Beyond arms control: challenges and choices for nuclear disarmament

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Acronyms

ABM	Anti-Ballistic Missile
AF&F	Arming, Fusing, and Firing System
AWE	Atomic Weapons Establishment
BTWC	Biological and Toxin Weapons Convention
CMRR	Chemical and Metallurgy Research Facility Replacement
CTBT	Comprehensive Test Ban Treaty
CWC	Chemical Weapons Convention
DOE	Department of Energy
DPRK	Democratic People's Republic of Korea
E3	France, Germany, United Kingdom
E3+3	China, France, Russia, United Kingdom, United States, and Germany (aka P5+1)
EU	European Union
EUF	Enriched Uranium Facility
FM(C)T	Fissile Materials (Cut-off) Treaty
GTS	Gas Transfer System
HEU	Highly Enriched Uranium
IAEA	International Atomic Energy Agency
ICBM	Intercontinental Ballistic Missile
ICJ	International Court of Justice
ICNND	International Commission on Nuclear Non-Proliferation and Disarmament
INF	Intermediate Nuclear Forces Treaty
ISIS	Institute for Science and International Security
LANL	Los Alamos National Laboratory
LEU	Low-Enriched Uranium
MDA	Mutual Defence Agreement
NAM	Non-Aligned Movement
NATO	North Atlantic Treaty Organization
NFU	No First Use

NG	Neutron Generator
NGO	Non-Governmental Organization
NIF	National Ignition Facility
NNSA	National Nuclear Security Administration
NPT	Nuclear Non-Proliferation Treaty
NSG	Nuclear Suppliers Group
NWC	Nuclear Weapons Convention
P5	China, France, Russia, United Kingdom, United States
P5+1	China, France, Russia, United Kingdom, United States, Germany (aka E3+3)
PAROS	Prevention of an Arms Race in Outer Space
PSA	Polaris Sales Agreement
RCW	Reaching Critical Will
RRW	Reliable Replacement Warhead
SIPRI	Stockholm International Peace Research Institute
START	Strategic Arms Reduction Treaty
TCBM	Transparency and Confidence-Building Measure
UAV	Unmanned Aerial Vehicle
UN	United Nations
UPF	Uranium Processing Facility
US	United States of America
USSR	Union Soviet Socialist Republics
USSTRATCOM	United States Strategic Command
WILPF	Women's International League for Peace and Freedom
WMD	Weapons of Mass Destruction
WSLF	Western States Legal Foundation

Executive Summary

Chapter 1: Rhetoric vs. reality: the political economy of nuclear weapons and their elimination

A state's interest in acquiring and retaining nuclear weapons is the product of multiple institutions and constituencies dispersed throughout its government, corporate, academic, and political spheres of power. All nuclear-armed states wield these weapons because specific constituents benefit from investment in the weapons' production and maintenance. Further, these interests within nuclear-armed states reinforce and invigorate similar interests in other nuclear-armed states.

This institutional inertia that maintains the nuclear-armed state and militates against concrete steps toward disarmament is itself encapsulated in a specific geopolitical and domestic order best understood as imperialism. States with imperial ambitions utilize nuclear weapons, as one means among many, to coerce other states on virtually every matter of international relations. Seen from this angle, nuclear arsenals are not "stockpiles" hidden away in silos and subs awaiting a dreaded day of possible use, but instead are one of many tools used by imperial states to maintain global inequalities between states and within states.

The United States provides an excellent model to explore both the institutional and imperial underpinnings of the nuclear-armed state. The US is the hegemonic nuclear-imperial state. It provides the clearest illustration of the strategic value of these weapons within the current global political economy. While the other nuclear-armed states have similar interests and constituencies, US nuclear weapons exist within the broader context of the country's unrivaled military supremacy—its military budget, foreign military bases, and history of military interventions. US nuclear weapons are uniquely entrenched in the apparatus and theology of the United States' hegemonic world order. Other nuclear-armed states fit into this order; their policies both take direction from the United States and help provide cover

for US policy. Thus, they stand together at international fora, confirming each other's need for a strong "nuclear deterrent" and demanding stricter measures to stem further proliferation. Despite this, the international community looks to the US government to "take the lead" in nuclear disarmament. Yet a careful analysis reveals that the *direction* the United States is leading—which other nuclear-armed states either implicitly or explicitly support—is not toward disarmament at all, but toward the indefinite retention of nuclear weapons in order to preserve the present global order.

Although the Obama administration has committed the United States to nuclear disarmament in stronger rhetorical terms than any administration in recent memory, its nuclear weapons programmes and policies are actually designed to lock in a virtually insurmountable advantage over other nations in the area of nuclear weapon technologies, while legitimating a more bellicose conventional military and diplomatic stance against accused proliferators. This foreign policy is being given ideological cover by a group of elder (Cold Warrior) statesmen who have in recent years donned a mantle of sober anti-nuclearism, but who remain politically, administratively, and financially invested in the long-term maintenance of the US nuclear weapons complex. The same strategy is being mirrored by the other principal nuclear weapons states, also seeking to use anti-nuclear rhetoric as a weapon against non-nuclear states, particularly those that would transgress the established geopolitical order.

At face value the goals of this political project include non-proliferation, achieving new arms control treaties, new stringent fissile material controls, and the eventual elimination of nuclear weapons, all ostensibly to make the world universally more secure. These aims—to the extent that they are genuine, especially in the case of the last one—are in fact entirely subordinate to the two instrumental goals driving current US nuclear weapons policies.

The first is to secure domestic political conditions ensuring the long-range funding of nuclear weapons programmes. This means that arms control treaties and platitudes that aspire to a "nuclear free world" will be traded for multi-billion dollar infrastructure investments in the nuclear weapons complex, as well as the programmatic authority to design new weapons. This is entirely about supporting and placating the politically powerful laboratories, corporations, universities, Congress members, and military branches that embody the nuclear weapons complex.

