballistic missile early warning and space monitoring systems.

The military use of space is rapidly proliferating. China has launched a number of military satellites; India has imaging and communication satellites suitable for military use; and Israel has military satellites, has plans for new communications, imaging, and radar satellites, and is considering a system that would allow launch-on-demand of small satellites from fighter aircraft. Other countries such as Brazil, Pakistan, and Ukraine have military space capability or potential; Australia has a dual use military-commercial communications satellite; while in Europe, the UK, France, and Italy make extensive use of military satellites for imaging and communications and the European Space Agency (ESA), set up to be an entirely independent organisation, is slowly becoming politicised (with increasing control from the European Commission) and militarised through its Galileo GPS system.

Anti-Satellite Programmes

This reliance on space for command, control, communications, computer, intelligence, surveillance and reconnaissance (C4ISR) has one serious disadvantage: space-based satellite systems are extremely vulnerable to attack from anti-satellite (ASAT) systems. Shortly before his appointment as Secretary of Defense, Donald Rumsfeld chaired the Commission to Assess United States National Security Space Management and Organization, which concluded in January 2001 that the likelihood of an attack on U.S. space systems needed to be taken seriously to prevent a future "space Pearl Harbor."

In fact, the first actual attack on any military satellite system occurred in 2003 when the Iraqi military unsuccessfully attempted to jam the US Global Positioning System. US Air Force Secretary James Roche commented that this attempt to disrupt GPS-guided weapons demonstrated the world’s understanding of the importance of space to the U.S. military. Interestingly, the US Air Force itself deployed a number of reversible jamming, or Counter Communications, systems in autumn 2004. However, a more threatening scenario is the possibility of the deployment of actual weapons systems against satellites.

Since the beginning of the space age, Russia and the US have both openly worked on several anti-satellite projects. Initial efforts in the 1950s consisted of well-known air-launched missile technology but more sophisticated systems have been developed over the ensuing years.

The Soviet Union and Russia

In the 1960s, the Soviet Union surrounded Moscow with nuclear-tipped inter-continental ballistic missiles to act as an Anti-Ballistic Missile (ABM) system. These missiles would also have ASAT capabilities as they would be able to destroy all space-based systems in the vicinity of their detonation. However, the main ASAT system developed by the Soviet Union...
was the “Co-orbital ASAT” – a kamikaze satellite packed with explosives. Development on the Istrebitel Sputnikov (fighter satellites) began in the early 1960s, and the first test flights were made in 1968. The ASAT was to be placed in an orbit close to that of its target and would move in to destroy it within one or two orbits. Initial tests made from 1963-1972 indicated that the system could work from altitudes from 230 to 1,000 kilometres, and the system was declared operational.

The Soviets temporarily ceased testing the system after signing the ABM Treaty in 1972, but resumed again in 1976 and continued until 1982. During this time the effective range of the system was reportedly extended to altitudes from 160 to 1,600 km.\(^{15}\) In 1983, the Soviet Union declared a moratorium on launching ASATs, on the condition that no other country deployed, and Russia seems to have continued to observe this policy.\(^{16}\) Jane’s 2001-2002 Space Directory describes the Russian ASAT program as “inactive.”

**United States**

The US began tests in 1959, but results were not encouraging and the project was stopped in 1963 although related US Navy projects did continue into the early 1970s. In the 1960s, the destruction of satellites by the use of nuclear explosions was considered. A 1.4 Megaton high altitude nuclear test explosion that was detonated 400 km over the Pacific in 1958 did damage three satellites. However, the potential damage to untargeted areas and systems through radiation and the electromagnetic pulse (EMP) meant that no actual ASAT tests of this type were carried out although the nuclear carrying Nike Zeus was adapted for ASAT use from 1962. A single, nuclear-tipped ASAT missile was deployed at Kwajalein Atoll in the Pacific until 1966 under so-called Project 505, code-named ‘Mudflap’\(^{17}\) and was then replaced by the USAF Thor ASAT until 1972.

