

Dear Dr. Caldicott:

I have long admired your work for nuclear disarmament, your vision, and your persistence. I would like to make a connection with your efforts by inviting you to provide an article on your current thinking for posting on [www.zero-nukes](http://www.zero-nukes.org), the website of the Interfaith Committee for Nuclear Disarmament.

This site serves two functions. First, we are posting statements of religious organizations, military leaders, international commissions, and civil-sector organizations on nuclear disarmament issues. We also provide linkage to numerous organizations, including the Nuclear Policy Research Institute at <http://www.zero-nukes.org/civilsector.html#nationalcivil>.

Second, we are gathering fresh ideas on how to get to zero nuclear weapons. We have now posted our first five articles with such scenarios. They are provided at <http://www.zero-nukes.org/howtogettozero4.htm>. We would like to add an article from you. It could be a scenario on how to go all the way to zero. We will also accept articles dealing with how to get close to zero for those who are uncertain about the possibility of total abolition. If you want to write on one aspect, such as de-alerting, deep cuts, transparency and verification, that is also acceptable.

We are seeking articles in the 1,000 to 2,000 word range. You can send your submissions to me at hhallman@mupwj.org or to proposal@zero-nukes.org. Please send your article as a Word attachment or similar format. We offer no compensation. We reserve the right to edit submissions for length and format.

When we post your article, we will be able to provide further linkage to the Nuclear Policy Research Institute and offer information on your book, *The New Nuclear Danger*.

I hope to hear from you.

Howard W. Hallman, Chair

Draft Proposal
An Executive Agreement
between the United States and Russia
to De-alert Their Nuclear Arsenals

- 1) We affirm that:
 - a) The United States has no intent of initiating an attack against the territory of Russia.
 - b) Russia has no intent of initiating an attack against the territory of the United States.

- 2) Nevertheless, we observe that
 - a) The United States deploys nuclear weapons with capability of attacking Russia from afar.
 - b) Russia deploys nuclear weapons with capability of attacking the United States from afar.

- 3) We note that because of this possibility both the United States and Russia maintain considerable numbers of nuclear weapons on a high state of alert in order to respond quickly to unexpected nuclear attack.

- 4) We realize that this high state of readiness runs the risk of unintended launch by accident, misinterpretation of early warning data, and other reasons and that this can lead to rapid counterattack resulting in catastrophic destruction on both sides.

- 5) We acknowledge that the security of both the United States and Russia would be enhanced if the two nations would carry out lower the alert status of their nuclear weapons.

- 6) Therefore, we agree that the following actions will be undertaken.

ACTIONS

[to be completed]

Drafted by Howard W. Hallman, February 7, 2003

Draft Proposal
An Agreement
between the United States and Russia
to Achieve Deep Cuts in Their Nuclear Arsenals

- 1) We affirm that:
 - a) The United States has no intent of initiating an attack against the territory of Russia.
 - b) Russia has no intent of initiating an attack against the territory of the United States.

- 2) Nevertheless, we observe that
 - a) The United States deploys nuclear weapons with capability of attacking Russia from afar.
 - b) Russia deploys nuclear weapons with capability of attacking the United States from afar.

- 3) We note that because of this possibility both the United States and Russia maintain considerable numbers of nuclear weapons on a high state of alert in order to respond quickly to unexpected nuclear attack.

- 4) We realize that this high state of readiness runs the risk of unintended launch by accident, misinterpretation of early warning data, and other reasons and that this could lead to rapid counterattack resulting in catastrophic destruction on both sides.

- 5) We acknowledge that the security of both the United States and Russia would be greatly enhanced if the two nations would substantially lower the alert status of their nuclear weapons.

- 6) We further declare that mutual security of both nations would be strengthened by very deep reduction in the number of nuclear weapons deployed and held in reserve by each nation.

- 7) Therefore, we agree that the following actions will be undertaken.

ACTIONS

[to be completed]

Drafted by Howard W. Hallman, February 19, 2003

An Argument for Nuclear Abolition

Joe Volk, FCNL Executive Secretary
Presented at the Ecumenical Advocacy Days
Arlington, Virginia
March 6, 2004

http://www.fcnl.org/issues/item.php?item_id=784&issue_id=2

http://www.fcnl.org/issues/persp8_nuclear_1.htm

<http://www.fcnl.org/pdfs/perspctvs/perspec8.pdf>

U. S. Nuclear Weapons Policies: The Choice Before Us

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Commander Robert Green, Royal Navy (Ret'd)

PDF Document [use Green.pdf]

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use photo of Robert Green
from [\[http://www.disarmsecure.org/people/.html\]](http://www.disarmsecure.org/people/.html)]

[text on right in italics]

During his service in the British Royal Navy from 1962 to 1982, Commander Robert Green [\[http://www.disarmsecure.org/people.html\]](http://www.disarmsecure.org/people.html) flew nuclear-armed aircraft for nine years and served in the intelligence service. During his navy career he became disillusioned with nuclear deterrence. In 1991 he became chair of the UK branch of the World Court Project. He is now co-coordinator with his wife, Kate Dewes, of the Peace Foundation's Disarmament & Security Centre in New Zealand.

Where Next For Nuclear Abolitionists?

November 2002

[sub-box. Arial. "Summary" in 12 pt, text in 11 pt]

Summary

In the United States the Bush administration has a lengthening track record of rejection of international treaties, linked to its near-contempt for international law and single-minded drive for military "full spectrum". The Bush administration has doubts about traditional nuclear deterrence policies. Instead it has revived ballistic missile defense. In dealing with Russia on strategic weapons, it has excluded China with negative implications for nuclear proliferation in Asia. It has made use of nuclear weapons more likely.

The key to progress toward nuclear abolition is to focus on practical projects to reduce the risk of nuclear war. Four candidates are offered for consideration:

- (1) Challenge launch-on-warning.
- (2) Challenge nuclear deterrence.
- (3) Offer more credible alternatives.
- (4) Intensify non-violent direct action upholding the law.

[end sub-box]

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Following the Bush administration's Nuclear Posture Review (NPR), the April 2002 preparatory meeting at the UN in New York for the next review of the Non-Proliferation Treaty (NPT) in 2005, and the 2002 UN General Assembly Disarmament Session, this is **an appropriate moment to assess where the international anti-nuclear movement should focus their energies.**

First, however, consideration will be given to how prospects for nuclear abolition could be affected by US responses to growing doubts about nuclear deterrence, including its plans for Ballistic Missile Defence (BMD). The focus on the US reflects the overwhelming influence of the world's first and sole remaining nuclear-armed superpower. The Bush administration has a lengthening track record of rejection of international treaties, linked to its near-contempt for international law and single-minded drive for military "full spectrum dominance".

There is thus **an urgent need to explore** "outside the box" ways to make progress towards nuclear abolition. These should try to build upon the few current campaigns which seem to have some traction, and lessons learned from **three successful past campaigns**: the World Court Project; the "Ottawa Process" which led to a treaty banning anti-personnel landmines, and the campaign for an International Criminal Court.

Responses to Doubts about Nuclear Deterrence

Almost the only encouraging aspect of current US nuclear policy is Bush's public admission of doubt about the effectiveness of nuclear deterrence against the primary threat: extremists armed with weapons of mass destruction (WMD). What is more, both his Vice-President Dick Cheney and Secretary of State Colin Powell rejected use of nuclear weapons against Iraqi forces in the Gulf War, [1] which means that any future comparable US nuclear threat would lack credibility.

One of Bush's responses has been to revive BMD in both its national and "theatre" forms, and to augment conventional offensive strike systems. Through this combination, he hopes to strengthen conventional deterrence and raise the threshold for use of strategic nuclear weapons. At first sight, this would appear to be a positive development for nuclear disarmament, especially after Bush and Putin signed the "Strategic Offensive Reductions" Treaty and with inauguration of the new NATO-Russia Council in May 2002.

Unfortunately, **Bush's piecemeal approach with Russia excludes China**, the only other nuclear-armed state with superpower potential. There are no plans for a NATO-China Council, or for sharing BMD technology with China. On the contrary, China understandably perceives current US collaboration with both Japan and Taiwan to develop theatre BMD systems as threatening its land-based nuclear-armed intercontinental ballistic missiles, of which currently it is believed to have less than 20. As it modernises its arsenal of only about 400 nuclear warheads, China will be able to use US theatre BMD plans to justify expanding its nuclear capability. This will inevitably ratchet up India's, to which Pakistan will feel pressured to respond. Thus one long-term consequence of deploying BMD will be to stifle any further progress in nuclear disarmament, because the US will argue that it cannot make further reductions in light of these developments, and Russia will feel forced to follow suit.

Another US response to doubts about nuclear deterrence has been to make nuclear weapon use more likely. The NPR recommends **using low-yield nuclear weapons against hardened or deeply buried non-nuclear WMD targets or bunkers** where conventional weapons might be ineffective. This might be driven by the perceived need to restore US credibility in light of the Cheney/Powell decision in the Gulf War. However, it is an incitement to nuclear proliferation, as it **would gut US assurances not to use nuclear weapons against non-nuclear NPT signatory states**, including the "axis of evil" trio of Iran, Iraq and North Korea plus Libya and Syria. Since this became clear, the UK government has echoed its "master's voice" by warning that it too is prepared to use nuclear weapons if its forces, not just national territory, are subjected to WMD attack.

Where Next for Nuclear Abolitionists?

One positive spin-off from US nuclear plans, the South Asian nuclear crisis, and US allegations of revived nuclear weapon development by Iraq and North Korea is that **the issue of nuclear weapons is again high on the international media agenda**. Of course, use of even one low-yield nuclear weapon by the US for the first time since Nagasaki (or by Israel) would cause worldwide outrage and reawaken the anti-nuclear mass movement - as would a nuclear war between India and Pakistan.

Nevertheless, acquisition by the five recognised nuclear states of their nuclear arsenals involved probably their greatest investment in financial, political and human terms since the Second World War. After over fifty years of their own propaganda, none of these governments would risk breaking out of the nuclear club without finding a replacement system with clear advantages to balance the perceived loss of security.

In struggles to overthrow oppression and injustice like the abolition of slavery and South African apartheid, there was often a phase when progress stalled before the status quo was shifted. The seemingly invincible regressive forces, no longer bothering to pay lip-service to progress, openly hardened their positions. One reason for this was awareness by the regressive forces that their arguments were failing, especially on the two anvils of practicality and the law.

At such moments, **the key to further progress is to focus on practical projects which go to the heart of the issue and uphold the law, while helping to reduce the risk of nuclear war and shift the pro-nuclear mindset**. Using these criteria, the following four candidates are offered for consideration:

- 1) **Challenge Launch-on-Warning.** The NPR claims that US strategic nuclear forces are not on "hair-trigger" alert. How does this square with persisting reports that, despite Bush's determination to transform the US relationship with Russia and to "replace Mutual Assured Destruction with Mutual Cooperation", some 2,000 strategic nuclear warheads on each side are still held at "launch-on-warning" readiness? This must be challenged, using Alan Phillips' excellent Canadian Ploughshares paper, and perhaps by expanding the US "Back from the Brink" campaign. [2]
- 2) **Challenge Nuclear Deterrence.** Following directly from (1), the world must be told that the pro-nuclear deterrence lobby is faltering. Winning

this argument is crucial to shifting the mindset against nuclear weapons, especially among the military. Little further progress towards nuclear abolition is possible without explaining why nuclear deterrence does not work, is immoral and unlawful, and there are more credible and acceptable alternative security strategies. [3]

3) **Offer More Credible Alternatives.** The UK holds most promise of becoming the first nuclear state to reject nuclear deterrence. It has cut its nuclear arsenal to about 185 warheads, the smallest of the recognised nuclear states, deployed in one delivery system: 16 submarine-launched US Trident ballistic missiles in each of four submarines, one of which is deployed at a notice to fire of "days". The UK government has to decide whether to replace Trident by around 2007. Exploiting US plans to convert four Ohio class Trident-equipped submarines to conventional armament, I have therefore proposed that the UK government should replace its nuclear arsenal with precision-guided, conventionally-armed cruise missiles plus special forces. [4] This would provide a more credible deterrence system, which the Navy would in principle support. The first "breakout" by one of the five permanent members of the UN Security Council would be sensational: the UK government would throw its weight behind the nuclear abolition movement, as Canada did so effectively in the campaign for a treaty banning landmines.

4) **Intensify Non-Violent Direct Action Upholding The Law.** Meanwhile, as another incentive for the governments of nuclear states to consider non-nuclear security options, carefully focused and sustained non-violent direct action campaigns in the nuclear states to uphold the law should be intensified. The UK Trident Ploughshares campaign, relying on legal attrition supported by the Acronym Institute, World Court Project, CND and other anti-nuclear groups, continues to embarrass the government, Royal Navy and police, with growing support from church leaders, politicians and such stars as Sir Sean Connery. The judiciary and government have been forced into a legal debate. This has moved beyond the 1996 World Court advisory opinion to confront the legal status of nuclear deterrence and possessing specific types of nuclear weapon with readiness and intent to use them, even against non-nuclear states and extremists. [5]

Notes

1. Colin Powell, 'A Soldier's Way' (Hutchinson, London, 1995), pp485-486.
2. See <http://backfromthebrink.policy.net/>; also Canadian Ploughshares Working Paper 02-1 'No Launch on Warning' by Alan Phillips MD (www.ploughshares.ca).
3. Robert Green, 'The Naked Nuclear Emperor: Debunking Nuclear Deterrence' (Disarmament & Security Centre, PO Box 8390, Christchurch, New Zealand, 2000) (www.disarmsecure.org).
4. 'Conventionally-Armed UK Trident?' (RUSI Journal, February 2002), pp31-34, available on request from robwcpuk@chch.planet.org.nz.
5. See www.tridentploughshares.org, www.acronym.org.uk, www.gn.apc.org/wcp, www.cnduk.org.

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John P. Holdren

[on left, photo from <http://www.pugwash.org/reports/pim/pim4.htm>]

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John P. Holdren, Ph.D.

[<http://ksgnotes1.harvard.edu/degreeprog/courses.nsf/wzByDirectoryName/JohnHoldren>] is Teresa and John Heinz Professor of Environmental Policy at the John F. Kennedy School of Government at Harvard University. He is chair of the Committee on International Security and Arms Control of the U.S. National Academy of Sciences. From 1987 to 1997 he was chair of the Executive Committee of the International Pugwash Council.

GETTING TO ZERO: Is Pursuing a Nuclear-Weapon-Free World Too Difficult? Too Dangerous? Too Distracting? April 1998

[Italic] This article is a longer version of a chapter for a book, Ending War: The Force of Reason [<http://www.pugwash.org/publication/b/force.htm>] (St. Martin's Press, 1999), honoring Sir Joseph Rotblat on his 90th birthday. Dr. Holdren's conclusion is presented below. The entire article is offered as a PDF document .[end italic]

View or print PDF.

[italic] In this article Dr. Holdren considers how to achieve a nuclear-weapon-free world (NFWF). He has sections on:

- *A Short History of Zero*
- *Shades of Zero: Meanings, Implications, Requirements*
- *Is Getting to Zero Too Difficult?*
- *Is Getting to Zero Too Dangerous?*
- *Is Getting to Zero Too Distracting?*

He then offers his conclusion, as follows. [end italic]

Conclusion

Let me use the conclusion of this essay to make completely clear my own positions on some of the key points at issue in the NFWF debate.

Benefits of Nuclear Disarmament

To begin, I agree with the conclusion of the 1997 National Academy of Sciences study (in the preparation of which I was much involved) that¹

the potential benefits of comprehensive nuclear disarmament are so attractive relevant to the attendant risks — and the opportunities presented by the end of the Cold War and a

range of other international trends are so compelling — that increased attention is now warranted to studying and fostering the conditions that would have to be met to make prohibition desirable and feasible.