The second instrumental goal of this political project is to preserve asymmetric military dominance for the nuclear weapon states, a dominance which is inversely related to waning economic and political hegemony. This massive boosting of "defence" spending relative to all other nations is itself a means toward another end: to sustain a world in which the richest one percent of adults own more than 40 percent of all wealth, while almost half the planet's population own less than 1 percent. Thus the international and domestic politics surrounding nuclear weapons are, in the most straightforward sense, about political economy, the distribution of wealth, and control over social and economic development.

Within this context "disarmament" is promoted as a vague "vision," which can only be reached through the rigorous pursuit of preconditions—the absolute assurance that no state will seek to develop nuclear weapons at any point in the future under any circumstances. In the meantime, the United States claims that as long as nuclear weapons exist, it will need to maintain an "effective deterrent" to any possible nuclear "outbreak". More than just keeping nuclear warheads in its quiver, this "hedge," as it has been called by all post-Cold War American administrations, means investing billions of dollars in a modernized nuclear weapons complex capable of maintaining existing weapons indefinitely.

US leadership against any real de-valorization of nuclear weapons has been more or less matched by Russia and has prompted other nuclear-armed states, such as the United Kingdom and France, to begin outlining policy recommendations for a "nuclear weapon free world" that do not actually include steps for disarmament. Like the United States, these governments focus almost exclusively on strengthening or demanding new non-proliferation restrictions to be imposed on non-nuclear weapon states, while at the same time maintaining the status quo (i.e. no real progress) on nuclear disarmament.

In the context of the nuclear Non-Proliferation Treaty (NPT), this spells danger for the 2010 Review Conference. Trading disarmament rhetoric for practical measures on non-proliferation will be unlikely to satisfy most non-nuclear weapon states. Putting some arsenal reductions on the table as proof of intent to move toward eventual disarmament, while simultaneously investing heavily in nuclear weapons research and production facilities capable of building the nuclear threat anew, and far into the future, is

not disarmament. If the danger of nuclear war is to be eliminated, ceasing to plan and build for an eternal nuclear threat must come early, not late, in the process, and it will have to be linked to a more general demilitarization and demobilization of US, Russian, European, and other major military forces.

Recommendations from Chapter 1:

- If the danger of nuclear war is to be eliminated, ceasing to plan and build for an eternal nuclear threat must come early, not late, in the process, and it will have to be linked to a more general demilitarization and demobilization of US, Russian, European, and other major military forces. All states possessing nuclear arsenals should halt research, development, testing, and component production while reductions of arsenals are in progress, not afterwards. Production and research facilities should be subject to an intrusive verification regime at the earliest possible time. States should reduce nuclear arsenals in a manner that supports concurrent general disarmament of "conventional" forces.
- Civil society and government leadership in non-nuclear weapon states need to recognize the dangers of uncritically endorsing the rhetorical "vision" espoused by the Obama administration, four horsemen, and other nuclear elites, and instead push forward a concrete agenda for nuclear disarmament to be pursued in tandem with non-proliferation measures. Within this concrete agenda for nuclear disarmament, these actors should recognize the paradoxically pro-nuclear weapon aims of the United States that can be accomplished through ratification of the Comprehensive Test Ban Treaty (CTBT) under current conditions.
- Taking this into account, disarmament NGOs in the United States and other nuclear weapon states should rigorously oppose funding for nuclear weapons research, design, and production and should oppose construction of any new nuclear weapons complex facilities as a condition of CTBT ratification. If this cannot be accomplished, perhaps it would be best to forgo CTBT ratification entirely, focusing instead on budget and infrastructure developments within nuclear weapon states.

Chapter 2: NATO nuclear sharing: an anachronistic obstacle to nuclear disarmament and regional security

The North Atlantic Treaty Organization (NATO)'s 1999 Strategic Concept asserts that strategic nuclear weapons provide the "supreme guarantee" of Alliance security. Three NATO members—the United States, United Kingdom, and France—possess over 10,000 nuclear weapons between them. Four NATO members that are formally non-nuclear weapon states parties to the nuclear Non-Proliferation Treaty (NPT)—Belgium, Germany, Italy, and the Netherlands—maintain "nuclear sharing" arrangements under which they could be given wartime use of some of the 200 American-owned and controlled nuclear free-fall bombs believed to be still stored in Europe. Until 2001, Greece, and until 2005, Turkey, also participated in nuclear sharing. Neither of these countries maintain active nuclear forces now, though Turkey still hosts US nuclear weapons on its soil.

During the Cold War, NATO nuclear sharing was credited with persuading some European countries to give up their national nuclear weapons programmes and join the NPT. Twenty-five of NATO's 28 member states, nominally non-nuclear, rely on nuclear weapons for their national defence. However, this policy now stands in the way of more effective non-proliferation approaches and progress towards building a world free of nuclear weapons.

Since the end of the Cold War, NATO has dramatically reduced the number of nuclear weapons deployed in Europe. However, the weapons, policies, and doctrines that remain in place are disproportionately damaging to relations with Russia and to the non-proliferation regime. They are a Cold War anachronism that undermines European security. Furthermore, nuclear sharing practices are a *prima facie* violation of Articles I and II of the NPT because they involve the eventual transfer by the United States to non-nuclear weapon states control over nuclear weapons. The legal justification for this was set unilaterally by the United States and many states parties to the Treaty acceded to the NPT without being aware of this policy. NATO policies run counter to much of the Programme of Action adopted by NPT states parties at the 2000 Review Conference, notably the commitments to transparency, further reductions in non-strategic weapons, reductions in the operational status of these weapons, and a diminishing role for nuclear weapons in security policies.