The resumption of USSR ASAT tests in 1976 could have been the result of reports of a renewed US interest in anti-satellite technology and the development of the US Space Shuttle programme (with was considered to have an ASAT capability). The U.S. was itself concerned with exaggerated reports of Soviet laser and particle beam ASAT/ABM technology and revived its ASAT programme with the Air-Launched Miniature Vehicle (ALMV), which was fired from an F-15 aircraft and was designed to attack Low Earth Orbit (LEO) satellites. The US carried out five tests from 1984-1986 and actually tested the system against a satellite in September 1985.\(^{18}\) However, considerable cost increases for further development led to the program being cancelled in 1988. In the same year, the US Congress voted against extending a unilateral ban on ASATs and development started on new ASAT systems.

Under President Reagan’s 1983 Strategic Defense Initiative (SDI), ASAT projects were adapted for ABM use and vice versa. Initially the plan was to use the MHV as a basis for a collection of about 40 space platforms containing up to 1,500 kinetic interceptors. By 1988 the project had evolved into a four stage development. The first stage was the “brilliant pebbles” system consisting of a number of single kinetic interceptors with their associated tracking systems. The second stage would deploy larger platforms, and the following phases were to include laser weapons and later and charged particle beam weapons. Plans were to complete the whole thing by 2000 at a cost of around US$ 125 billion.

The only successful energy weapon to come from SDI was the Mid-Infrared Advanced Chemical Laser (MIRACL).\(^{19}\) It can produce a megawatt of output for around 70 seconds and was developed mainly in response to intelligence that the Soviet Union had created a similar system. However, after an official US visit to the Soviet Union in 1989 discovered that the Soviet system was no threat, Congress banned the use of MIRACL in 1991. The development of the U.S. Army ground-based kinetic energy ASAT (KE-ASAT) system was also banned in 1993, but was resurrected in 1996 with US$ 45 million of funding which continued until 2002.

In 1996, the ban on using the MIRACL ended and the following year the system was tested by firing at a USAF satellite 420 km above the Earth – supposedly to see if U.S. satellites could withstand a laser attack. Currently, the KE-ASAT needs more funding and testing before it could become operational. The ALMV has not been tested and there appears to be little interest in reviving the system at the moment. The MIRACL laser is being further developed with Israel but it has not been tested since 1997, and its full capabilities are not known.

**China**

China does not have a publicly declared ASAT program although its existing launch capabilities could be used as a basis for the development of such a system.\(^{20}\) A program to field a viable ASAT system consisting of a kinetic kill vehicle, high powered laser, space early warning, and target discrimination system components was abandoned in 1980. Preliminary research on ASATs has been carried out since then, partly funded under a Program for High Technology Development.\(^{21}\)

In 2003 and 2004, the annual reports to the US Congress on Chinese Military Power quoted an article from a Hong Kong newspaper that reported China as having developed and tested a “parasitic micro satellite” ASAT system. However, this information seems to have originated from an item posted in 2000 on an unreliable internet bulletin board service run by a self-described “military enthusiast”.

**Current US Developments**

The U.S. has recently shown an increase in funding and support for ASAT and related programmes. In 2004 the Pentagon received US$ 168.6 million for the development of space weapons technology and over US$ 2 billion for weapons related programmes.\(^{22}\) In August 2004, the USAF released a document entitled Counterspace Operations, Air Force Doctrine Document 2-2.1,\(^{23}\) which details, for the first time, US antisatellite and space weapons opera-
tions. The Foreword by Gen John P. Jumper, USAF Chief of Staff, states that "U.S. Air Force counter space operations are the ways and means by which the Air Force achieves and maintains space superiority. Space superiority provides freedom to attack as well as freedom from attack ...Space and air superiority are crucial first steps in any military operation." The document discusses air-launched missiles, direct-ascent ASATs, and on-orbit ASATs as possible mechanisms for destroying satellites.