I also find persuasive the argument in the National Academy study in favor of the term “prohibition” to describe what is being sought: it has the merit of being unambiguous, clearly achievable, and consistent with what has already been achieved in the cases of chemical and biological weapons; and it can be seen as a practical means toward the ideal end of “elimination” of nuclear weapons — an end which, as Calogero has pointed out², is worth pursuing even if it can only be approached “asymptotically”.

Prohibition Is Desirable

I would go beyond what the National Academy group as a whole was willing to endorse, however, in arguing

- that the nuclear-weapon states should take the position already, today, that prohibition is *clearly* desirable under appropriate conditions,
- that the indefinite possession of nuclear weapons by any subset of states is *clearly* untenable, and
- that the nuclear-weapon states therefore commit themselves now to lead the way to achieving the conditions that will make prohibition feasible before another half century has passed.

Need for Timetable

I appreciate, but find ultimately unconvincing, the arguments that led the National Academy group, as well as the Canberra Commission and the Stimson Center Project on the Elimination of Weapons of Mass Destruction, to refrain from specifying a specific timetable. They are right to argue that the relevant variables are too many and the uncertainties too great to specify a timetable in detail. But an overall target is required to give meaning to the “unequivocal commitment” to elimination of nuclear weapons called for by the Canberra Commission (or the “serious commitment” called for by the Stimson Center group) and to give impetus to efforts to create the conditions that prohibition will require.

Any target will naturally be subject to revision — either more or less time might prove to be required — but there is at least a certain symmetry in the proposition that nuclear arsenals should be able to be built down in about the same amount of time that was used to build them up.

I proposed 2048 as the outer limit for getting to zero in a speech at the 150th anniversary conference of the American Association for the Advancement of Science in 1998³, where the theme was looking backwards and forwards fifty years. On the other hand, according to the Natural Resources Defense Council’s tabulation⁴ — the best unclassified source — global nuclear stockpiles peaked in 1986 at 69,500, declining subsequently to about half that number in 1998; if the entire build-down took only as long the build-up, 41 years, the world would be back at zero by 2027.

There is merit, in any case, in the idea that the target for achieving a prohibition should be within the lifetimes of many people now living.

What to Include

In my opinion, the prohibition should include, at least,

- all intact nuclear weapons,
- all nuclear-weapon components, and
- all military stockpiles of directly bomb-usable nuclear-explosive materials.

I do not see need or benefit in allowing “virtual” nuclear arsenals consisting of weapon components that could be minutes from assembly, except as a form of de-alerting not to be confused with a NFWF. The virtual-arsenals approach fails to deliver the nonproliferation benefits of renunciation by the nuclear-weapon states of their special status, and it fails to relieve the core moral dilemma of nuclear deterrence in the form of choosing to prepare deliberately for the mass destruction of innocents as a means for avoiding it.

With respect to both these aspects, there is a crucial difference, between (a) the form of existential deterrence that would result from the ineradicability of nuclear-weapon knowledge (which is a *state* of deterrence arising from unavoidable circumstances) and (b) the virtual-arsenals idea (which is a form of the *practice* of deterrence). Knowledge-based existential deterrence is a permanent and universal condition associated with physical realities, requiring no conscious choices to maintain or exercise and not denied to some while allowed to others.

Interim Possession by an International Agency

I believe it would be preferable for nuclear weapons, weapon components, and military stockpiles of directly bomb-usable nuclear-explosive materials to be banned altogether — that is, not only prohibited from possession by states but also not retained by any international organization. But I would favor allowing possession by an international agency as an interim measure, if allowing this could bring about a prohibition on possession by states earlier than would otherwise be possible.

It is true that retention by an international organization would not represent as thoroughgoing a rejection of nuclear weapons and nuclear deterrence as a total ban would. But as a way-station toward the latter, it would already achieve the nonproliferation benefit of erasing the distinction between nuclear-weapon states and the rest. And it would take a great step toward the total delegitimization of nuclear weapons by making illegitimate their possession by states.

Civilian Nuclear Energy Systems

I think it is likely to be necessary, in order to get to and remain in a NFWF, that those aspects of civilian nuclear energy systems that lend themselves too readily to nuclear-weapons production be foregone or placed under international management.

The least problematic approach would probably be restricting reactors to once-through use of low-enriched uranium fuel, with the associated enrichment plants and spent-fuel storage facilities under international management.

If economically competitive long-term energy sources that avoid fissile materials altogether are not available before the resources of uranium that are economically usable in once-through fuel cycles are exhausted, making recycle of plutonium appear necessary, this should be done only in internationally managed, integrated nuclear-energy centers (with reactors and reprocessing and fuel-fabrication operations all at the same site), preferably using still-to-be-developed approaches in which the plutonium would never be completely separated from fission products.

Don't Wait for General and Complete Disarmament

I do not think that prohibition of nuclear weapons needs to await or be followed quickly by general and complete disarmament. Nuclear weapons are in a class by themselves in relation to indiscriminate, comprehensive, long-lasting destructiveness — the only weapons now known that could plausibly destroy all of civilization.

If chemical and biological weapons can be banned without waiting for general and complete disarmament — as they have been and deserved to be — then so can nuclear weapons.

Of course a world that has renounced armed conflict as a means of settling disputes would offer the ultimate security against the remobilization of any of these kinds of weapons. But even in the interim before this desideratum is achieved, the world will be better off banning nuclear weapons than continuing to permit them.

Compared to What?

This brings us back to the question of “Compared to what?” There are real difficulties on the road to a NFWW, and real dangers at the destination. But these are to be compared not to the perfection of a hypothetical hazard-free world, but rather to the risks and difficulties of continuing to live in a world from which nuclear weapons in the possession of states have not been banned and nuclear weapons in the possession of subnational groups cannot be ruled out.

Here, it must be emphasized, the proper comparison is not just with today’s conditions — with the hazards of accidental, erroneous, unauthorized, or other use of nuclear weapons by any of five declared nuclear-weapon states and at least three undeclared ones — but also with the conditions likely to prevail in the future in the absence of decisive movement toward a NFWW.

For the world cannot simply stay where it is. In the absence of a credible commitment by the nuclear-weapon states to relinquish this special status on a timescale of practical interest, the number of nations choosing to acquire nuclear weapons for themselves is virtually certain to grow. Whether other factors affecting the probability of nuclear weapons use will improve rapidly enough to offset the adverse influence of a larger number of nuclear weapon states — and whether these improvements will apply everywhere that nuclear weapons appear — can be doubted.

Protection against Terrorists

While there are a few voices arguing that a world of more nuclear-weapon states will simply be a world of more robust and more comprehensive nuclear deterrence, moreover, no one can seriously argue that such deterrence will apply to the growing threat of nuclear bombs in the

hands of terrorist and other criminal groups. That threat, which grows with the number of arsenals and bomb-material stockpiles from which criminals could obtain what they need, could well be the dominant nuclear threat in the next century. Not only is it greatly aggravated by the continued existence of national nuclear arsenals, but nuclear deterrence is likely to be useless against it because terrorists and other criminals may not be locatable, or if locatable could not responsibly be attacked with nuclear weapons. It is therefore another reason for believing a NFWF is preferable to the alternative.

Risk of Cheating and Breakout

Would cheating and breakout be possible in a NFWF? They can be made improbable, but not impossible.

Would the risks associated with these possibilities — that is, the consequences weighted by the probabilities — be greater than the nuclear risks the world faces today or is likely to face in the future without a NFWF? It does not seem so to me, for reasons adduced in the “dangers” section, above, reinforced by a degree of optimism about potentially helpful technological changes: the evolution of monitoring capabilities (including internet-assisted “societal verification”) to improve the capacity to detect cheating or plans for breakout before they come to fruition; and the evolution of conventional-force capabilities to improve the capacity to knock out rogue nuclear capabilities before they can be used (or, at worst, before they can be used more than once).

If these capabilities are seen as insufficient in the context of the other incentives and barriers to nuclear weapons acquisition, keeping a small nuclear arsenal under international control as an interim step on the way to a true NFWF should be preferable by far to the hazards of a world with multiple nuclear arsenals in the hands of states.

Future Prospects

To those who say that it is “unimaginable” that verification of a NFWF could be good enough, or that sovereign states will ever voluntarily surrender control over nuclear weapons and nuclear-fuel-cycle facilities, I say these are failures of imagination. The rates of change in technology, in politics, and in international arrangements have been rapid in recent decades, and no one is smart enough to be able to confidently place limits on what may be achieved in a few decades more.

It is entirely possible, in fact, that another decade or so of cuts in the US and Russian nuclear arsenals, de-alerting of the forces that remain, improved protection of nuclear-explosive materials, a comprehensive cut-off of military production of these, and increased transparency and monitoring to go with it all will put in place a substantial part of the technical, institutional, and political ingredients that would be needed for a NFWF.

Let us find out.

¹ Committee on International Security and Arms Control (William F. Burns, Study Chair; John P. Holdren, Committee Chair; Jo L. Husbands, Staff Director; and 14 others), *The Future of U.S. Nuclear Weapons Policy*, National Academy Press, Washington, DC, 1997.

² Francesco Calogero, “An Asymptotic Approach to a NWWF”, Chapter 13 in Joseph Rotblat, Jack Steinberger, and Bhalchandra Udgaonkar, eds, *A Nuclear Weapons Free World: Desirable? Feasible?*, Westview, Boulder, 1993. pp. 191-200.

³ John P. Holdren, “Thoughts on Science, Technology, and Human Well-Being in the Next 50 Years”, *APS News*, vol. 7, no. 4, April 1998, p 12.

⁴ NRDC, “Table of Global Nuclear Stockpiles, 1945-1996”, available on the NRDC website at <http://www.nrdc.org/nrdcpro/nudb/datab19.html>

**GETTING TO ZERO:
Is Pursuing a Nuclear-Weapon-Free World Too Difficult?
Too Dangerous? Too Distracting?**

John P. Holdren
April 1998

This article is a longer version of a chapter for a book, Ending War: The Force of Reason (St. Martin's Press, 1999), honoring Sir Joseph Rotblat on his 90th birthday.

There is remarkably widespread and growing agreement, at the end of the 1990s, on the desirability and feasibility of many of the nuclear-arms-limitation measures treated in the foregoing chapters: on reductions in the nuclear forces of the United States and Russia going well beyond those prescribed in the START II treaty; on de-alerting measures that would increase the reaction time of nuclear forces from minutes to days; on a thoroughgoing revision of targeting practices in order to eliminate all consideration of massive attacks; on bringing into force the Comprehensive Test Ban Treaty and negotiating a comprehensive cutoff of production of fissile materials for weaponry; and on other measures to reduce the prominence of nuclear weapons in the foreign and military policies of the few countries that possess them and bolster the resolve of the rest to continue to refrain from acquiring them.

As remarkable as the extent of agreement on this range of restraints on nuclear weaponry, however, is the extent of the continuing *lack* of agreement on the desirability and feasibility of achieving a world free of nuclear weapons altogether — or, at least, on trying to achieve a nuclear-weapon-free world (NFWF) on any timescale of practical interest. Notwithstanding the spate of studies and statements, since the Cold War ended, by distinguished groups and individuals arguing that the time has come to address the elimination of nuclear weapons as a practical matter rather than merely a utopian goal, it seems apparent that getting to zero any time soon remains anathema to a majority of the people who populate the national-security establishments of the nuclear-weapon states — or, at least, to a majority of those whose opinions matter most.

NFWF proponents argue that getting to zero is desirable to reduce the horrific risks of intentional or unintentional use of nuclear weapons by the countries that now possess them, to prevent the proliferation of nuclear weapons (as well as chemical and biological weapons) to additional nations and to subnational groups, and to escape once and for all the vexing moral dilemmas of nuclear deterrence; and they argue that getting to zero has been made feasible by the end of the Cold War and by global trends towards democratization, cooperation, and interdependence. The NFWF skeptics, as I will call them, argue (with varying degrees of relative emphasis on the three points), that getting to zero is too difficult (many say impossible), too dangerous (both as a destination and en route), and too distracting from more promising arms-limitation agendas to warrant pursuing it with any seriousness at this time.

In this article — which I offer as a tribute to the indefatigable and relentlessly effective pioneer among NFWF proponents, Joseph Rotblat — I address these arguments of the skeptics and weigh them against those adduced in favor of getting to zero by Rotblat and other NFWF proponents. At the end, I indicate where I come out myself on some of the major dilemmas and disagreements that characterize this topic. Before turning to these “pro and con” matters, however, I provide some needed background in two parts: a capsule history of the debate about freeing the world from nuclear weapons, ending with the blossoming of attention to the issue

following the end of the Cold War; and an attempt to sort out some of the conceptual and terminological ambiguities about the meaning of zero that are the legacy of this history.

A Short History of Zero

As Joseph Rotblat notes in his opening chapter of the 1993 Pugwash monograph on a NWFW, interest in removing nuclear weapons from the control of individual nations — and ultimately banning them altogether — began among Manhattan Project scientists even before the first bomb was tested in July 1945 [1]. Following the use of the bomb against Japan in August 1945 and the subsequent end of the war, discussion of the issue of international control of nuclear weapons and the possibility of banning them blossomed in published essays and public forums engaging a wide cross-section of society.

In one such forum in December 1945, the brilliant and eccentric Manhattan project scientist Leo Szilard called for a treaty banning atomic bombs, to be verified by inspections conducted by the United Nations [2]. In a remarkable book published in January 1946 and titled *Must Destruction Be Our Destiny?*, the young Manhattan project chemist Harrison Brown went further, laying out a painstakingly logical argument that, in the long run, nothing less than a world government would suffice to save the world from nuclear disaster [3]. And, in January 1946 the first resolution of the first meeting of the United Nations General Assembly established a UN Atomic Energy Commission with the mandate to [4]“*make specific proposals...for the elimination from national armaments of atomic weapons and of all other major weapons adaptable to mass destruction.*”

At the first meeting of this new Commission in June 1946, the US representative to the Commission, Bernard Baruch, put forward the initial proposal of the United States for international control. This called for the creation of an International Atomic Development Authority that would include ownership or managerial control of all nuclear activities potentially dangerous to world security, but its proposals went much further than this [5]:

When an adequate system for control of atomic energy, including the renunciation of the bomb as a weapon, has been agreed upon and put into effective operation and condign punishments set up for violations of the rules of control which are to be stigmatized as international controls, we propose that: (1) manufacture of atomic bombs shall stop; (2) existing bombs shall be disposed of pursuant to the terms of the treaty; and (3) the Authority shall be in possession of full information as to the know-how for the production of atomic knowledge.

This Baruch Plan, as it came to be called, ultimately failed of agreement because of two irreconcilable differences between the positions of the United States and the Soviet Union: the Soviets would not accept the Plan’s provision for sanctions against violations without right of veto by the permanent members of the UN Security Council; and the Soviets wanted nuclear weapons outlawed before a verification system was in place, a proviso that the United States would not accept.