Since 1985, many states parties to the NPT, including more than 100 nations in the Non-Aligned Movement, have criticized NATO nuclear policies and have called on NATO members to transform their doctrine and policies to bring them into conformity with their NPT obligations. There are increasing calls from government figures, parliaments, and citizens groups—including in Germany, the Netherlands, Belgium, Italy, and Turkey—for NATO nuclear weapons to be removed from Europe. The NATO Strategic Concept review, to be concluded in late 2010, provides NATO countries with an excellent opportunity to live up fully to their obligations under Articles I and II and to strengthen the NPT by allowing the loophole on nuclear sharing to be closed once and for all.

Recommendations from Chapter 2:

- NATO's non-nuclear members should cease equipping their aircraft and training to use US nuclear weapons in times of war. This would be timely and economically attractive, since all nuclear sharing nations must replace their aging fleets of aircraft over the next decade, and could use this opportunity to reorient defence budgets while giving up the anachronistic nuclear role.
- As part of its Strategic Concept review, NATO should remove US tactical nuclear weapons from Europe and end the policies of nuclear sharing and deterrence based on the potential first use of nuclear weapons. NATO should use this decision in a leverage strategy to persuade Russia to mothball and eliminate its tactical nuclear forces as well.
- These actions should be publicly announced (unlike recent withdrawals) to contribute to a positive atmosphere at the NPT. NATO members should then initiate a further programme of action to strengthen the NPT, including committing to the goal of a nuclear weapon free world and practical steps to achieve this aim.
- To begin this process, at the 2010 Review Conference, NPT states should strengthen the Treaty by declaring that it is binding on all state parties "under any circumstances". NATO member states should issue a joint declaration accepting this and stating their intention to comply promptly.

Chapter 3: US-UK nuclear sharing: deterring disarmament

For over 50 years, the US and UK governments have shared information on the design of nuclear weapons and have traded warhead components, most of which has been unnoticed and unquestioned. The dialogue and trade is not only hidden from nuclear Non-Proliferation Treaty (NPT) meetings and other disarmament conferences—it is often even concealed from diplomats in the two participating countries.

The primary mechanisms for US-UK nuclear sharing are the 1958 Mutual Defence Agreement (MDA) and its amendments—which facilitate the exchange of blueprints, special nuclear material, and components for nuclear weapons—and the 1963 Polaris Sales Agreement, which, with its amendments, has given Britain access to US Polaris and Trident missiles and all the support systems that they require.

These agreements have led to direct collaboration between the United Kingdom's Atomic Weapons Establishment (AWE) and the United States' nuclear weapon laboratories. AWE is now two-thirds owned by two American companies, Lockheed Martin and Jacob's Engineering. The US National Ignition Facility and the UK laser Orion were designed to complement each other in the development of nuclear warheads. The UK Trident warhead is both British and American in design and in terms of its components, several of which were procured from the US labs. The UK had input to plans for the US Reliable Replacement Warhead. US scientists have "borrowed" the hydrodynamic test facilities at Aldermaston. US scientists and software engineers working on simulations of nuclear explosions exchange experimental data and information with their UK counterparts. The two countries are also working together to develop new ballistic missile submarines.

The US has assisted, encouraged, and induced the UK to manufacture and deploy sophisticated thermonuclear weapons. Had the UK been a non-nuclear weapon state, this would be a flagrant breach of Article I of the NPT, which prohibits any nuclear weapon state from assisting a non-nuclear weapon state to develop a nuclear capability. The Treaty is less rigorous in regulating exchanges between those countries which acquired nuclear weapons prior to 1970. However, the Non-Aligned Movement has challenged the legality of the US-UK nuclear sharing practice. While the two countries argue that the MDA pre-dates the NPT, neither country made

this clear prior to the negotiation of the Treaty and did not formally communicate their "special relationship" to other states when they signed and ratified the Treaty.

A case could be made that the exchanges of nuclear weapon components, designs, and information are so comprehensive that they constitute the transfer of nuclear explosive devices in breach of Article I. However, even if this trade was not formally prohibited by Article I, it is damaging because it reinforces the widely-held impression that the Treaty is an unfair bargain. US-UK nuclear sharing also contravenes the obligations of both countries under Article VI, in the context of the preamble of the Treaty. The preamble recognizes the need to make every effort to avert the danger of nuclear war. The effect of the nuclear sharing arrangement is to increase rather than reduce this risk. The preamble also calls for the cessation of the nuclear arms race. The nuclear sharing arrangement has encouraged the UK to produce sophisticated nuclear weapons which Britain would not otherwise have developed, which is inconsistent with ending the arms race.

The US and UK governments are also obliged to fulfill the 13 practical steps agreed at the 2000 NPT Review Conference. In the context of their nuclear sharing arrangements, this includes in particular: increasing transparency of nuclear weapon programmes and stockpiles; reducing operational status of nuclear forces; reducing the role of nuclear weapons in security policies; and making process towards the elimination of their nuclear arsenals.

Recommendations from Chapter 3:

- The US and UK governments should end their exchange of nuclear weapons information and materials in the interest of respecting their obligations under the NPT and promoting rather than deterring disarmament and non-proliferation.
- Other governments and civil society should hold the US and UK governments accountable to their obligations under the NPT and should encourage the US and UK governments to promote disarmament by ending their nuclear sharing arrangements.

- The US and UK governments should instead increase their collaboration on verification, non-proliferation, and disarmament technologies.

Chapter 4: Nuclear energy and the fuel chain: shackling progress toward a nuclear weapon free world

The continued reliance on nuclear power and its possible expansion to accommodate rising energy needs pose a challenge to non-proliferation and to verification of a nuclear weapon free world. With some adjustment, the same facilities and equipment used to produce low-enriched uranium fuel for power reactors can produce high-enriched uranium suitable for use in nuclear weapons. In addition, plutonium by-product from commercial reactors, once separated and reprocessed, can be directly usable in nuclear weapons.

The only truly proliferation-proof "safeguard" would be the global phase-out of nuclear power. In the meantime, proposals to mitigate the risks posed by the proliferation of sensitive nuclear technology should be explored, including a prohibition on plutonium reprocessing and on enrichment of uranium beyond 20% U-235 and the transition of nationally-controlled fuel cycle facilities to international control.