The budget request for space weapons-related programmes for 2005 totalled nearly US$3.5 billion. However, the appropriations committees knocked off nearly US$1 billion. The Congressional appropriators also directed the Force Application and Launch from the Continental U.S. (FALCON) program not to engage in any "weapons-related work" during fiscal year 2005 and cut funding for the Common Aero Vehicle (CAV) by half to US$12.5 million (any effort to put weapons on the CAV or test launch it on a ballistic missile was also forbidden). Other space programs suffered funding cuts from appropriators including the Space-Based Radar (SBR), Transformational SATCOM (T-SAT), and Counter Surveillance Reconnaissance System (CSRS) programs.

An recent article in Aerospace Daily & Defense Report quotes a scientist at Science Applications International Corporation (SAIC) as saying that these cuts are: "largely due to the concern over the proper use of force in space and the vocal anti-space weapons community." Peter Huessy of the National Defense University Foundation was also quoted as saying that the anti-space weapons lobby has been effective in part because of its significant financial backing. The lobby is "being led, unfortunately, by not just the traditional arms control community, but about $100 million a year from foundations," according to Huessy. "And that kind of money is so far and beyond anything being spent by the proponents."

Of course, this is probably just an argument for more funding for lobbying and no doubt that will happen but it appears that the activities of NGOs such as the Center for Defense Information (CDI), the Center for Nonproliferation Studies and the Monterey Institute of International Studies (CNS/MIS), assisted by grassroots campaigners such as the International Network of Engineers and Scientists Against Proliferation (INESAP) and the Global Network Against Weapons and Nuclear Power in Space, may have been effective.

Another project to come up against a funding hitch is the controversial Near Field InfraRed Experiment (NFIRE) of the Missile Defense Agency (MDA), whose primary role is to gather data to help differentiate between the rocket and its exhaust plume. The proposal was to launch a platform termed a "kill vehicle" to closely encounter a target missile with an obvious capability to disable or destroy targeted missiles or orbiting satellites. The NFIRE was originally to be launched from a Minotaur missile in summer 2004, but the MDA announced in March that there would be a year-long delay apparently due to having received only US$44.5 million of the requested US$82 million funding in 2004. Then, in July 2004, the Congressional appropriators cut all the $68 million requested for NFIRE, although the Senate Appropriations Committee recommended that the program should be preserved. It is now scheduled for launch late 2005 or early 2006 and it was reported in Space News in August 2004 that the controversial sensor (i.e. the "kill vehicle") would be removed from the program. The report stated that "U.S. Rep. Loretta Sanchez, D-Calif., championed the effort to persuade Pentagon officials to consider restructuring the NFIRE program to exclude the kill vehicle. 'My biggest concern,' Sanchez said last week, 'was what message we might send to other nations.'"

One other growth area with a clear ASAT capability is the ongoing development and testing of US micro-satellite (MS) prototypes, including a XSS-10 MS to manoeuvre around and photograph space objects. Much of the current US development of space-based technology and weaponry (including space based interceptors and airborne and space-based lasers) is taking place under the missile defence umbrella. As David Wright and Laura George from the Union of Concerned Scientists have stated:

"...current US ASAT capability is fairly limited and, based on current funding levels, dedicated ASAT systems appear not to be high priorities. Some of the planned missile defence systems, on the other hand, would add significant ASAT capability to the US arsenal and have strong political and financial support. This fact should be kept in mind when analysing US capabilities and developing policies relevant to restricting ASATs."

It seems clear then that projects that are overtly developing anti-satellite or space weapons systems are having some difficulties obtaining funds. However, there are other ways of obtaining large sums of money for very similar space-based programmes under the guise of a system to defend against missile attack from terrorists or "rogue states."

The Missile Defence Route?

The development of improved space tracking facilities on the ground (such as the upgrading of the Ballistic Missile Early Warning radars at Fylingdales and Thule and the development of the X-band radar) and in space (such as the Space-Based Infrared System, SBIRS) is integral to missile defence but could also be useful for ASAT capabilities. Interceptor missiles for the Ground-Based Midcourse Defence element of missile defence, designed to hit and intercept incoming missiles, could also be deployed against LEO satellites.