Following upon the Soviet Union’s successful test of an atomic bomb in 1949, the development of the much more powerful hydrogen (thermonuclear) bomb by both the United States and the Soviet Union in the early 1950s, the worsening atmosphere of confrontation between the Communist and Western blocs during these years, and the associated take-off of the nuclear arms race that any number of commentators had predicted a decade before, there emerged in the late 1950s and early 1960s a resurgence of public, scientific, and to some extent

policymaker interest in banning nuclear weapons. In addition to mass movements opposing nuclear testing and calling for nuclear disarmament, manifestations of this resurgence included:

- the issuance in 1955 of the Russell-Einstein Manifesto — signed by Bertrand Russell, Albert Einstein, Joseph Rotblat, and 8 other scientific luminaries from altogether 7 countries — calling for scientists to “*assemble in conference to appraise the perils that have arisen as a result of the development of weapons of mass destruction*” and arguing for both the renunciation of nuclear weapons and, as a necessary accompaniment to that, the renunciation of war as a means of settling disputes [6];
- the statement issued in 1957 by the first Pugwash Conference on Science and World Affairs (held in response to the Russell-Einstein Manifesto), emphasizing that [7] “*war must be finally eliminated, not merely regulated by limiting the weapons which may be used.*”
- the 1959 resolution of the General Assembly of the United Nations declaring general and complete disarmament to be the UN’s goal and calling for measures in this direction to be taken in the shortest possible time [8];
- the issuance by the United States and the Soviet Union in September 1961 of what came to be called the McCloy-Zorin Statement, which stated in response to the General Assembly’s disarmament resolution that the two countries agreed on the goals of [9] “*elimination of all stockpiles of nuclear, chemical, bacteriological, and other weapons of mass destruction, and cessation of the production of such weapons.*”

The Russell-Einstein Manifesto and the first Pugwash statement launched an independent, international, scientist-led movement whose deliberations and declarations have provided ideas and impetus to nuclear-arms limitation efforts throughout the ensuing four decades [10,11]. The more official UN and McCloy-Zorin statements were less efficacious: resolutions of the General Assembly are nonbinding, and US-Soviet efforts to embody the McCloy-Zorin principles in a treaty collapsed in 1962 over disagreements about timing and verification.

The rest of the 1960s and the early 1970s were marked by official negotiation of a set of “partial measures to alleviate immediate worries”, as Rotblat’s 1993 account characterizes them [12] — arms control treaties constraining nuclear weapons testing, proliferation, and anti-ballistic missile systems. These treaties, while doing nothing to reduce the then-extant nuclear forces, nonetheless embodied commitments by the parties to pursue the elimination of nuclear weapons as a long-term goal. Specifically:

- the Partial Test Ban Treaty of 1963 proclaims in its Preamble a commitment to “*the speediest possible achievement of an agreement on general and complete disarmament under strict international control*” and to “*eliminate the incentive to the production and testing of all kinds of weapons, including nuclear weapons*”;
- the Non-Proliferation Treaty (NPT) of 1968 states in its Article VI that “*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 Anti-Ballistic Missile Treaty of 1972, in the Preamble of which the United States and the Soviet Union agreed that *“it is their intention to achieve at the earliest possible date the cessation of the nuclear arms race and to take effective measures toward reductions in strategic arms, nuclear disarmament, and general and complete disarmament.”*

Also in the category of “partial measures” agreed in this period was the Treaty of Tlatelolco (1967). As the first of the major “nuclear-weapon-free zone” (NWFZ) treaties, it banned nuclear weapons in a particular region, in this case Latin America. (Ambassador Alfonso Garcia Robles of Mexico, who was the principal architect of this agreement, shared the 1982 Nobel Peace Prize for his efforts.)

Toward the end of the 1970s, with the US-Soviet nuclear arms race proceeding with little apparent impediment from the above-mentioned treaties, the United Nations attempted to regenerate interest in nuclear disarmament through a special session of the General Assembly devoted to this topic. This First UN Special Session on Disarmament, taking place in May/June 1978 and including many heads of state among its participants, produced a unanimously agreed Final Document stating that *“It is essential to halt and reverse the nuclear arms race in all its aspects in order to avert the danger of war involving nuclear weapons. The ultimate goal in this context is the complete elimination of nuclear weapons.”* The second Special Session on Disarmament (held in 1982) and the third (held in 1988), however, failed to agree on any specific programs or timetables for moving toward nuclear disarmament; indeed, neither meeting produced agreement on any final document at all. Rotblat attributes this lack of progress to the reluctance of the United States and Russia to concede the United Nations any significant role in what they had come to regard as the mainly bilateral business of nuclear arms control [13].

While the disarmament efforts of the United Nations were floundering, the agitation of publics in the United States and Europe about nuclear-weapons dangers was growing. Driven by militant Reagan Administration rhetoric, concerns that “nuclear winter” could turn any nuclear war into the end of civilization, the deployment of a new generation of Soviet intermediate-range ballistic missiles (SS-20s) threatening Europe, and the prospect of deployment there of new U.S. Pershing II and land-based cruise missiles in response, this agitation manifested itself in the emergence of a “nuclear freeze” movement capable of mustering rallies of half a million to a million people in major cities in Europe and the United States. This movement helped propel the superpowers toward the first treaty banning a whole class of nuclear weapons — the Intermediate Nuclear Forces Treaty of 1987 — as well as encouraging a new round of thinking about more comprehensive approaches to nuclear disarmament.

A noteworthy manifestation of such thinking outside official channels was Jonathan Schell’s eloquent and widely read 1984 *New Yorker* essay, “The Abolition” [14]. In it, he argued that elimination of nuclear weapons might actually be facilitated by the unavoidable circumstance that the knowledge of how to build such weapons cannot be eradicated. That is, Schell contended, one does not need to postpone abolition until something akin to a world government is available to deal with the potential for cheating, because cheating would be deterred even in a world much like today’s by recognition that other countries could quickly reconstitute their own arsenals to cancel a cheater’s advantage.

On the official side, the next major development in thinking about elimination of nuclear weapons came in January 1986, when the new Soviet leader Mikhail Gorbachev unveiled a plan for a step-by-step process to eliminate nuclear weapons by the year 2000. And, for a brief

moment at the Reykjavik summit in October of that year, it appeared that US President Ronald Reagan — to the astonishment of the world and his own advisors — had agreed to this proposal. Indeed, the two leaders agreed at Reykjavik to an even shorter timetable, ten years, than what Gorbachev had first proposed [15]. (Notably, although every U.S. President from Eisenhower onward had affirmed in one way or another a US commitment to elimination of nuclear weapons as an ultimate goal, none had ever specified a timetable.) The apparent accord quickly collapsed over the usual disagreements about details (not so much verification this time, but complications arising from Reagan's ideas about building and sharing a "Star Wars" defense against ballistic missiles), and the superpower nuclear confrontation returned to normal.

This "normality" was to be short-lived. Two years later, in 1989, Gorbachev began dismantling the Soviet empire, and in the space of another two years it was clear to everybody that the Cold War was over. The START I and START II agreements for successive stages of deep reductions in deployed strategic nuclear forces were signed in 1991 and 1993; unilateral commitments by Presidents Bush and Yeltsin began a process of sharp cuts in the numbers of tactical nuclear weapons deployed on both sides; Belarus, Kazakhstan, and Ukraine — former Soviet republics where nuclear weapons had been deployed — returned the weapons to Russia and joined the Non-Proliferation Treaty as non-nuclear-weapon states; and the process of actual dismantlement of nuclear weapons made surplus by these developments began in both Russia and the United States, even though no treaty required it. To many long-standing proponents of the elimination of nuclear weapons, that hitherto frustratingly elusive and distant goal seemed suddenly to have moved almost within reach; and to some others who had never taken the possibility of elimination seriously at all, it now seemed at least less implausible.

The resulting post-Cold-War outpouring of new analyses and statements relating to the desirability and feasibility of a NFWF has been ably reviewed in a recent article by US Pugwash Committee Co-Chair Steven Miller [16], on which I draw heavily here. Particularly noteworthy in this post-Cold-War phase of the elimination debate have been:

- the 1993 Pugwash volume, *A Nuclear-Weapon-Free World: Desirable? Feasible?*, edited by Joseph Rotblat, Jack Steinberger, and Bhalchandra Udgaonkar, which elevated the NFWF debate both in substantive content and in respectability with its detailed treatments of mechanisms and obstacles by a distinguished international array of authors [17];
- the April 1995 "Abolition 2000 Statement" [18], released in the context of the NPT Review and Extension Conference by a global coalition of nongovernmental organizations, calling for the elimination of nuclear weapons and adoption by the year 2000 of a convention to this effect;
- the statement of "Principles and Objectives" endorsed to by all NPT parties as part of the May 1995 agreement to extend the Non-Proliferation Treaty indefinitely [19], calling for *"the determined pursuit by the nuclear-weapon states of systematic and progressive efforts to reduce nuclear weapons globally, with the ultimate goal of eliminating those weapons, and by all states of general and complete disarmament under strict and effective international control."*

- the award of the 1995 Nobel Peace Prize in December of that year jointly to Joseph Rotblat and the Pugwash Conferences [20] *“for their efforts to diminish the part played by nuclear arms in international politics and in the longer run to eliminate such arms.”*
- the December 1995 report, “An Evolving US Nuclear Posture”, issued by the Henry L. Stimson Center’s Project on the Elimination of Weapons of Mass Destruction, which under the chairmanship of General (ret.) Andrew Goodpaster — a former Supreme Allied Commander in Europe — recommended *“a decisive commitment at the highest political level”* to the elimination of nuclear weapons, together with an array of shorter-term measures to reduce the role of nuclear weapons in US security policy [21];
- the July 1996 advisory opinion of the International Court of Justice [22], which in a 7-to-7 split vote decided by the Court’s President held 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”*, with the caveat that *“the Court cannot conclude definitively whether the threat or use of nuclear weapons would be lawful or unlawful in an extreme circumstance of self-defence, in which the very survival of a State would be at stake”*, and which at the same time held unanimously 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”*;
- the August 1996 report of the Canberra Commission on the Elimination of Nuclear Weapons (a group including, among others, the immediate past commander of US strategic nuclear forces, a former French Prime Minister, a former US Secretary of Defense, a former Brazilian Foreign Minister, a former Chief of the British Defence Staff, a former Chinese Ambassador to the United Nations in Geneva, a former Director of the International Institute for Strategic Studies, and Joseph Rotblat), which concluded that [23] *“the opportunity now exists, perhaps without precedent or recurrence, to make a new and clear choice to enable the world to conduct its affairs without nuclear weapons”*, called upon *“the United States, Russia, the United Kingdom, France and China to give the lead by committing themselves, unequivocally, to the elimination of all nuclear weapons”*, and offered a systematic set of rebuttals to the most frequently voiced objections to the desirability or practicality of a NWFV;
- the exceptionally eloquent personal statement by General George Lee Butler, former Commander-in-Chief of the US Strategic Command and a member of the Canberra Commission, to the State of the World Forum in October 1996 [24], in which he explains how his 30-year career with US nuclear forces — first implementing this country’s nuclear weapon policies and later helping shape and defend them — led him finally to the conclusion that those policies must be abandoned and the nuclear weapons themselves abolished;
- the December 1996 “Statement on Nuclear Weapons by International Generals and Admirals” — organized by Generals Goodpaster and Butler — in which some 60 retired senior military officers from 17 countries assert that [25] *“long-term international nuclear policy must be based on the declared principle of continuous, complete and irrevocable elimination of nuclear weapons”* although *“[t]he exact circumstances and*

conditions that will make it possible to proceed, finally, to abolition cannot now be foreseen or prescribed.”

- another report of the Stimson Center Project on the Elimination of Weapons of Mass Destruction, issued March 1997 and entitled “An American Legacy: Building a Nuclear-Weapon-Free World”, in which the distinguished Stimson group reiterates that [26] *“the ultimate objective of US national security policy should be the elimination of all weapons of mass destruction from all states — not the preservation of nuclear deterrence in perpetuity”* and *“only a serious commitment to cooperative nuclear disarmament is likely to provide the momentum necessary to drive forward the process of eliminating all weapons of mass destruction.”*
- the June 1997 report on “The Future of U.S. Nuclear Weapons Policy”, summarizing a study led by General William F. Burns (US Army, retired) under the auspices of the Committee on International Security and Arms Control of the U.S. National Academy of Sciences, which concluded concerning prohibition that [27] *“for the same reasons that the committee recommends rapid and substantial reductions in the size, readiness, and salience of national nuclear arsenals, the time also has come to begin to devote serious attention to the prospects for prohibiting those arsenals and to fostering the conditions that would have to be met to render prohibition feasible and desirable.”*
- the February 1998 “Statement on Nuclear Weapons by International Civilian Leaders”, organized by The State of the World Forum under the leadership of former US Senator Alan Cranston, in which 117 prominent figures (including 47 past and current prime ministers) from 46 countries declare that [28] *“leaders of the nuclear weapon states, and of the de facto nuclear nations, must keep the promise of disarmament enshrined in the Non-Proliferation Treaty of 1970 and clarified and reaffirmed in 1995 in the language codifying its indefinite extension...by commencing the systematic and progressive reduction and marginalization of nuclear weapons, and by declaring unambiguously that their goal is ultimate abolition.”*

As Miller points out [16], these developments through the 1990s (and still others mentioned in his survey but omitted here in the interests of brevity) firmly establish that support for elimination of nuclear weapons has expanded in the post-Cold-War period to far beyond the traditional abolitionist constituency; as he also points out, however, this wider support rests on an almost equally wide range of interpretations about what elimination means, implies, and requires.

These variations and ambiguities about the meaning of zero are perhaps an inevitable legacy of a half-century debate, involving a constantly changing cast of characters in a constantly changing world, about an issue that is at once subtle, complex, and complexly connected to the ways the world is changing. In any case, this chapter’s aim of clarifying some pros and cons of getting to zero requires shedding some light on these differences concerning what zero amounts to, and it is to that task that I now turn.

Shades of Zero: Meanings, Implications, Requirements

The variations and ambiguities begin with the terms employed to describe what is being sought: the “abolition” of nuclear weapons (a term often favored by the more philosophical

writers, such as Schell [14]); their “elimination” (the term usually favored by diplomats, from the first UN resolution in 1946 [4] to the Canberra Commission in 1996 [23]); their “prohibition” (a term favored by those of legal bent [29] and, most recently, by the National Academy of Sciences’ 1997 nuclear weapons study [27]); and “nuclear disarmament” (which crops up in all kinds of treatments of the subject). Are there actually differences in meaning here, the sorting out of which could add precision or other insight to the discussion of “getting to zero”? Are some of these terms more useful — by virtue of being more precise or appropriate to the use to which they are being put in this context — than others? I believe the answer to both questions is “yes”.

Specifically, “prohibit” in this context clearly means to “forbid by authority of law”, that is, to make illegal (30). This term is both unambiguous and clearly not synonymous with “eliminate”, which means to cause the disappearance of something, to get rid of it entirely. Thus, for example, the United States imposed a prohibition on alcoholic beverages with the 18th Amendment to the US Constitution (lasting from 1919 to 1933), but these were far from eliminated. A prohibition on handguns, similarly, would represent an attempt to drastically reduce the numbers of these in use by making them illegal, although no one would expect it to quite lead to their elimination.

“Abolish” means to “do away with wholly” or “put an end to”. It embodies both the legal connotation of “prohibit” and much of the sense of permanence and comprehensiveness of “eliminate”. But it is more often (and some would argue more appropriately) applied to laws, customs, and institutions (such as slavery, capital punishment, or war) than to physical objects (such as nuclear weapons). Moreover, thinking about this word’s most familiar usage, which is in relation to the abolition of slavery, suggests some ambiguity about whether complete effectiveness is implied: abolition certainly deprived slavery of its legitimacy, one presumes permanently, and disposed of the institution in its most conspicuous form; but still some forms of slavery persist (such as the selling of girls and young women into sexual slavery, which although illegal occurs quite routinely in a number of societies).