Article IV of the NPT refers to an "inalienable right" of non-nuclear weapon states to develop nuclear energy for peaceful purposes. However, any right must be exercised in conformity with international law, as is illustrated by the NPT itself, which makes the exercise of the Article IV right contingent on obligations not to manufacture or acquire nuclear weapons. More broadly, the Article IV right is subject to limits based upon the environmental and security rights of other states and the global community. Further, while states surely are entitled to develop energy sources as part of the sovereign right of development, that right is subject to restrictions—including on particular energy sources—in the common interest. Accordingly, the qualification of the NPT right to peaceful nuclear energy as "inalienable" should be understood in the context of the NPT bargain, and not as a claim that it is a fundamental aspect of sovereignty. It therefore may be limited or extinguished over time by subsequent developments and agreements.

Recommendations from Chapter 4:

- Governments should increase their support for development of commercially viable renewable and non-carbon emitting sources of energy, and for energy conservation. They should join the International Renewable Energy Agency and work for a rapid transition to the widespread and sustainable use of renewable energy worldwide.
- Governments should work for establishment of a multilateral framework for the production of nuclear fuel that precludes the construction of nationally-controlled fuel cycle facilities and transitions existing facilities to international control, pending the phase-out of nuclear power.
- Governments and industry should phase-out nuclear power and refrain from promoting nuclear power as a means to combat climate change.
- Citizens should work with each other and their governments to promote a carbon-free, nuclear-free future: see www.carbonfreenuclearfree.org for information and ideas.

Chapter 5: The US-India nuclear deal: violating norms, terminating futures

In July 2005, US President George Bush and Indian Prime Minister Manmohan Singh issued a joint statement that laid the ground for a resumption of US and international nuclear aid to India (henceforth the "US-India deal"). Such international support was crucial to the nuclear infrastructure and capabilities developed previously by India. Even the 1974 nuclear weapon test used plutonium resulting from technology and materials supplied by the United States and Canada. Following India's 1974 test, the United States and other countries formed the Nuclear Suppliers Group (NSG) with the aim of preventing exports for commercial purposes from being used to make nuclear weapons. NSG guidelines list specific nuclear materials, equipment, and technologies that are subject to export controls.

In 2008, the NSG, under intense pressure from the US government and other countries hoping to benefit from a nuclear expansion, decided to lift its ban on nuclear trade with India. This decision constituted a blow to the nu-

clear Non-Proliferation Treaty (NPT) and global non-proliferation regime. The NSG exemption will allow India to expand its nuclear arsenal, permitting it to buy fuel for nuclear power reactors on the international market while using scarce domestic uranium in nuclear weapons production. It will also further aggravate tensions with Pakistan, which has signaled that it will respond in kind to a more ambitious Indian nuclear weapons programme. It also serves to further legitimize the possession of nuclear weapons and to encourage nuclear weapon states to ignore their nuclear disarmament obligations under the NPT.

The US-India deal is a violation of both procedure and substance of the NPT. In terms of substance, implicit in the bargain underlying the NPT is that non-nuclear weapon states would get access to nuclear technology in exchange for not acquiring nuclear weapons. Procedurally, if such a deal were to be agreed to at all, it should have been voted on by all states parties to the NPT rather than just by a minority of countries that are members of the NSG. The deal also was the last nail in the coffin of UN Security Council resolution 1172 (1998), which responded to India and Pakistan's 1998 nuclear weapon tests with a series of demands to prevent further development or deployment of their nuclear weapons.

The US-India deal, as part of the larger package of agreements made in 2005 between the United States and India, opens the door for foreign investment and sales, not only in nuclear technology and services but in everything from banking to food and agriculture to big box retail stores. The ambitions of elites in the two countries to strengthen an array of military and economic ties and the socioeconomic impact that these ties will have on the mass of the populations in India and the United States are important for understanding how globalization will continue to effect north-south relations and economic disparities worldwide. The effect of the US-India deal—or deals—will be to reinforce the kind of global economy that is most favourable to those currently in power in both countries. India's development will be shifted further towards production of goods and services that serve global supply chains that are controlled by multinational corporations and that produce goods that only a small minority of the world's population can afford, reinforcing the general trend toward extreme polarization of wealth amidst growing economic insecurity for the majority in both India and the United States.

Despite claims to the contrary by US and Indian government elites, nuclear energy will not solve the energy needs of the vast majority of India's population, especially not in a way that offers any net environmental gains. Rather, nuclear power is most useful for serving the emerging production and service centres of the global corporate capitalist metropole and the consumption needs of the elites who profit from them. Nuclear power, as the most expensive form of centralized electricity generation, is an inefficient way to deliver energy to the populations living in rural villages. Instead, decentralized, renewable energy technologies provide a better chance of building an environmentally sustainable, socially equitable world, emphasizing a healthy dignified life for all over profits and consumption for a privileged few.

Recommendations from Chapter 5:

- Decisions about the expansion of nuclear power should be made with the explicit understanding that the technology used to generate nuclear electricity is intrinsically, and under the present circumstances, inextricably, linked to the ability to make nuclear weapons.
- Actors should refrain from engaging in trade and cooperation on nuclear power technologies that flout carefully crafted non-proliferation norms, which will only strengthen the linkage between nuclear power and nuclear weapons.
- NPT member states should establish an explicit prohibition on nuclear cooperation with non-states parties.
- Governments should focus efforts on developing decentralized and local sources of energy rather than promoting nuclear power, which is not the most efficient form of energy for poor populations. Decentralized and local sources of energy also provide a better chance of building an environmentally sustainable, socially equitable world, empowering the majority to live a healthy dignified and productive life.