The Air-Borne Laser (ABL) – currently under development and being tested – is capable of both intercepting missiles and destroying, or at least blinding, satellites. Although the Space-Based Laser (SBL) programme has been more or less cancelled, the idea of a powerful land-based laser using a space based mirror system has been proposed to act as a missile defence and/or space weapon.
Although US missile defence is sold to the American people and the world as a defence against limited missile attack from a "rogue state" or terrorists, it can also be seen as a proving ground for certain space weapon components. Add to this the fact that the U.S. has consistently blocked moves to create a treaty for the Prevention of an Arms Race in Outer Space (PAROS)\(^\text{38}\) while removing itself from the Anti-Ballistic Missile Treaty, and we might come to see a reason why the U.S. military has been so energetic in developing a missile defence system that has been widely criticised as being vastly expensive, plagued by delays and failure, and unlikely to work effectively. It may be difficult to convince the people of the U.S. (and of the world) that space weapons are necessary, but it may be easier to generate a fear of attack from terrorists or states that operate under different and unfamiliar regimes and so justify the development of space weapons technologies that way.

Now more than ever the world needs to determine a way of preventing the further militarisation of space and its ultimate weaponisation and the allies must apply pressure to the U.S. to abandon missile defence and take PAROS negotiations seriously.

5. Ibid.
9. See European Space Agency, www.esa.int, in particular www.esa.int/sesCP/SEMFEPYY1SD_index_0.html.
18. The US tested the ALMV against an ageing Solwind satellite in a 555 km orbit on 13 September 1985.
19. For more information see www.fas.org/spp/military/program/asat/miralcl.htm.
21. Ibid.
25. Ibid.
29. Ibid.
30. Ibid.

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Dave is also Chair of the Global Network Against Weapons and Nuclear Power in Space (www.space4peace.org), which says in its Statement of Concern: “As we prepare to move into the 21st century it is crucial for peace and environmental activists to view space as an area of concern. The enormous expenditures of our tax revenues for space must be questioned. The morality and ethics of moving an arms race into space must be vigorously debated.”
Reinventing Multilateralism

by Clifford Singer, James Walsh, and Dean Wilkening

“Since wars begin in the minds of men, it is in the minds of men that the defenses of peace must be constructed.”

This quote from the constitution of UNESCO introduces the project website Reinventing Multilateralism. A study under the same name has been initiated by the Program in Arms Control, Disarmament, and International Security (ACDIS) at the University of Illinois at Urbana Champaign in May 2004. In the collaborative effort, ACDIS was joined by the Institute of Government and Public Affairs (IGPA) of the University of Illinois and many other U.S. academic organizations and individuals.

The report Reinventing Multilateralism presents the study findings and is the first in a serious of four annual studies designed to support new U.S. administrations and the broader body politic in the process of “reinventing multilateralism”. Future studies will focus on biodefense and public health, homeland security and public safety, and foreign aid and security policy.

Executive Summary

The report Reinventing Multilateralism recommends policies for consideration by a new U.S. administration in dealing with security problems in three areas that have particularly strong technical components: securing nuclear materials, ensuring energy security, and using outer space to enhance security. Recommendations fall into two time frames: those for immediate action and those with goals to be accomplished by 2011.

Recommendations for immediate action are:

- Implement the recommendations of the “Managing the Atom” project for securing nuclear materials.
- Restructure U.S. military operations and foreign assistance for more effectiveness in Afghan reconstruction and other peacekeeping operations.
- At the Geneva Conference on Disarmament, open discussions on preventing the creation of long-lived space debris through military action, begin negotiations on a cutoff of the production of fissile materials for nuclear weapons, and initiate discussions in a working group on nuclear disarmament. Combined with the policies listed in the rest of this summary, these steps should lead to a broader moratorium on the production of nuclear weapons materials no later than 2011.