“Nuclear disarmament”, finally, is even more ambiguous: it can and often does mean merely reducing or limiting one’s forces, not necessarily reaching zero. The usual approach to reducing this ambiguity is resort to more cumbersome (and nonetheless still ambiguous!) formulations such as “complete nuclear disarmament” or “comprehensive nuclear disarmament”.

These considerations figured in the preference expressed in the National Academy of Sciences’ 1997 nuclear weapon study for the word “prohibition” to describe an approach to the NFWF issue that ultimately could be accepted as both desirable and feasible. This choice has the attraction of avoiding both ambiguity and the common objection, made against “elimination” or “abolition”, that these goals are unattainable insofar as (a) there would never be certainty that every last weapon was gone and (b) the knowledge of how to make nuclear weapons — hence the possibility of reconstitution of nuclear arsenals — cannot be eradicated. Prohibition, as a matter of law, is certainly possible in principle; the main argument is about what it would actually accomplish.

There is also the question, of course, of exactly what is to be prohibited or eliminated in a NFWF. The candidates include, in order of increasing comprehensiveness and stringency:

- (a) nuclear weapons deployed with means for their delivery;

- (b) intact nuclear weapons in all conditions and locations;
- (c) (b) plus all nuclear-weapon components;
- (d) (c) plus all military stockpiles of directly bomb-usable nuclear-explosive materials (separated plutonium and highly enriched uranium);
- (e) (c) plus all stockpiles of directly bomb-usable nuclear-explosive materials, civilian and military;
- (f) (e) plus all facilities capable of producing directly bomb-usable nuclear-explosive materials;
- (g) (e) plus all nuclear-energy facilities.

At each of these levels, moreover, there is a choice among: (i) prohibiting/eliminating these items altogether; (ii) prohibiting their possession by states but allowing possession by an international authority; and (iii) allowing their possession by states but only under dual control with an international authority. And there is the question of what other measures would need to accompany the nuclear prohibition, whatever its details, in order for it to be effective. That is: Is it necessary that chemical and biological weapons also have been convincingly eliminated? Conventional forces (or just the subset of these powerful enough to threaten the existence or independence of states)? All possibility of armed conflict between states? Would deployment of effective national defenses against ballistic missiles help with a nuclear ban, or hurt, or make little difference?

A substantial part of the literature of “getting to zero” has been devoted to the development of these diverse possibilities — and further combinations and variations of them — and to analysis and argumentation about their pros and cons. (See, especially, Harrison Brown’s prescient 1946 book [3], Jonathan Schell’s *The Abolition* [14], the 1993 Pugwash NFWF volume [17], the “Background Papers” of the Canberra Commission [23], and Steven Miller’s recent précis of “The Abolitionist Upsurge” [16].) Many of the relevant issues are treated here in the sections to come on the putative difficulties, dangers, and distractions of getting to zero, but three points need a bit of elaboration first as background for those discussions.

First, progressing through the foregoing hierarchy of nuclear prohibitions from (a) towards (g) brings successively greater barriers against the overt or covert reconstitution of the capacity to deploy and use nuclear weapons, longer time requirements for reconstitution starting from the decision to do so, and more protection against acquisition of nuclear weapons by subnational actors...but also bigger obstacles to agreement and implementation. While, historically, most proposals to “ban the bomb” have gone at least to level (d), there has been some recent attention to the possibilities of stopping at levels (a) or (b). Level (a), separating all warheads from their delivery vehicles, is of course not really banning the bomb at all but just a form of de-alerting; it would reduce some of the risks of accidental and inadvertent use, but would do little or nothing to reduce proliferation incentives or the perplexities of nuclear deterrence.

Level (b), which has been advocated recently by Michael Mazarr [31] under the label “Virtual Nuclear Arsenals”, would ban intact nuclear weapons while allowing retention of nuclear-weapons components. Intended as a position that might bridge the gap between abolitionists, on the one hand, and advocates of deep cuts and thoroughgoing de-alerting who have not been ready to embrace zero, on the other, this idea has been criticized as “a fake zero” that would encourage countries to position themselves “a turn of a screw” away from operational nuclear arsenals and would do little to de-legitimize reliance on nuclear weapons as instruments of national policy. It appears that most proponents of a NFWF would accept the “virtual nuclear arsenals” approach only as a temporary way-station on the road to a destination somewhere between levels (c) and (g). (For an extended discussion, see Jonathan Schell’s new essay on abolition, “The Gift of Time” [32].)

Second, there has been a long-running debate within the NFWF community about whether achieving and preserving a world free of nuclear weapons requires placing constraints on civilian nuclear energy activities, that is, requires moving beyond level (d) to somewhere between (e) and (g). This issue, like so many others in the nuclear weapons arena, was already visited by Harrison Brown writing in late 1945 [3]. A good account of the argument that verification of a NFWF is too hard and break-out from it too easy unless nuclear energy is banned along with the bomb was provided by Lovins in his 1977 book *Soft Energy Paths* [33]. The essence of this case is that the huge stocks and flows of directly bomb-usable material in nuclear energy systems that recycle plutonium make detection of theft or diversion of a few bombs’ worth virtually impossible; and that, even in systems without such recycle, intolerably large break-out possibilities would still reside in a civilian nuclear energy system’s large numbers of nuclear-skilled engineers and technicians, uranium-enrichment facilities readily adaptable to produce weapons-usable material, and potential for quickly building new facilities from scratch to extract plutonium from spent fuel.

These considerations have convinced many that, at the very least, a nuclear-energy system compatible with a NFWF would need to be confined to the once-through fuel cycle, with all uranium-enrichment plants and spent-fuel storage under international control. Others argue that diversion-resistant closed fuel cycles yet to be developed and/or the co-location of all sensitive materials and facilities at internationally owned and guarded sites could also be consistent with a NFWF [34]. A quite comprehensive comparison of the pros and cons of different combinations of constraint and international control on nuclear energy in the context of a variety of interpretations of “zero” nuclear weapons has been provided recently by Cochran, Paine, and Norris in one of the “Background Papers” of the Canberra Commission [35].

Third, beyond the question of whether international control of aspects of civilian nuclear energy would be a necessary condition for the maintenance of a NFWF, there is an even more fundamental question about whether confining possession or control of nuclear weapons themselves to an international organization might accomplish many if not all of the aims of a “true” NFWF while being considerably easier to achieve. Most of the early ruminations on how to re-bottle the nuclear genie — both by the nuclear scientists who had developed these weapons and by the diplomats who pondered the matter in the early aftermath of World War II — were in fact focused on eliminating nuclear weapons from national arsenals and placing them under international control, not on eliminating them altogether [1-5]. These considerations presumably were influenced by the clarity with which the early weapons scientists, having just invented nuclear weapons, understood that they could not be un-invented.

In later discussions about complete elimination of nuclear weapons, the question of international ownership of an arsenal of nuclear weapons in a world in which nations had given them up re-emerged as a potential answer to the objection that a NFWF would be excruciatingly vulnerable to domination by a country that succeeded in concealing a small arsenal while others were eliminating theirs, or that subsequently reconstituted such an arsenal. An arsenal in the hands of an international body would provide the means for discouraging such cheating, assuming that the international organization in question was seen to be capable of acting if the need arose. The variant of “dual key” control by an international agency and individual nation-states possessing nuclear arsenals has been suggested as a response to the concern that nuclear weapon states would not be willing to turn over complete control of such powerful weapons to an international body.

But ideas about international control of nuclear weapons, whether this control is exclusive or shared, continue to get mixed reviews. Among those observers who believe a NFWF is infeasible because of the reluctance of nuclear-weapon states to give up this particular currency of status and power, many argue that these countries’ transferring control of nuclear weapons to an international body is not significantly more likely than their agreeing to eliminate them altogether. Among those who *favor* a NFWF, moreover, there are many who feel that allowing an internationally controlled nuclear arsenal to remain after nations had renounced these weapons would be too large a concession to the proposition that threatening the use of nuclear weapons is a legitimate way to deter others from using them. (The differences of view on this point among NFWF proponents are on display in the 1993 Pugwash NFWF book, for example, in which some authors endorse the idea of an internationally controlled nuclear arsenal — at least as an interim measure — while others categorically reject it: contrast [36] and [37] with [38] and [39].)

Is Getting to Zero Too Difficult?

The issues just raised about whether a NFWF would need to include a ban on or international control of nuclear energy activities and whether nuclear weapons themselves might still be possessed, either temporarily or permanently, by international authorities are not only a matter of how a NFWF is defined and understood; they also relate importantly to the more fundamental question of whether a NFWF is feasible at all. It is just on this point of international control, in fact, that some of the arguments of supporters of a NFWF run into the greatest difficulty with the skeptics.

That is, for example, the supporters say “A NFWF is only practical if civil nuclear-energy activities are banned, too, or at least placed under international control.” To this the skeptics say “Aha! You have just made clear why a NFWF is not feasible, because the countries of the world are never going to be willing to give up nuclear energy, or even to place under international control an activity as important to their economic well-being as nuclear energy is.” Or the supporters say “A true NFWF would not allow any nuclear weapons at all, even in the hands of an international authority”; to which the skeptics respond “Then your NFWF is certainly unattainable, because you have ruled out the only plausible means for dealing with cheating by individual nations.” (Of course, to supporters who *favor* retaining a nuclear arsenal under international control, the skeptics say — with even more force than in the case of civil nuclear energy — that countries will never be willing to cede this much power to an international entity.)

Certainly, many of the early thinkers who pondered the perils of nuclear weapons — notably the several groups of Manhattan Project scientists who struggled at the end of World War II with the implications of their invention [1]-[3] and the founders of the Pugwash Conferences a decade later [6]-[7] — reached the conclusion that for a ban on nuclear weapons to be really effective required not only unprecedented international powers of verification but also the abolition of war as a means of settling disputes between states. And quite a few of these thinkers pushed the argument to what seemed its next logical step, namely that the abolition of war could only be achieved in the context of “general and complete disarmament” (GCD), enforced by a close-to-all-powerful world government. These ideas account for the persistent linkage of nuclear disarmament with GCD in most of the declarations, proposals, and treaty formulations put forward on this topic then and since. They also account for the view of opponents and skeptics of a NFWF that it is a utopian idea in the same class with GCD and world government...and thus will never need to be taken seriously except in the almost unimaginable event that world government becomes a plausible proposition. Indeed, for the opponents of a NFWF, seeing it constantly linked with GCD and world government has undoubtedly been a source of great satisfaction — a way of reminding everybody that it will never happen.

Most proponents of a NFWF now argue, however, that there are worthwhile forms of a nuclear-weapon ban that can be attained without waiting for the arrival of either GCD or world government. Much has happened, after all, since the 1940s and 1950s when these concepts seemed so closely linked. There is now considerable experience, for example, with a step-wise approach of outlawing the most worrisome (or most easily controlled) classes of weapons and activities first, rather than waiting for a comprehensive solution: banning atmospheric nuclear tests before a ban on all testing was possible; banning all testing before a ban on all nuclear-weapon development work was possible; banning biological weapons before bans on chemical and nuclear weapons were possible; banning intermediate-range land-based ballistic missiles between the United States and the Soviet Union before a global ban on these missiles — or on all ballistic missiles — was possible; and so on. If banning nuclear weapons now looks like a sensible next step, the argument goes, there is no reason it needs to wait for GCD.

There is also much experience with building and operating a variety of global institutions that, while falling far short of constituting a world government, have been tailored to specific problems not likely to be adequately addressed by nation-states acting solely as independent entities. Institutions ranging from the International Atomic Energy Agency to the World Health Organization to the World Bank to the UN Security Council provide an “existence proof” for the capacity of the world community to address complex global problems collectively when the need arises. And the trend in the direction of fashioning diverse institutions of governance to match the scale of the specific problems addressed — local, regional, national, multinational, global — seems likely to continue, suggesting that it may well be possible to craft an international institution (or upgrade an existing one) to deal with the challenges of creating and preserving a NFWF while appropriating only a modest piece of the traditional prerogatives of nation-states.

Whether a NFWF will prove to be too difficult in relation to the key problem of verification will of course depend on a combination of institutional arrangements and technical capabilities. Some analysts opposed to aiming for a NFWF insist flatly that such a thing could *never* be verified [40]. But technologies relevant to verification are constantly being improved, and few technologists would claim a crystal ball clear enough to know what will be possible with

various forms of remote sensing combined with plausible degrees of in-country inspection in, say, twenty years...not to mention fifty [41]-[42].

On the institutional side, advocates of a NFWF beginning with Szilard in 1945 [43] have pointed to the possibilities inherent in “societal verification” — reliance on a sense of duty to humankind, reinforced by national laws that would be enacted as a part of the commitment of nations to a NFWF treaty, to motivate individual citizens who become aware of prospective violations of the treaty to report these to international authorities. (Joseph Rotblat has been a major contributor to the development and promotion of this idea and has recently described his view of it both in the Pugwash NFWF volume [44] and in his Nobel Prize acceptance speech [20].) It may be supposed that universal access to encrypted, anonymous communication with international authorities via the Internet — already close to a reality — will helpfully reduce the risks to “whistle-blowers” even where laws encouraging such behavior are not enacted or not respected by national authorities.

Another argument about the difficulty of achieving a NFWF has to do with a possible proliferation dynamic that might arise on the path from here to there. Those who make this point say that the large size of the US and Soviet/Russian arsenals has been one of principal barriers to proliferation, insofar as most other countries could not hope to match these arsenals and would see little gain from creating nuclear forces that would necessarily be small by comparison. They also argue that allies of the United States and Russia falling under the protective “nuclear umbrella” of these two countries’ arsenals might be tempted, were the umbrella smaller, to acquire one of their own. In this view, then, any attempt by the United and Russia to move down the path toward zero by drastically shrinking their own arsenals could backfire by lowering the “entry barriers” to other countries’ joining the nuclear club. (See, for example, the argument to this effect in the 1997 testimony of Richard Perle [40].)

This argument is at least partly undermined by the experience of nuclear proliferation to date: the third, fourth, and fifth nations to join the ranks of declared nuclear-weapon states — the United Kingdom, France, and China — while not sufficiently reassured by the nuclear umbrellas of the United States (in the case of the UK and France) and the Soviet Union (in the case of China) to refrain from acquiring their own, evidently saw no need to compete with the size of the US and Soviet arsenals and were not therefore discouraged from going nuclear by their inability to compete in this way. They apparently concluded that whatever they needed in the way of nuclear deterrence did not depend on the relative sizes of arsenals but only on the ability to do an absolute amount of damage that any rational adversary would consider intolerable, for which an arsenal a fraction of the size of those of the United States and the Soviet Union would suffice.

Subsequent proliferation by the undeclared nuclear-weapon states Israel, India, and Pakistan likewise was not discouraged by their inability to compete, in terms of arsenal size, with the superpowers. The idea that a small number of nuclear weapons can act as an “equalizer” in a world of power imbalances seems if anything to be growing stronger over time since the end of the Cold War, not weaker. That is indeed a difficulty on the path to a NFWF, but it is not one that US and Russian reductions are likely to make much worse. This, in any case, was the conclusion of the 1997 CISAC study of US nuclear weapons policy, which found that on balance the proliferation-suppressing effects of a large US arsenal were outweighed in the post-Cold-War world by the proliferation-enhancing ones [45].

A last question I want to treat under the heading of the difficulty of a NFWF is whether the advent of effective national defenses against nuclear-armed ballistic missiles would help or hinder progress toward a NFWF. Here one must first distinguish between the situation on the path to zero and the situation at the endpoint. With respect to the path, it is sometimes argued that such defenses would help by devaluing nuclear weapons, making it easier for countries to agree to get rid of them. This position is undermined, however, by the great diversity of ways to deliver nuclear weapons other than by ballistic missiles. Unless effective defenses are available against *all* of these means of delivery — from aircraft to taxicabs — devaluation via defenses seems a weak effect.