Chapter 6: Nuclear futures for the Middle East: impact on the goal of a weapons of mass destruction-free zone

The goal of a zone free of weapons of mass destruction (WMD) in the Middle East has been confirmed at the highest political levels and by all relevant members of the international community, including all states in the region and the UN Security Council. All states parties to the nuclear Non-Proliferation Treaty (NPT) have acknowledged this goal through the 1995 NPT Middle East Resolution and the Final Document of the 2000 NPT Review Conference. However, WMD, specifically chemical weapons, have been used in region and the majority of countries in the region have some form of WMD-related research, development, or weaponization programme. Israel is the only state in the region to possess nuclear weapons, though it is Iran's nuclear programme, including uranium enrichment, that garners hostile international attention (see chapter on "Iran's challenge to the nuclear order"). Many other states in the region have expressed interest in pursuing nuclear power to "diversity their energy options" and resent the efforts of developed states to limit their access to proliferation-sensitive technologies, which are inextricably linked to nuclear fuel and power programmes. The spread of nuclear technology will affect regional security dynamics because of its inherent duality, its political prestige, and the demonstrated influence that nuclear capabilities can have, even without acknowledgment or proof of a weapons capability.

The issue of establishing a WMD free zone (WMDFZ) in the Middle East is further complicated by the broader issue of the Middle East peace process and Israel's relations with its neighbours. Israel's position is that peace and security must prevail in the region before nuclear issues can be addressed, while the Arab states' official position is that before arms control and regional security can be addressed, Israel's nuclear weapons must be dealt with.

In order to prevent nuclear proliferation and make concrete progress on nuclear disarmament in the Middle East, the prevailing concerns of each of the relevant players must be addressed. Peace process and WMDFZ efforts must be complemented by a process that addresses the past as well as the human, social, and psychological elements that undermine security. Political demands will need to be constantly checked against underlying security concerns, threat perceptions, and political and social realities. This process

will also require attention to energy needs and related security concerns, which can best be addressed through a combination of energy efficiency measures and renewable energy sources, primarily solar and wind.

Recommendations from Chapter 6:

- Governments in the region need to undergo a renewed assessment of the threats they perceive from each other and of the best approaches to defusing these threats. They should address each other's prevailing concerns with an aim to bolstering confidence that their security concerns can be addressed through the political process and show flexibility to create a real political opening. As a starting point, all governments in the region should make unilateral categorical commitments to no possession or no first use of WMD.
- Outside powers also have a responsibility in identifying and solving these threat perceptions and should particularly focus on avoiding double-standards, inconsistent polices, and practices that contribute to conflict in the region.
- Any country considering a nuclear power programme should undertake a comprehensive and critical review of potential proliferation, economic, environmental, and health consequences, as well as alternatives such as renewable energy. The potential contribution of wind and solar energy sources in the Middle East deserve increased support for research and development.
- All governments should examine the possibility of a verified suspension of their fuel cycle activities as a confidence-building measure, including the exploration of creative verification mechanisms that prevent the disclosure of sensitive or proliferation-prone information while establishing and maintaining confidence in adherence to commitments.
- The political peace process should provide opportunities for addressing the human, social, and psychological elements that undermine security, including the opportunity to voice historical grievances. For example, governments and/or non-governmental organizations could establish a

forum for airing past injustices; identify mechanisms for the promotion of social development and human rights; and undertake joint economic programmes around sustainable energy for the region.

- In the NPT context, all NPT states parties should consider steps that could pave the way toward implementing the 1995 Middle East resolution, such as convening a conference to explore the conditions necessary for achieving a zone in the Middle East free of nuclear and other weapons of mass destruction and appointing a standing NPT body to follow-up intersessionally and support efforts toward these ends.

Chapter 7: Iran's challenge to the nuclear order

Despite repeated confirmation by the International Atomic Energy Agency (IAEA) that no nuclear materials have been diverted from its indigenous nuclear fuel cycle programme, Iran is widely considered to be pursuing the development of nuclear weapons and is subsequently the target of ever increasing economic sanctions. No concrete evidence exists that Iran has either an atomic explosive device or an active programme to manufacture one. Iran's declared facilities related to uranium enrichment remain subject to IAEA inspection and accountancy. With notable exceptions, nearly all of the commentary directed to Iran's programme revolves around issues of "breakout," numbers of centrifuges, the launching of new ballistic missiles, or its non-compliance with UN Security Council resolutions demanding the cessation of all uranium enrichment.

Detached from historical context, Western media (and most politicians) portray Iran's efforts as one-sided, aggressive, threatening, irrational, and merely nationalistic. This viewpoint has only been exacerbated since June 2009, when Iran's internal turmoil following the elections exposed substantial cleavages within the Islamic Republic's political society. The question of Iran's ostensible quest for nuclear weapons is based upon perception and assumptions that are far more notional than objective. Unfortunately, further recent events have added to the West's apprehensions of an Iranian nuclear weapons programme, including the revelation of a second, underground uranium enrichment facility in late 2009 at Qom, and the Iranian

government's announced intention to enrich uranium up to 20% for use in a research reactor.

Iran's defence of its uranium enrichment programme, with assertions of national sovereignty and its rights under Article IV of the nuclear Non-Proliferation Treaty (NPT), is too easily misconstrued as evasiveness and secretiveness in a public discourse dominated by strident and increasingly bellicose Western voices. Technically, Iran has not yet violated any treaty, including the NPT. Yet as long as its government exhibits mannerisms consistent with a secret intent to develop nuclear weapons, the West's *impressions of Iran's unspoken intent* will take centre stage over whatever direct evidence (or lack thereof) is obtained by the IAEA and state intelligence agencies.

Iran presents a crisis, but also an opportunity, to re-examine the post-Cold War nuclear order, possibly with a more pragmatic endpoint of non-proliferation that involves, rather than exempts, the established nuclear weapon states that have ratified the NPT. Such a re-examination must confront the causes for the robust military-industrial interests in these countries, and in the United States in particular. It must examine the role of nuclear weapons in international relations, including the hard question of why, after so many years and statements of good intentions, nuclear weapons are so organically bound up as a lodestar measure of superpower status.