The “Managing the Atom” project recommendations call for a “global cleanout” to secure all nuclear weapons materials, appointment of both a U.S. and Russian official to lead efforts to secure nuclear materials, accelerated dismantlement of tactical nuclear weapons, and global cooperation on stolen nuclear materials. The key to conventional military re-structuring is to assign support for reconstruction and peacekeeping operations no less importance and prestige than that given to large-scale battle. The Conference on Disarmament could help work out the details of an agreement that will lead, at a minimum, to a broader moratorium on the production of additional materials for nuclear weapons. Such a moratorium is related to the following longer-term targets for 2011:

- Continue dismantlement of Russian nuclear warheads at the rate of at least a thousand a year and of U.S. nuclear “overbuild” until both countries attain the common level of strategic warheads specified for 2012 by the Moscow Strategic Offensive Reductions Treaty, plus a smaller number of spares and “nonstrategic” assembled nuclear explosives. Consider parallel unilateral commitments to further annual percentage reductions, as long as such reductions remain in each country’s security interests and those of other countries that eventually would have to decrease their stockpiles to stay below a universal common upper limit.
- Institute a set of energy security initiatives related to petroleum reserves, tax and depletion allowance readjustments, and incentives for developing energy-efficient technologies and alternatives to fluid fossil fuels as energy sources. By 2011 it should be a clearly formulated and stated policy of the United States that it will not unilaterally intervene with its military in any international or internal conflict solely or primarily for the purpose of influencing who has control over energy resources.
- Undertake missile defense deployments and technology transfer only to the extent that they are cost-effective compared with other security measures, and take into account the political costs with respect to China and other countries. Address security concerns about military use of space in international negotiations and avoid developing weapons in space and testing dedicated antisatellite weapons in the absence of a compelling and cost-effective net security advantage.
International Control of Tritium for Nuclear Non-Proliferation and Disarmament

by Martin B. Kalinowski

The book is issued as Volume IV in the Science and Global Security Monograph series, a series with the explicitly expressed aim to publish high-quality technical and scientific analyses related to arms control and security policy.

Even though the book to some extent deals with political issues in the form of multilateral and bilateral treaties and agreements, and tritium control through national legislation, the main focus is on technical and scientific issues. Thus, the monograph falls well within the above cited scope of the series. Most nuclear weapons of all recognized nuclear weapon states are believed to contain tritium, and warheads containing tritium can be built smaller and lighter while retaining the same yield. This fact represents the technical and scientific background for suggesting international control of tritium for nuclear non-proliferation and disarmament.

In Chapter 1 the physical and chemical properties of tritium are summarized, and civilian and non-nuclear military applications are listed. Very briefly the function of tritium in nuclear warheads is described. For non-nuclear experts, the latter topic could with benefit have been outlined in greater detail. Another minor critical comment refers to the main physical data on tritium presented in Table 1.1 of the book. Here, a dose figure of 1.19 mSv/day resulting from 1GBq tritium in man is given, which is correct for 1 GBq body content. However, health physics aspects are usually expressed in terms of committed dose from a particular intake, and the appropriate figure of approximately 20 mSv for a 1 GBq intake could also have been listed.

Further in Chapter 1, the current state of tritium control at the national and international level is described in some detail. In this context, a very recent initiative from IAEA as regards the strengthening of the import/export control of non-nuclear radiation sources from a radiation safety and security point of view could be mentioned. So far this initiative does not include open radioactive sources like tritium, but the principle may very well be extended to include these kind of sources as well.

In Chapter 2, a comprehensive analysis of diversion paths, i.e. clandestine production or illegal removal, is presented. All diversion paths by which a significant quantity of 1 gram per year can be acquired are considered in the analysis. Altogether 55 different paths are described, five of which do not exceed the critical production rate. The most relevant paths to illegally produce pure tritium in significant quantities are those that are based on the positioning of large quantities of raw material with a high cross section for tritium production in a high neutron flux. In this context the insertion of lithium-6 into a nuclear reactor may be the preferred technique. Among the diversion paths a number of tritium removal paths are listed. Larger quantities of tritium are available in heavy water and spent fuel, but the number of facilities in the world where the proper amounts of tritium are extractable is very small.