Quite the contrary, the logic behind the Anti-Ballistic Missile Treaty of 1972 holds that deployment of defenses will inhibit reductions in the numbers of nuclear warheads mounted on missiles — thus discouraging progress down the path toward zero — because nuclear-weapon states that continue to believe they need any nuclear weapons at all will want enough to be sure that they can overcome the defenses. As the CISAC study argued, this logic seems no less compelling late in the reductions process (at low levels of nuclear forces) than early [46]. If zero had finally been attained, on the other hand, then deployment of missile defenses could provide a benefit in reducing the gain that a cheater could expect from reconstituting a small arsenal, if these were going to be mounted on missiles. But even in this context of discouraging cheating in a world of zero, the availability of other, difficult-to-defend-against means of delivery might make the benefit of missile defenses seem scarcely large enough to be worth the trouble.

Is Getting to Zero Too Dangerous?

Some skeptics question not only the feasibility of a NFWF but its desirability, arguing that even if it were possible to get there we should not want to do so. Their argument is that getting to zero would make the world even more dangerous than it is now, or more dangerous than it is likely to be in the future in the absence of attempts to get to zero. Some of the dangers they foresee arise on the path to zero, and others reside in the end-state — that is, in living in a world free of nuclear weapons.

The purported problems on the path to zero (besides those already discussed above under “difficulty”) have mainly to do with the possibility of instability — that is, with encountering a configuration of forces in which, with numbers of nuclear weapons smaller than today’s, the incentives for resorting to their use in time of crisis could be larger than those incentives are today. This could come about, in principle, either because the smaller numbers might make the prospect of nuclear war seem less horrible than with today’s arsenals, or because a combination of the smaller numbers and the interaction of counterforce capabilities on one side and vulnerability of the nuclear weapons on the other might make a pre-emptive first strike seem an attractive proposition.

These concerns cannot be dismissed lightly, but neither do they seem persuasive reasons not to try to get to zero. In the first instance, it will remain true throughout most of the path to zero (that is, all the way from today’s tens of thousands of nuclear weapons down to the point where “only” a few hundred remain) that the use of any substantial fraction of the stockpiles would destroy much of industrial civilization; thus, to this point, the barrier to nuclear-weapons use posed by the magnitude of the potential consequences will not have been meaningfully lowered. And, even in a world where only a few tens of nuclear weapons remain, any rational leader will surely be restrained by the recognition that use of these would still be a catastrophe

beyond any in human history. (That an irrational leader might not be restrained by this recognition is, of course, a problem with even larger potential consequences when the arsenals are larger, as today.) As for potential crisis instability arising specifically from vulnerability of residual nuclear arsenals to pre-emptive attack, this danger can and must be minimized — as the CISAC study [47] and others have argued — by careful shaping of the reductions trajectory to avoid counterforce/vulnerability problems at every step.

Another concern about the path to zero is that a world of low numbers of nuclear weapons — necessarily a way-station on that path — is a world in which these would be targeted against cities in order to maximize their deterrent value. If one accepts the claim of abolitionists that a major reason for doing away with nuclear weapons is the immorality of deploying weapons so indiscriminately and massively destructive of the innocent, then should one not resist moving to a situation in which these weapons are *explicitly* targeted to maximize the destruction of the innocent, rather than being mainly targeted against the nuclear weapons of the other side, as today? Perhaps the most compelling response to this concern is that the immense destructiveness of nuclear weapons renders almost immaterial the details of how they are targeted: there would be huge civilian casualties even from a “pure” counterforce attack. Combined with the likelihood that any use of nuclear weapons, between two countries that both possessed them, would escalate to an all-out exchange, this means that the probable destructiveness of a nuclear war depends mainly on the sizes of the arsenals involved, not on any other details — a good argument for heading toward zero.

While it is sometimes also argued by NFWF proponents that targeting civilians in a world with small numbers of nuclear weapons is tolerable as long as this condition is only a temporary way-station on the path to a much better world, I would prefer to think it possible that the role of nuclear weapons would already be so greatly diminished in a world with arsenals much smaller than today’s that the weapons would not be targeted at all. That is, they would be seen as a largely irrelevant remnant, en route to total disappearance, whose residual interim deterrent role if any were needed would be amply fulfilled by their mere existence, without need for specification of particular targets or even consideration of that unless and until some almost unimaginable reversal required it. (This is the situation that has been called “existential deterrence”, wherein the existence of nuclear weapons exerts a certain deterrent effect that does not depend on any details of doctrine, deployments, targeting, or operational practices [48].)

The dangers generally associated with being in a NFWF — as opposed to the dangers of getting there — are mainly four: the danger of *cheating* (meaning that one or more nations or subnational actors clandestinely retain or reconstitute a number of nuclear weapons); the danger of *breakout* (one or more nations or subnational actors openly renounce the NFWF regime and re-acquire nuclear weapons); the danger that the absence of nuclear weapons will make the use of *biological weapons* more difficult to deter; and the danger that the absence of nuclear weapons will make *conventional conflicts* more likely and less restrained.

The problem of cheating is a matter of the incentives and barriers that bear on its probability, as well as a matter of the consequences that result if cheating occurs. The barriers depend on the adequacy of monitoring and verification — already discussed above under the heading of the difficulty of getting to a NFWF — as well as on the strength of the international norm against nuclear weapons and the consequences of being caught at cheating. The incentives depend on the benefits, to particular national or subnational interests, that are seen to derive from possessing some nuclear weapons in a world where few if any other national or subnational

actors do. Inasmuch as I am dealing now with the dangers of being in a NFWF as opposed to the difficulties of getting there, it seems fair to assume for the purposes of this discussion that, a NFWF having been achieved, the monitoring and verification capabilities in place are at least quite good and the strength of the international norm against possession of nuclear weapons at least quite strong. The consequences of being caught at cheating in such a world could include a variety of economic, political, and military sanctions and countermeasures and would seem likely to be severe. (Of course the cheater might be a superpower, hence not very susceptible to such responses, but it is hard to see why such a power would feel it needed to cheat on the nuclear-weapons ban at all.)

Not only would the barriers to cheating be considerable, but the benefits would seem to be quite modest. To get some benefit from the weapons — indeed, in order for their existence to affect the rest of the world at all — the cheater would need to reveal their existence; but, once revealed, they would be a rapidly wasting asset, inasmuch as other actors could use the ineradicable knowledge of how to make nuclear weapons to quite quickly acquire their own. In the variant of a NFWF in which these weapons had been banned from possession by states and sub-state actors but were retained in some numbers by an international body, of course, the benefit of cheating would be even less, perhaps negligible. And even in the absence of an internationally controlled arsenal, what would a cheater do with its temporary advantage? This question relates to the consequences for the world as well as to the incentives for the cheater. It is not easy to write a plausible scenario that amounts to much.

Similar considerations of barriers and benefits apply to the breakout problem, except that capabilities for verification and monitoring are less germane. Both for breakout and for cheating, then, the barriers would be considerable, the incentives and consequences limited. No one can show that cheating and breakout would be so unlikely and/or inconsequential in a NFWF as to be a non-issue, but neither does it seem persuasive that the risk associated with such developments — their probability multiplied by their consequences — should be regarded as comparable to the nuclear-weapon-related risks in a world from which such weapons had *not* been banned. (This question of “Compared to what?” is of course crucial in contemplating the problems of a NFWF, and I return to it below.)

Another danger sometimes ascribed to a NFWF is that the absence of nuclear weapons would make the use of other “weapons of mass destruction” — particularly biological weapons (BW) — more likely. (Chemical weapons usually get less emphasis in discussions along these lines, because they are clearly a threat of a lower order, against which it is harder to argue that a nuclear response would ever be warranted.) A variant of this position, which comes up in relation to the shorter-term issue of whether countries that possess nuclear weapons should declare unconditionally that they will not be the first to use them, is that the threat to respond with nuclear weapons is an indispensable deterrent to biological attack and should not be renounced through a no-first-use declaration.

As pointed out in the reports of the Canberra Commission [49] and the 1997 National Academy of Sciences nuclear-weapons study [50], however, there are serious liabilities of insisting that nuclear weapons are the only way, the best way, or even a desirable way to discourage the use of BW. First, the use of nuclear threats to deter BW use is likely to be of limited effectiveness, both because the source of a BW attack may be difficult to ascertain (making it unclear against whom to retaliate) and because the willingness of national leaders to cross the nuclear threshold in response to a nonnuclear attack may be doubted. Second, insisting

that it is sensible to threaten nuclear retaliation against BW attack blurs the many distinctions between these two classes of weapons (among others, nuclear weapons are proven, predictable, and massively destructive of infrastructure and ecosystems as well as of human lives), which may actually encourage the retention or acquisition of BW by countries that think this provides an effective and inexpensive counter to the nuclear weapons of others. Third, if a country as powerful as the United States (for example) insists it needs nuclear weapons to counter BW threats, then many less powerful countries will be tempted to conclude that they have an even *greater* need for nuclear weapons for this purpose...a clear prescription for nuclear proliferation.

While it is hard to doubt that the threat of nuclear retaliation can provide some deterrent effect against a nation that possesses BW and is contemplating using them, the cost of insisting on this function for nuclear weapons seems very high — the encouragement of proliferation of *both* biological and nuclear weapons and the relinquishment of the possibility of a NFWF. Given that there is already a global convention prohibiting BW, the NFWF proponents argue, it would seem better to work for strengthening its provisions (particularly for verification and safeguards) while trying to create the conditions for a prohibition on nuclear weapons as well, rather than assuming — and thereby guaranteeing — the failure of the BW ban while proposing as the “remedy” the indefinite retention of nuclear weapons.

There is, finally, the danger that prohibition of nuclear weapons would, by eliminating a major source of restraint in international relations, “make the world safe for conventional war”. Indeed, that the source of restraint provided by nuclear weapons today would be reduced in a NFWF is hard to doubt. The issue is the size/importance of the effect, which proponents of a NFWF argue is small and skeptics say is large.

The skeptics say that only the existence of nuclear weapons prevented a Third World War in the period from the end of World War II to the break-up of the Soviet Union 45 years later. NFWF proponents say that a determinative role for nuclear weapons in this outcome cannot be proven, and that many smaller wars and confrontations occurred in this period — including some that engaged the nuclear-armed powers — accompanied by large casualties and, in some instances, risks of escalation to nuclear war that should have been considered intolerable. It could easily have been a combination of good luck and good management, more than any immutable logic of deterrence, that got the world through this period without disaster. If it is conceded, moreover, that nuclear weapons at least reduce the chance of large-scale conventional conflict between nuclear-armed powers, must one then concede also that a world of many such powers would be safer from major conventional war than the world of today? And what does this approach to preventing conventional war do to the probability of a *nuclear* war?

Proponents of a NFWF argue that the restraint against conventional conflict that nuclear weapons provide is bought at too high a price. They also argue that this source of restraint will be needed less and less as time goes on, because global economic integration, the intolerable destructiveness of even conventional conflicts, and other considerations will combine to make major war less and less likely altogether. The 1997 CISAC study, for example, made this point emphatically, listing among other relevant factors [49]

the spread of democracy; the growth of information-based economic systems that do not depend on or benefit from territorial conquest; expanding economic interdependence and integration; the emergence of strong international financial and political institutions, such as the United Nations and the International Monetary Fund; the

diffusion of global communications and shared culture, which limit the degree to which governments can control information and propagate negative images of adversaries; the advent of modern intelligence and surveillance systems that facilitate accurate assessments of military capabilities and which make surprise attacks less likely to succeed; the development of collective security arrangements, such as NATO and the Organization for Security and Cooperation in Europe; and, more recently, deployment by the Western powers of modern conventional armaments, such as precision-guided munitions, which improve the effectiveness of defenses against armored attacks.

The CISAC study also made the argument (as Schell had done in 1984 [14]) that even the elimination of all physical nuclear weapons would unavoidably leave behind a residual deterrent effect against large-scale conventional conflict, arising from the understanding that such conflict could lead to the reconstitution of nuclear arsenals and their use. This is a form of “existential deterrence” that depends only on the existence of the knowledge of how to make nuclear weapons, which is ineradicable whether we like it or not; and it would reinforce the other factors mentioned as mitigating the concern that a NFWF would be prone to conventional war.

It has been suggested, on the other hand, that existential deterrence based on the possibility of reconstitution of nuclear arsenals might be less stable in time of crisis than deterrence based on arsenals already in place. The idea here is that a race to reconstitution of nuclear arsenals in time of crisis or conventional war could lead to incentives for the side that thought it was winning the race to use nuclear weapons first, while it had an advantage. Several questions suggest themselves. What would the first-strike incentives really be in a world of only a few weapons? Could a few destroy the resolve of a potential adversary? Or destroy enough of the adversary’s (and the world’s) military capacity to rule out devastating retaliation? How would retention of some nuclear weapons in the hands of an international organization change the calculus? And how would these considerations vary as a function of numbers of weapons? These questions surely deserve more systematic analysis; but even as answers are sought it should be kept in mind that their overall importance will depend on other characteristics of a NFWF that, in consequence of the conditions that helped bring it about, could be so different from those of today’s world as to make thinking about reconstitution, first strikes, and retaliation almost irrelevant.

Is Getting To Zero Too Distracting?

Many “moderates” on the issue of a NFWF — people who are neither enthusiastic proponents nor committed skeptics — make the argument that, whatever the long-term attractions of a NFWF may be, pursuing this goal too energetically now poses the liability of distracting attention from measures with more immediate benefits (such as de-alerting of and deeper cuts in deployed nuclear forces, entry into force of the Comprehensive Test Ban Treaty, negotiation of a cutoff of production of fissile materials for weapons purposes, and so on). Such distraction could take two forms. First, a debate about banning nuclear weapons might, by focusing attention on a topic on which agreement is difficult, raise the level of contentiousness and confrontation in arms-control discussions to the point where the good will needed to agree on potentially easier points is dissipated. Second, if the human resources at the disposal of governments for analyzing and negotiating arms control are limited, spending too many of them in pursuit of a NFWF could mean inadequate resources for more immediate goals. Both concerns are captured in the question, “Why spend time and effort disagreeing about the ultimate destination if we can agree on the direction we need to travel now?”

The argument for postponing attention to the pursuit of zero is undermined, say NFWF proponents, by the connections between a commitment to zero and the accomplishment of some of the most important shorter-term arms-control goals. The most important of these linkages is with nuclear non-proliferation. The slow pace of proliferation during the Cold War, the achievement in 1995 of indefinite extension of the Non-Proliferation Treaty, and the signing of a Comprehensive Test Ban Treaty by most countries in 1996 are all good reasons for optimism; but all of this could be undermined sooner or later — and quite possibly sooner — if the nuclear-weapon states do not finally make plain, now that the “excuse” of the Cold War is long gone, that they do not mean to maintain their exceptional status as possessors of nuclear weapons indefinitely. And, while it is argued against this that the decisions of states about whether to acquire nuclear weapons depend far more on the local and immediate threats that they perceive than on what the United States and the other declared nuclear-weapon states say about their long-term intentions with respect to their nuclear arsenals, the counter-argument is that the international norm against nuclear weapons matters and would be greatly strengthened by weapon-state declarations that they are committed to prohibition as a practical goal.