The global nuclear order presently accepts the *permanent* and preeminent status of nuclear weapon states and their nuclear institutions. Within this global order, the vast nuclear infrastructure is institutionally *animate*, capable of sustaining its own interests regardless of an external threat to which thousands of nuclear warheads have any relevance. These nuclear institutions operate much the same as large private corporations, serving constituents, seeking new missions, and acquiring political influence.

With the *permanency* of nuclear weapons institutions inevitably comes nuclear weapon proliferation. Since the first five acquired nuclear weapons, several others have tried to develop them—and some have succeeded. The superpowers have indicated that they are prepared to "live with" the second generation nuclear-armed states India, Israel, and Pakistan, not only because they believe they are powerless to do anything about them, but also because these countries for now are prepared to live within the unspoken rules of the established order, even though they have shunned the NPT and IAEA safeguards regime. This condition erodes the NPT as a non-proliferation instrument.

In contrast, Iran's uranium enrichment programme (subject to IAEA verification) is considered unacceptable and a threat to world peace in the Western polity. Casting Iran in such a light serves to enhance the position of elites in the US, France, and elsewhere with a stake in the reinvigoration of the nuclear weapons complex and related military sectors such as the manufacturers of global strike dual-use systems and anti-missile defence. On the diplomatic side, the United States' constant message that Iran is aggressively acquiring nuclear weapons has corroded domestic willingness to ratify the Comprehensive Test Ban Treaty and is exploited to justify American intransigence in considering further "concrete steps" to negotiate disarmament specified by Article VI of the NPT.

The terms of the NPT itself contribute to international uncertainty concerning non-proliferation. If the nuclear weapon states intend to promote the spread of peaceful nuclear energy within the NPT framework, that is a bed they have to be prepared to lie in. If the standard for a permitted atomic programme is whether you are considered an enemy or friend, this is not a legitimate universal treaty goal. Furthermore, not all articles of the NPT are respected equally. The nuclear weapon states have largely considered the disarmament directive of Article VI like a feel-good suggestion. At the same time, the non-nuclear weapon states have performed well under safeguards agreements with the IAEA. To date, the significant proliferators have been non-NPT parties. This imbalanced implementation of the Treaty cannot sustain itself, especially in the face of hypocritical, subjective accusations against other states parties to the Treaty.

The diplomatic and sanctions war directed to Iran further erodes the IAEA safeguards process. When subjective intent overpowers objective facts, states that are trying in good faith to ascertain precise "rules of the road" on regulated and declared nuclear activities will undoubtedly suspect that political interests are superseding technical guidance. The IAEA's verification that all declared nuclear material is accounted for has taken second chair to considerably less precise observations that Iran is "less cooperative" or provided "inadequate responses" to legacy issues. Simply denying the good faith of the opposite party in negotiations only guarantees a walkout. Punitive measures, also predicated on non-facts, only exacerbate the potential for failure.

Recommendations for Chapter 7:

- Within the United States and the E3 countries, opinion leaders and the public need to educate themselves and vigorously challenge the prevailing consensus among most political and media elites that Iran is either arming itself with nuclear weapons, or is on the verge of doing so.
- Iranian leaders can exhibit more genuine cooperation with the IAEA and transparency around their uranium enrichment programme. Instead of belatedly disclosing new programmes, Iran's government needs to exercise good faith in informing the Agency as soon as a decision to proceed with construction is taken. Whether or not such late disclosure is "technically" consistent with prior agreements, Iran's situation is beyond such fine lines and its leaders must exhibit good faith.
- The United States and Iran need to continue engaging in direct talks without preconditions and with the participation of European and Russian negotiators, to achieve a result that is consistent with national rights under the IAEA.
- Iran should reaffirm its prior Non-Aligned Movement statements and its official and secular commitments to forswear atomic weapons and promote regional and universal nuclear disarmament.
- The cycle of sanctions premised upon Iran's pursuit of nuclear enrichment should be suspended.
- The IAEA must remain technically neutral, employ sound expertise, and resist efforts to expand its jurisdiction based upon influence by the declared nuclear weapon states.
- The US and Iran should take steps to de-militarize the Persian Gulf, particularly in the Strait of Tiran.
- The legal non-proliferation regime, and the NPT in particular, must be rigorously examined to address the permanence of nuclear weapon institutions and to discount the value of such weapons in international relations.
- Southeast and South Asian nations, without exception, should commit to a specific programme to defuse nuclear tensions and avoid a catastrophic

arms race, accompanied by a commitment by the nuclear superpowers to honour such programmes and not introduce nuclear weapons in the region or sponsor/assist local nations to stockpile theirs.

Chapter 8: Missiles and other threats: the illogic of missile "defence" and space weapons

Missile proliferation and its link to weapons of mass destruction and space weapons remains an international security concern. Ballistic missile technology has spread to more than 30 countries. The five nuclear Non-Proliferation Treaty (NPT) nuclear weapon states, along with India, Iran, Israel, North Korea, and Pakistan, have produced or flight-tested intermediate-range ballistic missiles (ICBMs) with a range of between 1000 km and 5500 km. All these states continue to develop and test their missile arsenals.

Prospects will remain dim for reducing, rather than merely slowing the growth of, missile threats so long as those states that already possess sophisticated missile capabilities continue to improve them. And in missiles and other long-range delivery systems, as in most areas of military technology, the United States far outstrips all other states in the scope and ambition of its efforts. At the same time, the United States has sought to counter the growing missile threat with improved capabilities for preemptive strikes and for missile defence, both of which are fuelling the missile arms race. The latter is not only outrageously expensive and prone to repeated development setbacks, but also impedes both nuclear and conventional disarmament and arms control efforts on a broader scale. In particular, the Russian government has objected strongly to US plans to establish missile defence systems in Europe, arguing that the system could be used against Russia's ICBMs and thus would undermine strategic stability. The missile defence issue has been one of the biggest obstacles in the negotiation of a new Strategic Arms Reduction Treaty between the US and Russia.