In Chapter 3, methods and goals for verification of an international tritium control agreement are discussed, in terms of verification of non-production and non-removal from existing and declared inventories. A table lists the various facility types worldwide which are relevant for tritium control. Of a total number of 956 facilities in 1992, almost 80 % are linked to nuclear power reactors or research reactors. A thorough list of appropriate inspection activities by facility types is presented. At nuclear reactors, verification of non-production is already covered by the existing nuclear safeguard procedures as carried out by IAEA and EURATOM, and the author concludes that unreported breeding of tritium up to 100 g/y would be detectable by those nuclear safeguards activities which are already implemented in order to detect unreported breeding of plutonium. Verification if non-removal can partly rely on IAEA safeguards for heavy water to the extent that these are actually implemented, and illegal removal from spent fuel containing more than 0.2 g of tritium would be detectable with the existing control measures. The author thus concludes that verification of non-diversion of tritium is feasible at reasonable costs, and that the control regime would have to be applied to a limited number of facilities (up to some 50).

In Chapter 4, the technical assessment of an international tritium control agreement is made. The politically required verification effectiveness may be lower for tritium than for nuclear safeguards in general, as tritium is not necessary for the production of first-generation nuclear weapons. The author concludes that all diversion paths which could yield more than 1 g of tritium within the desired detection time of 1 year can be covered by state-of-the-art control measures. Thus, it is suggested to expand the scope of the nuclear non-proliferation regime to include tritium. For this purpose, the author outlines an international Tritium Control System as well as a verified cutoff for the production of fissile materials and for tritium (Integrated cutoff).

The monograph gives a comprehensive qualitative and quantitative presentation regarding fields of application, production methods, and current status of tritium control. A large amount of data is gathered, and the book may very well serve as a general introduction to the world of tritium and tritium applications. The author further argues convincingly that it is feasible from a physical and technical point of view to implement and to verify an agreement on international tritium control, both to prevent horizontal proliferation and to reverse vertical proliferation.

The monograph is well written, and the topics are presented in an educational manner. Apart from Chapter 1, all chapters end with a conclusion sec-
A couple of years ago, David Krieger authored a list with 100 Ideas for a More Peaceful World, which he sent around by e-mail. The ideas were simple, and interpreted “peace” in a broad sense. “Teach peace to children,” “Be generous with your smiles,” “Walk softly on the Earth,” “Fight against militarism,” “Share,” “Laugh more,” “Support nonviolent solutions to global problems,” and 93 further concrete proposals encouraged the reader to think of ways how she or he could contribute to a more peaceful world in their own daily life. I came across this list every now and then, on a website, as an e-mail, when browsing my mail archive. Sometimes, I stopped a moment to wonder whether simple things could really make a change.

David Krieger’s peace ideas came to the attention of Joshua C. Chen, Principal and Creative Director of Chen Design Associates, at a time when he and his team decided “to develop a project that would showcase creativity and the potential of high-quality design... The project would celebrate design in the context of communicating a much larger, much more important idea.” And “celebrating design” in order to “communicate a much more important idea” is indeed what the book Peace - 100 Ideas does. The co-editor and the layout assistant of the INESAP Information Bulletin sat down to look at the book many times. We pointed out little details to each other, were amazed by the unusual ideas. The book’s 100 double pages miraculously depict the 100 peace idea’s meaning. And they are a feast in color and patterns and subtle shades. Nothing that can be conveyed in the Bulletin’s black and white print. We hope that you’ll have a look at the INESAP webpage, where a few more than the two (almost) black-and-white compatible pictures you see here are posted in color. And that once you see them thus, you want to go and get the real book for yourself!

Regina Hagen and Julia Veits

100 Peace Ideas
by Joshua C. Chen and David Krieger

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INESAP is the International Network of Engineers and Scientists Against Proliferation and was founded in 1993. It is a non-profit, non-governmental network organization with participants from all over the world. INESAP is part of the activities of the International Network of Engineers and Scientists for Global Responsibility (INES), which currently comprises more than 60 organizations from 25 countries. INES is a UN accredited NGO.

Although those active in the network can and do work independently from each other, the office plays an essential organizational role in most INESAP activities. It is hosted by the Interdisciplinary Research Group in Science Technology and Security (IANUS) at Darmstadt University of Technology. The INESAP Coordinator (Regina Hagen) cooperates closely with the international Coordinating Committee.

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