It needs to be remembered, in this connection, that decisions of potential proliferator states are likely to hinge on internal debates between “hawks” and “doves”, in which the balance could well be tipped in some instances by the clarity of the commitment of nuclear-weapon states to get rid of these weapons. It also needs to be remembered, as the 1997 National Academy of Sciences study argued [52], that

the short-term and medium-term effectiveness of the global non-proliferation regime requires the full support and cooperation of a large number of non-nuclear-weapon states in the maintenance of a vigorous International Atomic Energy Agency with the inspection powers and resources needed to do its job, the implementation of effective controls on the transfer of sensitive technologies, and the creation of transparency conditions conducive to building confidence that proliferation is not taking place.

Presumably, the commitment to these crucial, collective, nonproliferation efforts by states that are not potential proliferators themselves must eventually be eroded by continuing failure of the nuclear-weapon states to commit to zero nuclear weapons for everyone...not just for everyone else.

There is, finally, a more general argument supporting the idea of linkage between a commitment to prohibition and the attainment of shorter-term nuclear-arms-control goals. It is that nuclear-weapon states’ embracing the clearly defined, final goal of prohibition would invigorate the pursuit of all of the intermediate goals — deep cuts, de-alerting, and so on — by ending official support for the proposition that nuclear weapons have purposes that will persist indefinitely. This would immediately devalue the nuclear-weapon “currency” and hasten their marginalization in world affairs.

Conclusion

Let me use the conclusion of this essay to make completely clear my own positions on some of the key points at issue in the NFWF debate. To begin, I agree with the conclusion of the 1997 National Academy of Sciences study (in the preparation of which I was much involved) that [53]

the potential benefits of comprehensive nuclear disarmament are so attractive relevant to the attendant risks — and the opportunities presented by the end of the Cold War and a range of other international trends are so compelling — that increased attention is now warranted to studying and fostering the conditions that would have to be met to make prohibition desirable and feasible.

I also find persuasive the argument in the National Academy study in favor of the term “prohibition” to describe what is being sought: it has the merit of being unambiguous, clearly achievable, and consistent with what has already been achieved in the cases of chemical and biological weapons; and it can be seen as a practical means toward the ideal end of “elimination” of nuclear weapons — an end which, as Calogero has pointed out [36], is worth pursuing even if it can only be approached “asymptotically”.

I would go beyond what the National Academy group as a whole was willing to endorse, however, in arguing that the nuclear-weapon states should take the position already, today, that prohibition is *clearly* desirable under appropriate conditions, that the indefinite possession of nuclear weapons by any subset of states is *clearly* untenable, and that the nuclear-weapon states therefore commit themselves now to lead the way to achieving the conditions that will make prohibition feasible before another half century has passed. I appreciate, but find ultimately unconvincing, the arguments that led the National Academy group, as well as the Canberra Commission and the Stimson Center Project on the Elimination of Weapons of Mass Destruction, to refrain from specifying a specific timetable. They are right to argue that the relevant variables are too many and the uncertainties too great to specify a timetable in detail. But an overall target is required to give meaning to the “unequivocal commitment” to elimination of nuclear weapons called for by the Canberra Commission (or the “serious commitment” called for by the Stimson Center group) and to give impetus to efforts to create the conditions that prohibition will require.

Any target will naturally be subject to revision — either more or less time might prove to be required — but there is at least a certain symmetry in the proposition that nuclear arsenals should be able to be built down in about the same amount of time that was used to build them up. (I proposed 2048 as the outer limit for getting to zero in a speech at the 150th anniversary conference of the American Association for the Advancement of Science in 1998 [54], where the theme was looking backwards and forwards fifty years. On the other hand, according to the Natural Resources Defense Council’s tabulation [55] — the best unclassified source — global nuclear stockpiles peaked in 1986 at 69,500, declining subsequently to about half that number in 1998; if the entire build-down took only as long the build-up, 41 years, the world would be back at zero by 2027.) There is merit, in any case, in the idea that the target for achieving a prohibition should be within the lifetimes of many people now living.

In my opinion, the prohibition should include, at least, all intact nuclear weapons, all nuclear-weapon components, and all military stockpiles of directly bomb-usable nuclear-explosive materials. I do not see need or benefit in allowing “virtual” nuclear arsenals consisting of weapon components that could be minutes from assembly, except as a form of de-alerting not to be confused with a NFWW. The virtual-arsenals approach fails to deliver the nonproliferation benefits of renunciation by the nuclear-weapon states of their special status, and it fails to relieve the core moral dilemma of nuclear deterrence in the form of choosing to prepare deliberately for the mass destruction of innocents as a means for avoiding it. With respect to both these aspects, there is a crucial difference, between the form of existential deterrence that would result from the

ineradicability of nuclear-weapon knowledge (which is a *state* of deterrence arising from unavoidable circumstances) and the virtual-arsenals idea (which is a form of the *practice* of deterrence); that is, knowledge-based existential deterrence is a permanent and universal condition associated with physical realities, requiring no conscious choices to maintain or exercise and not denied to some while allowed to others.

I believe it would be preferable for nuclear weapons, weapon components, and military stockpiles of directly bomb-usable nuclear-explosive materials to be banned altogether — that is, not only prohibited from possession by states but also not retained by any international organization — but I would favor allowing possession by an international agency as an interim measure, if allowing this could bring about a prohibition on possession by states earlier than would otherwise be possible. It is true that retention by an international organization would not represent as thoroughgoing a rejection of nuclear weapons and nuclear deterrence as a total ban would; but, as a way-station toward the latter, it would already achieve the nonproliferation benefit of erasing the distinction between nuclear-weapon states and the rest, and it would take a great step toward the total delegitimization of nuclear weapons by making illegitimate their possession by states.

I think it is likely to be necessary, in order to get to and remain in a NFWF, that those aspects of civilian nuclear energy systems that lend themselves too readily to nuclear-weapons production be foregone or placed under international management. The least problematic approach would probably be restricting reactors to once-through use of low-enriched uranium fuel, with the associated enrichment plants and spent-fuel storage facilities under international management. If economically competitive long-term energy sources that avoid fissile materials altogether are not available before the resources of uranium that are economically usable in once-through fuel cycles are exhausted, making recycle of plutonium appear necessary, this should be done only in internationally managed, integrated nuclear-energy centers (with reactors and reprocessing and fuel-fabrication operations all at the same site), preferably using still-to-be-developed approaches in which the plutonium would never be completely separated from fission products.

I do not think that prohibition of nuclear weapons needs to await or be followed quickly by general and complete disarmament. Nuclear weapons are in a class by themselves in relation to indiscriminate, comprehensive, long-lasting destructiveness — the only weapons now known that could plausibly destroy all of civilization. If chemical and biological weapons can be banned without waiting for general and complete disarmament — as they have been and deserved to be — then so can nuclear weapons. Of course a world that has renounced armed conflict as a means of settling disputes would offer the ultimate security against the remobilization of any of these kinds of weapons; but even in the interim before this desideratum is achieved, the world will be better off banning nuclear weapons than continuing to permit them.

This brings us back to the question of “Compared to what?” There are real difficulties on the road to a NFWF, and real dangers at the destination. But these are to be compared not to the perfection of a hypothetical hazard-free world, but rather to the risks and difficulties of continuing to live in a world from which nuclear weapons in the possession of states have not been banned and nuclear weapons in the possession of subnational groups cannot be ruled out. Here, it must be emphasized, the proper comparison is not just with today’s conditions — with the hazards of accidental, erroneous, unauthorized, or other use of nuclear weapons by any of

five declared nuclear-weapon states and at least three undeclared ones — but also with the conditions likely to prevail in the future in the absence of decisive movement toward a NFWW.

For the world cannot simply stay where it is. In the absence of a credible commitment by the nuclear-weapon states to relinquish this special status on a timescale of practical interest, the number of nations choosing to acquire nuclear weapons for themselves is virtually certain to grow. Whether other factors affecting the probability of nuclear weapons use will improve rapidly enough to offset the adverse influence of a larger number of nuclear weapon states — and whether these improvements will apply everywhere that nuclear weapons appear — can be doubted.

While there are a few voices arguing that a world of more nuclear-weapon states will simply be a world of more robust and more comprehensive nuclear deterrence, moreover, no one can seriously argue that such deterrence will apply to the growing threat of nuclear bombs in the hands of terrorist and other criminal groups. That threat, which grows with the number of arsenals and bomb-material stockpiles from which criminals could obtain what they need, could well be the dominant nuclear threat in the next century; and not only is it greatly aggravated by the continued existence of national nuclear arsenals, but nuclear deterrence is likely to be useless against it (because terrorists and other criminals may not be locatable, or if locatable could not responsibly be attacked with nuclear weapons). It is therefore another reason for believing a NFWW is preferable to the alternative.

Would cheating and breakout be possible in a NFWW? They can be made improbable, but not impossible. Would the risks associated with these possibilities — that is, the consequences weighted by the probabilities — be greater than the nuclear risks the world faces today or is likely to face in the future without a NFWW? It does not seem so to me, for reasons adduced in the “dangers” section, above, reinforced by a degree of optimism about potentially helpful technological changes: the evolution of monitoring capabilities (including internet-assisted “societal verification”) to improve the capacity to detect cheating or plans for breakout before they come to fruition; and the evolution of conventional-force capabilities to improve the capacity to knock out rogue nuclear capabilities before they can be used (or, at worst, before they can be used more than once). If these capabilities are seen as insufficient in the context of the other incentives and barriers to nuclear weapons acquisition, keeping a small nuclear arsenal under international control as an interim step on the way to a true NFWW should be preferable by far to the hazards of a world with multiple nuclear arsenals in the hands of states.

To those who say that it is “unimaginable” that verification of a NFWW could be good enough, or that sovereign states will ever voluntarily surrender control over nuclear weapons and nuclear-fuel-cycle facilities, I say these are failures of imagination. The rates of change in technology, in politics, and in international arrangements have been rapid in recent decades, and no one is smart enough to be able to confidently place limits on what may be achieved in a few decades more. It is entirely possible, in fact, that another decade or so of cuts in the US and Russian nuclear arsenals, de-alerting of the forces that remain, improved protection of nuclear-explosive materials, a comprehensive cut-off of military production of these, and increased transparency and monitoring to go with it all will put in place a substantial part of the technical, institutional, and political ingredients that would be needed for a NFWW. Let us find out.

* * * * *

The failures of imagination that appear to afflict many opponents of a NFWF have never been a problem for Joseph Rotblat. He has been imagining the ways to bring about a NFWF for decades, and has done more than anyone living or dead to bring this vision into being. It has been a privilege to work with him and learn from him, and it is an honor to dedicate this essay to him on the occasion of his ninetieth birthday.

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"If men can develop weapons that are so terrifying as to make the thought of global war include almost a sentence for suicide, you would think that man's intelligence and his comprehension would include also his ability to find a peaceful solution."

*President Dwight D. Eisenhower
November 14, 1956*

"Standing down nuclear arsenals requires only a fraction of the ingenuity and resources as were devoted to their creation."

*General Lee Butler,
December 4, 1996*

"It is only through a conscious choice and through a deliberate policy that humanity can survive."

*Pope John Paul II,
Address in Hiroshima, 1981*

"Where there's a will, there's a way."

-- anon.

How to Get to Zero

Other pages of this web site present recommendations from religious organizations, military leaders, and civil sector organizations for the global elimination of nuclear weapons. This web page explores practical steps for achieving this goal. It offers:

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- *Consideration of interim measures, such as de-alerting, deep cuts in nuclear arms, and dealing with potential possessors.*
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As a father of two, Michael Christ is worried about the future of his young girls. As IPPNW's Executive Director, he is convinced that physicians and health workers worldwide have a major role to play in ensuring that coming generations are protected from the effects of war and the threat of nuclear destruction. Michael joined the organization in 1988 with a background in environmental economics and political activism. He describes his visits to Hiroshima and Nagasaki in 1989, and to the downwind community of Karaul near the former Soviet nuclear test site in Kazakhstan in 1990, as "life changing." Michael led IPPNW's World Court Project to persuade the World Health Organization and the United Nations to challenge the legality of nuclear weapons at the International Court of Justice. As Director of Programs from 1996 to 1998, he was responsible for numerous projects and campaigns on nuclear non-proliferation and disarmament and helped to launch IPPNW's landmines campaign. Michael was appointed Executive Director in January 1998.

Bernard Lown, MD
IPPNW Co-Founder

TEN REASONS TO ABOLISH NUCLEAR WEAPONS

by David Krieger

1. Fulfill Existing Obligations. The nuclear weapons states have made solemn promises to the international community to negotiate in good faith to achieve nuclear disarmament. The United States, Russia, Britain, France and China accepted this obligation when they signed the Non-Proliferation Treaty (NPT), and extended their promises at the 1995 NPT Review and Extension Conference and again at the 2000 NPT Review Conference. India and Pakistan, which are not signatories of the NPT, have committed themselves to abolish their nuclear arsenals if the other nuclear weapons states agree to do so. The only nuclear weapons state that has not made this promise is Israel, and surely it could be convinced to do so if the other nuclear weapons states agreed to the elimination of their nuclear arsenals. The International Court of Justice, the world's highest court, unanimously highlighted the obligation to nuclear disarmament in its 1996 Opinion: "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." This means an obligation to reduce the world's nuclear arsenals to zero.

2. Stop Nuclear Weapons Proliferation. The failure of nuclear weapons states to act to eliminate their nuclear arsenals will likely result in the proliferation of nuclear weapons to other nations. If nuclear weapons states continue to maintain the position that nuclear weapons preserve their security, it is only reasonable that other nations with less powerful military forces, such as North Korea, will decide that their security should also be maintained by nuclear arsenals. Without substantial progress toward nuclear disarmament, the Non-Proliferation Treaty will be in jeopardy when the parties to the treaty meet for the NPT Review Conference in the year 2005.

3. Prevent Nuclear Terrorism. The very existence of nuclear weapons and their production endanger our safety because they are susceptible to terrorist exploitation. Nuclear weapons and production sites all over the world are vulnerable to terrorist attack or to theft of weapons or weapons-grade materials. Russia, due to the breakup of the former Soviet Union, has a weakened command and control system, making their substantial arsenal especially vulnerable to terrorists. In addition, nuclear weapons are not helpful in defending against or responding to terrorism because nuclear weapons cannot target a group that is unlocatable.

4. Avoid Nuclear Accidents. The risk of accidental war through miscommunication, miscalculation or malfunction is especially dangerous given the thousands of nuclear warheads deployed and on high alert status. Given the short time periods available in which to make decisions about whether or not a state is under nuclear attack, and whether to launch a retaliatory response, the risk of miscalculation is high. In addition, the breakup of the former Soviet Union has weakened Russia's early warning system, since many parts of this system were located outside of Russia, and this increases the likelihood of a nuclear accident. [Read more about nuclear accidents.](#)

5. Cease the Immorality of Threatening Mass Murder. It is highly immoral to base the security of a nation on the threat to destroy cities and potentially murder millions of

people. This immoral policy is named nuclear deterrence, and it is relied upon by all nuclear weapons states. Nuclear deterrence is a dangerous policy. Its implementation places humanity and most forms of life in jeopardy of annihilation.

6. Reverse the Concentration of Power. Nuclear weapons undermine democracy by giving a few individuals the power to destroy the world as we know it. No one should have this much power. If these individuals make a mistake or misjudgment, everyone in the world will pay for it.

7. Promote Democratic Openness. Decisions about nuclear weapons have been made largely in secrecy with little involvement from the public. In the United States, for example, nuclear weapons policy is set forth in highly classified documents, which are not made available to the public and come to public attention only by leaks. On this most important of all issues facing humanity, there is no informed consent of the people.

8. Halt the Drain on Resources. Nuclear weapons have drained resources, including scientific resources, from other more productive uses. A 1998 study by the Brookings Institution found that the United States alone had spent more than \$5.5 trillion on nuclear weapons programs between 1940 and 1996. The United States continues to spend some \$25-\$35 billion annually on research, development and maintenance of its nuclear arsenal. All of these misspent resources represent lost opportunities for improving the health, education and welfare of the people of the world.