There is also a dangerous synergy between the development of missile defence and the threat of space weaponization. Since both missiles and missile defences have a capability to attack satellites, their control relates directly to the protection of space-based objects. Yet the high-tech appeal particularly for the United States of both missile defences and military space gener-

ally as "the ultimate high ground" help to sustain budgets for technologies such as space launch and hypersonic flight, contributing to a steady flow of incremental improvements in already highly dangerous and inherently destabilizing strategic weapons, such as highly accurate long-range missiles.

The international community has long been calling for the prevention of an arms race in outer space, seeking to strengthen international space law and arms control in space by introducing provisions against the weaponization of space. Comprehensive space arms control would seek to ban weapons against objects in space and from objects in space against any target, and would prohibit development, testing, and deployment of such systems altogether before more advanced weapons are tested or become operational. A comprehensive approach could integrate risk reduction measures and partial agreements in a phased approach. This would be also attractive to the general public and require an unprecedented degree of international cooperation.

Recommendations from Chapter 8:

- The United States should abandon its quest to maintain long-term military supremacy through modernization and development of missiles and other strategic delivery systems, anti-missile systems, and possible deployment of space-based weapon systems. As a starting point, the United States should re-join the Anti-Ballistic Missile Treaty.
- All governments should support the establishment of international controls on delivery systems and anti-missile systems as part of a global process of reducing and eliminating nuclear forces, banning weapons in space, limiting strategic weapons generally, and implementing a policy of "non-offensive defence".
- To this end, governments should pursue a global treaty controlling missiles, and, as an interim step, explore a missile flight test ban, which would prevent new missile designs and limit modification of traditional technology.
- Governments should work with commercial and civilian space operators to develop best-practice "rules of the road" for outer space activi-

ties. They should also commit to transparency- and confidence-building measures guiding space activities while simultaneously discussing the nuts and bolts of a legally-binding treaty that would prohibit the weaponization of outer space.

Chapter 9: Dismantling discourses: nuclear weapons and human security

When the Cold War ended, nuclear disarmament advocates and the general public everywhere were relieved, believing that the threat of a nuclear holocaust was over. But the military-industrial-academic complexes that built the bombs and articulated strategies for their use survived and have even flourished since then, conjuring up new justifications to project the nuclear weapons enterprise into the future. The problems posed by nuclear weapons for the survival and security of our planet have not diminished.

Nuclear weapons act as an existential threat to humanity and life on this planet. The security of human beings is undermined by the creation, existence, and potential use of nuclear weapons. Yet nuclear weapons are nevertheless a central feature of the mainstream "national security" discourse in countries that possess them or shelter under the umbrella of those who possess them. "National security" thus refers to the security of the elites who benefit economically and politically from maintaining the nuclear military-industrial-academic complexes.

Nuclear weapons are instrumental for maintaining the structural inequalities between the elite, technologically-proficient classes and the rest of humanity, between those with power, money, and access and those without. Nuclear weapons establishments constitute a formidable set of institutions that are in turn part of a far broader constellation of powerful institutions that see their interests served by military power underwritten by nuclear weapons. This highly militarized order also benefits those who profit from all the other elements of an economically stratified world maintained in large part by force or threat of force.

In 2008, global military expenditure reached approximately $1464 billion, which represents a 45 percent increase over the last decade and comprises 4.2 percent of the world's gross domestic product—or $217 per per-

son. While military expenditure increases every year, investment in conflict resolution, peace-building, and development lags far behind. For example, in 2008, Official Development Assistance amounted to only about $145 billion. The UN Development Programme has found that an additional $40 billion a year would be enough to achieve and maintain many if not all of the Millennium Development Goals. Yet, in 2008, the United States spent much more than that on nuclear weapons-related programmes alone.

Human security cannot be brought about through nuclear weapons and military might. It can only be ensured through the equitable distribution of adequate food, shelter, clean water and air, health care, education, and even the arts. Human security requires an environmentally sustainable, socially equitable world, empowering the majority to live a healthy, dignified, and productive life. If funding was shifted from armaments to fulfilling basic human needs, some of the root causes of violence would at the same time be addressed, thus reducing the excuse for military action or other expressions of violence.

Non-governmental organizations have a special responsibility to articulate a programme for a nuclear weapon free world that takes into account the economic, health, environmental, and democratic imperatives for the elimination of nuclear weapons and that identifies and addresses the root causes of the maintenance of nuclear weapons. NGO advocacy for nuclear disarmament must linked to local, national, and international multi-issue campaigns, coalitions, and social movements promoting social justice, environmental protection, democratization, economic development, respect for human rights, conflict resolution, and comprehensive disarmament.

Recommendations from Chapter 9:

- Governments and NGOs should make nuclear disarmament the leading edge of a global trend towards demilitarization and redirection of military expenditures to meet human and environmental needs.
- The financial and human resources currently used to develop and maintain nuclear weapons systems should be used instead to meet social and economic needs consistent with the United Nations Millennium Development Goals.

- Only a comprehensive view of disarmament based on human security will lead to progress toward an equitable and secure nuclear weapon free world. The concept of security should be reframed at every level of society and government, with a premium on universal human and ecological security, multilateralism, and a commitment to cooperative, nonviolent means of conflict resolution. Civil society should actively seek to create a new discourse for nuclear abolition advocacy that illuminates the relationship between nuclear weapons and the structures that maintain them and that identifies the beneficiaries of nuclear weapons. Governments should reframe their approach to disarmament, employing a humanitarian perspective rather than a military one.
- Nuclear disarmament activists should link their efforts with those of activists working on a broad range of issues to draw a complete picture of security, peace, and justice, forging a stronger, more unified call for human and ecological security.
- NGOs should call on governments, the UN Security Council, and civil society to report on ways and means for implementing Article 26 of the UN Charter.
- All governments should contribute data annually to the UN Instrument for Reporting Military Expenditure and the UN Register for Conventional Arms and constructively participate in efforts to enhance and upgrade both instruments.