9. Heed Warnings by Distinguished Leaders. Distinguished leaders throughout the world, including generals, admirals, heads of state and government, scientists and Nobel Peace Laureates, have warned of the dangers inherent in relying upon nuclear weapons for security. These warnings have gone unheeded by the leaders of nuclear weapons states. [Read more about the Nuclear Age Peace Foundation's Appeal to End the Nuclear Weapons Threat to Humanity and All Life.](#)

10. Meet Our Responsibility. We each have a responsibility to our children, grandchildren and future generations to end the threat that nuclear weapons pose to humanity and all life. This is a responsibility unique in human history. If we do not accept responsibility to speak out and act for a world free of nuclear weapons, who will?

David Krieger is president of the Nuclear Age Peace Foundation
(www.wagingpeace.org).

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*David Krieger [<http://www.wagingpeace.org/articles/president-napf.html>] is a founder of the Nuclear Age Peace Foundation, [www.wagingpeace.org] and has served as its president since 1982. Under his leadership the Foundation has initiated many innovative and important projects for building peace, strengthening international law and abolishing nuclear weapons. Dr. Krieger, is author and editor of a number of books, including *Hope in a Dark Time*, *Reflections on Humanity's Future* and *The Poetry of Peace*. He is a founder and a member of the Global Council of *Abolition 2000*, [<http://www.abolition2000.org/>] a global network of over 2000 organizations and municipalities committed to the elimination of nuclear weapons. These ten reasons to abolish nuclear weapons first appeared on the website of the Nuclear Age Peace Foundation.*

Ten Reasons to Abolish Nuclear Weapons

June 2003

[Arial] SUMMARY

Dr. Krieger offers the following ten reasons for abolishing nuclear weapons:

1. Fulfill existing obligations
2. Stop nuclear weapons proliferation
3. Prevent nuclear terrorism
4. Avoid nuclear accidents
5. Cease the immorality of threatening mass murder
6. Reverse the concentration of power
7. Promote democratic openness
8. Halt the drain on resources
9. Heed warnings by distinguished leaders
10. Meet our responsibility

[Times Roman] Elaboration of the Ten Reasons

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* Member of Executive Committee

This list was last updated on 27 September 2002.

New text for How to Get to Zero

1. Go to How to Get to Zero: <http://www.zero-nukes.org/howtogettozero.html>
2. In index at top of page, go to Scenarios for Achieving Zero Nuclear Weapons.
 - (a) Strike "By Military Professionals" & "By Civilians"
3. Go to Scenarios section: <http://www.zero-nukes.org/howtogettozero.html#scenariosforachieving>
 - (a) In introductory paragraph strike "s" in proposals, to read proposal@zero-nukes.org
 - (b) Underline "Your Feedback" and link to <http://www.zero-nukes.org/yourfeedback.html#feedbackform>
 - (c) Strike "Ideas of Military Professionals [to be added]" & "Ideas of Civilians [to be added]"
4. Add a lengthy new section, starting with index of entrees by name with linkage to below where their entrees appear, as follows:

[this index comes after the introductory paragraph]

- Jonathan Dean
- Commander Robert Green
- Morton H. Halperin
- Middle Powers Initiative

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Jonathan Dean

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[block in on left as a paragraph insert
photo of Jonathan Dean, somewhat reduced in size
from <http://www.ucsusa.org/news.cfm?newsID=217>]

[text on right in italics]

As a member of the U.S. Foreign Service, [Ambassador Jonathan Dean] [<http://www.ucsusa.org/news.cfm?newsID=217>] served as U.S. representative to the NATO-Warsaw Pact force reduction negotiations in Vienna between 1973 and 1981. Since 1984 he has been advisor on international security issues to the Union of Concerned Scientists.

Getting Serious about Nuclear Disarmament

December 2002

[sub-box. Arial. "Summary" in 12 pt., text in 11 pt.]

Summary

The danger that nuclear weapons might be used appears to be increasing at this time. The situation as regards nuclear proliferation and nuclear disarmament has seriously deteriorated and risks becoming even more serious.

Action is needed to neutralize nuclear arsenals. Fourteen steps are proposed:

- (1) In stage one reduction of U.S. and Russia arsenals to 1,000 warheads each.
- (2) U.S. and Russia end production of fissile material, dismantle all reduced warheads, and turn over fissile material to the International Atomic Energy Agency (IAEA).
- (3) China, the United Kingdom, France, Israel, India, and Pakistan join a system of nuclear controls.
- (4) In stage two a level of 200 warheads for U.S., Russia, China, UK, and France and 100 each for India, Pakistan, and Israel.
- (5) Reduced weapons dismantled and fissile material turned over to IAEA.
- (6) Remaining arsenals put in monitored storage.
- (7) Delivery systems reduced.
- (8) Warhead storage hardened and defended by owner states.
- (9) With advanced notice, stored nuclear weapons could be withdrawn in a national emergency.
- (10) Each weapon state could retain up to three operational warheads.
- (11) Weapon states could retaliate jointly against use or threatened use of nuclear weapons.
- (12) Establish a more effective non-nuclear proliferation regime.
- (13) Achieve effective control of biological weapons.
- (14) If UN Security Council cannot agree on remedial action to deal with non-compliance on nuclear or biological control agreements, five states may take joint action against the offender.

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Current Situation of Nuclear Disarmament

Next to war itself, nuclear weapons represent the greatest continuing danger to humanity, extending, at least in theoretical calculations, to the extinction of the human species. Viewed objectively, **that danger appears to be increasing at this time.**

Even those opposed to possible war in Iraq must admit that the Bush administration has energetically pursued the issue of possible proliferation of nuclear weapons to rogue states and terrorists. But the administration has done this unilaterally and at the cost of **ignoring** or even condoning the **nuclear weapons activities of states which already possess nuclear arsenals.**

There is justified **worry about the security of the Russian nuclear arsenal** from theft and diversion. It is also a fact that Russia has revoked its no-first-use policy and has repeatedly failed to reach agreement with the United States on transparency exchange of information about the numbers and locations of each government's nuclear warheads.

China, France, the UK, two recent proliferants, India and Pakistan, and Israel, a long-time proliferant, have joined the United States in the partnership against terrorism, and their nuclear arsenals are apparently viewed as benign, although, for one, India and Pakistan continue at loggerheads. The administration argues that both Iraq and Iran are moving toward development of nuclear weapons. North Korea has revealed itself as a two-time violator of the Non-Proliferation Treaty. Obviously, **the state of non-proliferation is not good.**

Nor is the situation of nuclear disarmament. In the **May 2002 Moscow agreement**, the U.S. and Russia agreed to take several thousand warheads off operational alert and to reduce the levels of deployed strategic warheads to about 2,000 for each country. But there is **nothing enduring about this transaction.** The reduced warheads will be **stored for possible redeployment.** There is **no commitment to further reductions.** **Tactical nuclear warheads were not constrained or reduced.**

For its part, the **U.S. has annulled the ABM Treaty** with its limit on the number of deployed missile interceptors, and is energetically pursuing a program of missile defense including ultimate weaponization of space. In the long term, these actions will result in increasing the nuclear arsenals of the other nuclear weapon states. U.S.-Russian negotiation in the Clinton administration to carry out monitored destruction of warheads withdrawn from operational deployment has been dropped.

The U.S. has retained its own first-use policy and has **lowered the nuclear threshold for possible use of U.S. nuclear weapons:** The U.S. Nuclear Posture Review submitted to Congress at the beginning of 2002 threatened use of nuclear weapons in response to the use of chemical and biological weapons and "unforeseen circumstances" and broadened the circle of potential target states. The administration followed this action with a security doctrine which threatened preemptive attack, possibly including the use of nuclear weapons, on those preparing to attack the United States.

In the 2002 meeting of the Preparatory Committee for the 2005 Review Conference on performance of the Non-Proliferation Treaty, the Bush administration representative indicated that the administration considered null and void commitments undertaken by the Clinton administration at the 2000 NPT review conference.

Of the eight known nuclear weapon states – U.S., Russia, China, UK, France, India, Pakistan, and Israel – only two, the U.S. and Russia, have accepted specific limits on the size of their deployed nuclear arsenals. The **United States** has refused to ratify the Comprehensive Test Ban Treaty and appears to be **edging toward resumption of nuclear tests** to develop earth penetrating warheads. There has been no progress towards a treaty to end production of fissile material for nuclear weapons.

The evidence seems incontrovertible that **the situation as regards nuclear proliferation and nuclear disarmament has seriously deteriorated** and risks **becoming even more serious.**

Action Needed

If this situation is viewed rationally (rather than from the viewpoint of current political feasibility), then, logically, what is needed to cope with it is international action to **get serious about nuclear disarmament** while simultaneously **tightening the non-proliferation regime for both nuclear and biological weapons.** The dangers from chemical weapons appear more under control, given a relatively effective international regime and the very large amounts of chemical weapons needed for strategic attack, though dangers of small-scale, localized, terrorism remain. However, given greatly increased concern over the use of biological weapons, there is little prospect of gaining agreement to far-reaching moves on nuclear disarmament without dealing at the same time with the biological weapons issue by establishing a more effective non-proliferation regime for both types of weapons. At the same time, only serious moves of nuclear disarmament will make politically feasible this second action of tightening the non-proliferation regime.

Neutralizing Nuclear Arsenals

Nuclear disarmament might best be pursued through a program of “neutralizing” nuclear arsenals. Neutralizing nuclear arsenals can be achieved by reducing the national holdings of all known nuclear weapon states to a minimal residual force which is then immobilized by separating warheads from launchers and storing both under international monitoring on the territory of the owner state. The following individual steps are needed:

(1) **The U.S. and Russia** should agree to reduce their total arsenal of nuclear weapons to **one thousand warheads each**, this total to include all strategic and tactical, deployed and stored warheads.

(2) The two governments would agree to **exchange full information** on the nature, types, amounts and location of existing warheads and fissile material, to conclude **a bilateral (later multilateral) agreement** to formally **end production of fissile material** for weapons, to **dismantle all reduced warheads** under bilateral supervision, and to **turn over fissile material** from these weapons to the **International Atomic Energy Agency (IAEA)** for monitored secure storage.

(3) These actions would be dependent on agreement by **the remaining nuclear weapon states** – China, UK, France, Israel, India and Pakistan – to **join in a system of nuclear controls**, to include no increase agreements and exchange of information on their nuclear arsenals and their agreement to an international treaty ending production of fissile material for the nuclear weapons.

(4) **In a second stage**, all the nuclear weapon states would drastically reduce their nuclear arsenals to **a level of 200 each total warheads for the NPT weapon states** – U.S., Russia, China, UK, and France – **and 100 each for India, Pakistan and Israel.**

(5) **Reduced weapons would be dismantled** and the **fissile material turned over to the IAEA** for secure storage.

(6) **Remaining arsenals would be placed in storage** on the territory of the owner state and placed under multilateral monitoring, either by the IAEA, by mixed teams of owner state nationals, or by a combination of the two.

(7) **Delivery systems** – missiles and nuclear-capable aircraft – **would be reduced** and limited in conformity with warhead reductions in order to reduce the danger from concealed weapons.

(8) For the same reason, **warhead storage** could be in up to ten separate sites on the territory of owner states, which could be **hardened and defended** by owner state forces, including on-site missile defenses.

(9) **Stored nuclear weapons could be withdrawn** by the owner state in a situation of **national emergency**, but not without giving notice. Monitors would not seek to prevent reopening of storage sites, but would warn all other participants in the system if this occurred.

(10) If concern over possible cheating remains high, in order to further protect against the possibility of concealed weapons, **each weapon state** could be permitted to **retain up to three operational warheads** with an equal number of single warhead ground or sea launchers, sufficient for damaging retaliation against an offender, but not enough to launch decisive attack on another state.

(11) Weapon state governments would agree among themselves to **retaliate jointly** against any of their number or any other state or organization which used or threatened use of nuclear weapons.

(12) Also necessary is **a more effective non-nuclear proliferation regime**, to include compulsory adherence both to normal IAEA safeguards and to the additional (post-Iraq 1991) protocol of the IAEA, acceptance of the right of the IAEA to place sensors of all kinds on the territory of member states, and agreement among all states parties to the NPT that efforts to avoid these requirements will be met with sanctions by other parties to the treaty, including the use of military force.

This system would make large-scale nuclear surprise attack, and accidental or unauthorized nuclear launch nearly impossible, as well as diversion of nuclear warheads or fissile material. It would be **a giant step toward nuclear disarmament**, representing the final stage of nuclear disarmament before elimination of nuclear weapons.

(13) This degree of nuclear disarmament would be possible only if there is **effective control of biological weapons**, including an effective compliance regime. Therefore, it could be accepted only if there were an agreed compliance system, including full transparency, for the Biological Weapons Convention, backed by explicit agreement among member states to take joint military action against violators as an integral part of the compliance regime.

(14) If there still is strong continuing **concern about the possibility of non-compliance and concealed weapons** after the steps described, it could also be agreed that, in the event there is evidence of non-compliance on either nuclear or biological control agreements, but the UN Security Council cannot agree on a course of remedial action, any five parties to the Treaty may take **joint action against the offender**. In these circumstances, insistence on retaining nuclear or biological weapon capability would be considered a greater evil than the use of armed force.

These steps and the greatly decreased possibility of use or threat of use of nuclear weapons they will bring **will create the conditions**, including greater cooperation among nuclear weapon states, dependable transparency, and enhanced effectiveness of the Security Council and the UN system, **necessary for final and complete elimination of nuclear weapons**.

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Commander Robert Green, Royal Navy (Ret'd)

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from [/http://www.disarmsecure.org/people/.html](http://www.disarmsecure.org/people/.html)]

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During his service in the British Royal Navy from 1962 to 1982, Commander Robert Green [\[http://www.disarmsecure.org/people.html\]](http://www.disarmsecure.org/people.html) flew nuclear-armed aircraft for nine years and served in the intelligence service. During his navy career he became disillusioned with nuclear deterrence. In 1991 he became chair of the UK branch of the World Court Project. He is now co-coordinator with his wife, Kate Dewes, of the Peace Foundation's Disarmament & Security Centre in New Zealand.

Where Next For Nuclear Abolitionists?

November 2002

[sub-box. Arial. "Summary" in 12 pt, text in 11 pt]

Summary

In the United States the Bush administration has a lengthening track record of rejection of international treaties, linked to its near-contempt for international law and single-minded drive for military "full spectrum". The Bush administration has doubts about traditional nuclear deterrence policies. Instead it has revived ballistic missile defense. In dealing with Russia on strategic weapons, it has excluded China with negative implications for nuclear proliferation in Asia. It has made use of nuclear weapons more likely.

The key to progress toward nuclear abolition is to focus on practical projects to reduce the risk of nuclear war. Four candidates are offered for consideration:

- (1) Challenge launch-on-warning.
- (2) Challenge nuclear deterrence.
- (3) Offer more credible alternatives.
- (4) Intensify non-violent direct action upholding the law.

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Following the Bush administration's Nuclear Posture Review (NPR), the April 2002 preparatory meeting at the UN in New York for the next review of the Non-Proliferation Treaty (NPT) in 2005, and the 2002 UN General Assembly Disarmament Session, this is **an appropriate moment to assess where the international anti-nuclear movement should focus their energies.**

First, however, consideration will be given to how prospects for nuclear abolition could be affected by US responses to growing doubts about nuclear deterrence, including its plans for Ballistic Missile Defence (BMD). The focus on the US reflects the overwhelming influence of the world's first and sole remaining nuclear-armed superpower. The Bush administration has a lengthening track record of rejection of international treaties, linked to its near-contempt for international law and single-minded drive for military "full spectrum dominance".

There is thus **an urgent need to explore** "outside the box" ways to make progress towards nuclear abolition. These should try to build upon the few current campaigns which seem to have some traction, and lessons learned from **three successful past campaigns**: the World Court Project; the "Ottawa Process" which led to a treaty banning anti-personnel landmines, and the campaign for an International Criminal Court.

Responses to Doubts about Nuclear Deterrence

Almost the only encouraging aspect of current US nuclear policy is Bush's public admission of doubt about the effectiveness of nuclear deterrence against the primary threat: extremists armed with weapons of mass destruction (WMD). What is more, both his Vice-President Dick Cheney and Secretary of State Colin Powell rejected use of nuclear weapons against Iraqi forces in the Gulf War, [1] which means that any future comparable US nuclear threat would lack credibility.

One of Bush's responses has been to revive BMD in both its national and "theatre" forms, and to augment conventional offensive strike systems. Through this combination, he hopes to strengthen conventional deterrence and raise the threshold for use of strategic nuclear weapons. At first sight, this would appear to be a positive development for nuclear disarmament, especially after Bush and Putin signed the "Strategic Offensive Reductions" Treaty and with inauguration of the new NATO-Russia Council in May 2002.

Unfortunately, **Bush's piecemeal approach with Russia excludes China**, the only other nuclear-armed state with superpower potential. There are no plans for a NATO-China Council, or for sharing BMD technology with China. On the contrary, China understandably perceives current US collaboration with both Japan and Taiwan to develop theatre BMD systems as threatening its land-based nuclear-armed intercontinental ballistic missiles, of which currently it is believed to have less than 20. As it modernises its arsenal of only about 400 nuclear warheads, China will be able to use US theatre BMD plans to justify expanding its nuclear capability. This will inevitably ratchet up India's, to which Pakistan will feel pressured to respond. Thus one long-term consequence of deploying BMD will be to stifle any further progress in nuclear disarmament, because the US will argue that it cannot make further reductions in light of these developments, and Russia will feel forced to follow suit.

Another US response to doubts about nuclear deterrence has been to make nuclear weapon use more likely. The NPR recommends **using low-yield nuclear weapons against hardened or deeply buried non-nuclear WMD targets or bunkers** where conventional weapons might be ineffective. This might be driven by the perceived need to restore US credibility in light of the Cheney/Powell decision in the Gulf War. However, it is an incitement to nuclear proliferation, as it **would gut US assurances not to use nuclear weapons against non-nuclear NPT signatory states**, including the "axis of evil" trio of Iran, Iraq and North Korea plus Libya and Syria. Since this became clear, the UK government has echoed its "master's voice" by warning that it too is prepared to use nuclear weapons if its forces, not just national territory, are subjected to WMD attack.

Where Next for Nuclear Abolitionists?

One positive spin-off from US nuclear plans, the South Asian nuclear crisis, and US allegations of revived nuclear weapon development by Iraq and North Korea is that **the issue of nuclear weapons is again high on the international media agenda**. Of course, use of even one low-yield nuclear weapon by the US for the first time since Nagasaki (or by Israel) would cause worldwide outrage and reawaken the anti-nuclear mass movement - as would a nuclear war between India and Pakistan.

Nevertheless, acquisition by the five recognised nuclear states of their nuclear arsenals involved probably their greatest investment in financial, political and human terms since the Second World War. After over fifty years of their own propaganda, none of these governments would risk breaking out of the nuclear club without finding a replacement system with clear advantages to balance the perceived loss of security.

In struggles to overthrow oppression and injustice like the abolition of slavery and South African apartheid, there was often a phase when progress stalled before the status quo was shifted. The seemingly invincible regressive forces, no longer bothering to pay lip-service to progress, openly hardened their positions. One reason for this was awareness by the regressive forces that their arguments were failing, especially on the two anvils of practicality and the law.

At such moments, **the key to further progress is to focus on practical projects which go to the heart of the issue and uphold the law, while helping to reduce the risk of nuclear war and shift the pro-nuclear mindset**. Using these criteria, the following four candidates are offered for consideration:

- 1) **Challenge Launch-on-Warning.** The NPR claims that US strategic nuclear forces are not on "hair-trigger" alert. How does this square with persisting reports that, despite Bush's determination to transform the US relationship with Russia and to "replace Mutual Assured Destruction with Mutual Cooperation", some 2,000 strategic nuclear warheads on each side are still held at "launch-on-warning" readiness? This must be challenged, using Alan Phillips' excellent Canadian Ploughshares paper, and perhaps by expanding the US "Back from the Brink" campaign. [2]
- 2) **Challenge Nuclear Deterrence.** Following directly from (1), the world must be told that the pro-nuclear deterrence lobby is faltering. Winning this argument is crucial to shifting the mindset against nuclear weapons, especially among the military. Little further progress

towards nuclear abolition is possible without explaining why nuclear deterrence does not work, is immoral and unlawful, and there are more credible and acceptable alternative security strategies. [3]

- 3) **Offer More Credible Alternatives.** The UK holds most promise of becoming the first nuclear state to reject nuclear deterrence. It has cut its nuclear arsenal to about 185 warheads, the smallest of the recognised nuclear states, deployed in one delivery system: 16 submarine-launched US Trident ballistic missiles in each of four submarines, one of which is deployed at a notice to fire of "days". The UK government has to decide whether to replace Trident by around 2007. Exploiting US plans to convert four Ohio class Trident-equipped submarines to conventional armament, I have therefore proposed that the UK government should replace its nuclear arsenal with precision-guided, conventionally-armed cruise missiles plus special forces. [4] This would provide a more credible deterrence system, which the Navy would in principle support. The first "breakout" by one of the five permanent members of the UN Security Council would be sensational: the UK government would throw its weight behind the nuclear abolition movement, as Canada did so effectively in the campaign for a treaty banning landmines.

Intensify Non-Violent Direct Action Upholding The Law. Meanwhile, as another incentive for the governments of nuclear states to consider non-nuclear security options, carefully focused and sustained non-violent direct action campaigns in the nuclear states to uphold the law should be intensified. The UK Trident Ploughshares campaign, relying on legal attrition supported by the Acronym Institute, World Court Project, CND and other anti-nuclear groups, continues to embarrass the government, Royal Navy and police, with growing support from church leaders, politicians and such stars as Sir Sean Connery. The judiciary and government have been forced into a legal debate. This has moved beyond the 1996 World Court advisory opinion to confront the legal status of nuclear deterrence and possessing specific types of nuclear weapon with readiness and intent to use them, even against non-nuclear states and extremists. [5]

Notes

1. Colin Powell, 'A Soldier's Way' (Hutchinson, London, 1995), pp485-486.
2. See <http://backfromthebrink.policy.net/>; also Canadian Ploughshares Working Paper 02-1 'No Launch on Warning' by Alan Phillips MD (www.ploughshares.ca).
3. Robert Green, 'The Naked Nuclear Emperor: Debunking Nuclear Deterrence' (Disarmament & Security Centre, PO Box 8390, Christchurch, New Zealand, 2000) (www.disarmsecure.org).
4. 'Conventionally-Armed UK Trident?' (RUSI Journal, February 2002), pp31-34, available on request from robwcpuk@chch.planet.org.nz.
5. See www.tridentploughshares.org, www.acronym.org.uk, www.gn.apc.org/wcp, www.cnduk.org.

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Morton H. Halperin

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from <http://www.cfr.org/bio.php?id=43>]

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Morton H. Halperin [<http://www.cfr.org/bio.php?id=43>] is a senior fellow of the Council on Foreign Relations. He has served in the Department of Defense and National Security Council in the Clinton, Nixon, and Johnson administrations. He was also director of the American Civil Liberties Union (ACLU). He offered his ideas on steps toward zero nuclear weapons in an article on "Defining 'Eliminating' Nuclear Weapons" [<http://www.acronym.org.uk/dd/dd19/19zero.htm>] in *Disarmament Diplomacy*, October 1997.

Defining "Eliminating" Nuclear Weapons

October 1997

Excerpts

In international disarmament negotiations there is a stalemate between non-nuclear weapon states which call for a timetable for the elimination of nuclear weapons and the nuclear weapon states which have refused to commit to a timetable. The way out of this impasse is to redefine the end state of "zero" nuclear weapons.

"The current definition of zero assumes that nuclear States, as well as all other States, will progressively destroy their entire nuclear arsenal until there are no nuclear weapons left in existence. . . ."

". . . . Since nuclear weapons pose a threat to international security, any viable long-run solution must be based on the equality of all States, prevent all States from relying on the use or the threat of the use of nuclear weapons for any purpose, and eliminate the danger of accidental, inadvertent, or unauthorized use of nuclear weapons.

"A redefinition of zero nuclear weapons that meets this criteria, is verifiable, and does not depend on fundamental changes in the nature of international politics could consist of the following:

"First, firm international security assurances - both negative and positive - must be put in place with the support of the UN Security Council. The international community should pledge to respond collectively if a State threatens to use nuclear weapons against any other State - regardless of the context - or if a State reverses the process of nuclear disarmament described below. In addition, all States should agree not to threaten to initiate the use of nuclear weapons or to use such nuclear threats first (i.e., not to seek to use nuclear weapons as an instrument of policy).

"**Second**, all nations must **accept the ruling of the International Court of Justice on nuclear weapons and commit to the complete nuclear disarmament** contained in the Non-Proliferation Treaty. . . .

"Third, this international cooperation on nuclear disarmament should take the form of all States agreeing to **implement a step by step plan to remove nuclear weapons from their arsenals and render them useless**. . . .This process. . . would dictate that all States:

1. Agree to **destroy all warheads in excess of 2,000** and publicly describe both their arsenal of nuclear warheads and the delivery systems to which they are or may be mated.
2. Agree **not** to make any efforts to **improve or expand their nuclear arsenals**.
3. Agree to **progressively separate their existing nuclear warheads from delivery systems** by removing a certain percentage of such warheads each year.
4. Begin a process of **separating nuclear cores from nuclear warheads** once all warheads had been separated from their delivery systems.
5. Begin a process of reducing the number of nuclear cores from the maximum of 2,000 agreed to at the start of the disarmament process. Over a period of an additional five years, all States would **reduce their storage of nuclear cores to no more than two hundred**.

"**Zero nuclear weapons** would thus be defined as **an end state of no more than eight nuclear States, each with no more than two hundred nuclear cores separated from their warheads and delivery systems**. (States that now have fewer than two hundred warheads would not increase to that number). . . .

"This end state would further dictate that the **remaining nuclear cores** be separated from their warheads and delivery systems in a manner ensuring that they **could not be mated within hours or days**. . . ."

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Middle Powers Initiative

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from <http://www.gsinsitute.org/programs/index.shtml>]

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The Middle Powers Initiative [<http://www.middlepowers.org/mpi/about/>] is an international civil society coalition formed to work with respected non-nuclear countries in persuading the

nuclear-armed states to reduce nuclear risks and initiate the elimination of nuclear arsenals. The campaign is guided by an International Steering Committee, chaired by Canadian Senator Douglas Roche, O.C.. The Middle Powers Initiative functions as a program of the Global Security Institute. [<http://www.gsinitiative.org/index.shtml>]

In November 2002 the Middle Powers Initiative published a Consultation Report on Priorities for Preserving the Nuclear Non-Proliferation Treaty in the New Strategic Context. [<http://www.middlepowers.org/mpi/archives/000153.shtml#000153>] The recommendations lay out an agenda for next steps toward zero nuclear weapons.

Priorities for Preserving the Nuclear Non-Proliferation Treaty in the New Strategic Concept

November 2002

Recommendations

The Middle Powers Initiative urges governments to work together to obtain the following priority results in fulfillment of the nuclear disarmament and non-proliferation obligations under the NPT, outlined in the 13 Steps document of 2000:

1. Strategic Nuclear Arms Reductions: Implementation of the May 2002 U.S.-Russian Strategic Offensive Reductions Treaty (Moscow Treaty) in accordance with NPT principles so that downloaded warheads and their delivery systems are irreversibly dismantled in a transparent and verifiable manner; dealerting the remaining deployed U.S. and Russian nuclear forces in accordance with the NPT commitment to further reduce the operational status of nuclear weapons systems.

2. Tactical Nuclear Arms Reductions: Unilateral removal by the United States of its remaining tactical nuclear bombs deployed under NATO auspices in Europe; creation of a wider process and control of U.S. and Russian tactical weapons through

- a) reporting on the 1991-1992 Presidential initiatives;
- b) formalizing these initiatives by establishing a verification mechanism;
- c) reciprocally exchanging information – in accordance with existing NATO proposals – regarding readiness, safety, and sub-strategic forces; and
- d) commencing U.S.-Russian negotiations on reducing non-strategic nuclear weapons.

3. Non-Use of Nuclear Weapons: Reversal of trends toward expansion of options for use of nuclear weapons, including against non-nuclear weapon countries, as exemplified in the Russian National Security Concept of January 2000 or the U.S. Nuclear Posture Review of January 2002 and the U.S. WMD Strategy of December 2002; establishment of an absolute refusal of middle power countries in any multilateral or bilateral security alliances to participate in or support the first use of nuclear weapons or to prepare for such use.

4. Ban on Nuclear Testing: Implementation of a total moratorium on nuclear testing; entry into force of the CTBT; closing of all nuclear test sites, including those in Nevada, Novaya Zemlya and Lop Nor.

5. Control of Fissile Materials: Building on heightened awareness of the threat of terrorist use of nuclear devices and materials,

- a) creation of a process of accounting for and control of fissile material holdings on a global scale and in accordance with NPT principles of transparency, irreversibility and verification, with the objective of establishing a worldwide inventory of all weapon-usable fissile materials and nuclear weapons;
- b) commencement of negotiations on a fissile materials ban; and
- c) increased funding for the IAEA eight-point plan to improve protection of nuclear materials and facilities against acts of terrorism.

6. Control of Missile Defenses and Non-Proliferation of Missiles: Initiation of negotiations aimed at the control of missile defenses to avoid obstruction of the NPT Art. VI process and to promote international stability and the principle of undiminished security for all; prevention of missile proliferation, through

- a) ad hoc arrangements (as with North Korea); and
- b) developing proposals for a missile flight test moratorium and missile control regimes combining disarmament and non-proliferation objectives.

7. New Agenda Coalition Resolutions: Support for the full implementation of the two New Agenda Coalition Resolutions, “Towards a Nuclear-Weapon-Free World: the Need for a New Agenda” (A/C.1/57/L.3/Rev.1 of 18 October 2002) and “Reductions of Non-Strategic Nuclear Weapons” (A/C.1/57/L.2/Rev. 1 of 23 October 2002).

8. Disarmament and Non-Proliferation Education: Full implementation of the recommendations made in the new UN Study on Disarmament and Non-Proliferation Education (UN/A/57/124), with particular attention to recommendations 1, 4, 8, 13, 17, 19, 20, 28, 31, 33.

9. Nuclear Weapon-Free Zones: Reaffirmation and strengthening of existing nuclear weapon-free zones, be they established unilaterally, as in Austria, Mongolia and New Zealand, or multilaterally, under the treaties of Bangkok, Pelindaba, Rarotonga, and Tlatelolco, the Antarctica, Outer Space, or Seabed Treaties; support for the emerging nuclear weapon-free zone in Central Asia and the idea to turn the entire Southern hemisphere into a nuclear weapon-free zone; promotion of additional new nuclear weapon-free zones, especially in the Northern hemisphere.

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