Chapter 10: The relevance of gender for eliminating weapons of mass destruction

Ideas and expectations about gender are woven through the professional and political discourses that shape all aspects of how nuclear weapons are considered, desired, and addressed. To address nuclear disarmament and arms control issues more effectively, it is essential to take into consideration how armament and disarmament policies and practices are influenced by ideas about masculinity and femininity. These qualifications are characterized socially and culturally to the effect of ascribing traits and values to male

and female bodies and unequally distributing power among men and women. Ideas about gender not only shape how we perceive men and women, they shape how we see the world and thus have political effects.

The political context within which nuclear weapons are situated is deeply gendered, as are the practical and symbolic dimensions of the weapons themselves. Political actors incorporate sexual metaphors in their representations of nuclear weapons as a way to mobilize gendered associations and symbols in creating asset, excitement, support for, and identification with the weapons and their own political regime. On the other hand, disarmament and peace are feminized and devalued as unattainable, unrealistic, passive, and weak.

Nuclear weapons are enshrined as an emblem of power not as a natural fact, but as a social one, produced by the actions of states and the discourses their elites develop to discuss nuclear weapons. When governments act as though their power and security are guaranteed only by a nuclear arsenal, they create a context in which nuclear weapons become the ultimate necessity for, and symbol of, state security. And when they work to ensure that other countries do not obtain nuclear weapons, they create a context in which they are perceived as keeping other nations down, to subordinate and emasculate the non-nuclear weapon states. The prevailing arguments against proliferation draw on Occidentalist portrayals of third world actors through the medium of gender-laden terminology. The terms of the debate are constructed to normalize and legitimate the current nuclear weapon possessor states while controlling and limiting the "uncivilized," "irrational" others. This patronizing, ethno-racist approach to non-proliferation only serves to increase the risk of proliferation and reinforce the symbolism of nuclear weapons as the ultimate instrument of state power.

Ideas about gender shape, limit, and distort the discourses that have been developed to think about nuclear weapons and the national and international political processes through which decisions about nuclear weapons are made. They exclude a whole range of relevant inputs that could effectively amplify and deepen arguments for disarmament. Gender awareness makes it possible to confront traditionally constructed meanings and redefine terms such as "strength" and "security" so that they more appropriately reflect the needs of people and reveal the ways in which the notions of militarized security are underwritten and supported by an image of hegemonic masculinity.

Recommendations from Chapter 10:

- All government and civil society representatives should consider gender issues in their deliberations and use the tools of gender analysis to reform traditional behaviours and values expressed in negotiations and discussions on nuclear weapons.
- All governments should implement UN Security Council resolution 1325, including through increasing the participation by women at all decision-making levels, particularly in institutions and bodies dealing with security and disarmament.

Chapter 11: Reaching nuclear disarmament

While the nuclear weapon states parties to the nuclear Non-Proliferation Treaty (NPT) claim to be in compliance with their disarmament obligations under Article VI of the Treaty, under current official plans, they all intend to rely on large, modernized nuclear forces for decades to come as a central component of their security postures. Based on past performance and present plans, reductions in arsenal size appear more a matter of efficiency and rationalization than working for marginalization and elimination of nuclear weapons. The 1995 and 2000 NPT Review Conferences, along with the 1996 advisory opinion of the International Court of Justice, have decisively shown that the NPT requires the nuclear weapon states to eliminate their arsenals, not simply reduce them.

The most important means of revitalizing the NPT and the non-proliferation regime is good-faith implementation of the disarmament obligation as specified in 1995 and 2000. At some point, this will require an agreement or agreements that complete that obligation, integrate states outside the NPT, and institutionalize the elimination of nuclear weapons globally. In the meantime, what is most important is that disarmament—unilateral, bilateral, or multilateral—actually occurs and that investment in the production and design of nuclear weapons ceases.

In the UN and NPT context, much emphasis is placed on bilateral and multilateral negotiations as the path to accomplishing disarmament. Legal-

ly-binding agreements are necessary to make permanent and institutionalize disarmament measures. They are not, however, necessarily the best means to set in motion all aspects of the process of marginalization and elimination of nuclear forces. Negotiations can serve as a time-consuming detour, with unnecessary linkages to other issues, and with legislative approval becoming an occasion for forces opposing disarmament to extract a very high price in terms of maintaining design, production, and replacement capabilities for both warheads and delivery systems. It is the result of negotiations—their success—that provide the touchstone for assessment of progress, not negotiations themselves. States can take steps unilaterally, or coordinated politically with other states, on matters such as doctrine, reductions, and halting modernization.

A key step toward multilateral nuclear disarmament is for all nuclear weapon states—including those outside of the NPT—to cease all research, development, modernization, and production of nuclear weapons. In the United States, however, the trend is in the opposite direction. Strong efforts are already underway in the United States to tie ratification of the Strategic Arms Reduction Treaty (START) replacement and the Comprehensive Test Ban Treaty (CTBT) to commitments to modified or new-design warheads and new weapons production facilities, and also to modernization of delivery systems. The Obama administration's FY2011 budget request includes about a 10% increase in funding for nuclear weapons; its goal is to increase the nuclear budget by $5 billion over the next five years.

Trading some arms control agreements or arsenal reduction for modernized nuclear weapons research and production facilities capable of building the nuclear threat anew is not disarmament. If the danger of nuclear war is to be eliminated, ceasing to plan and build for an eternal nuclear threat must come early, not late, in the process.

To this end, the role and value assigned to nuclear weapons by their possessors must be diminished. Security doctrines that include a prominent role for nuclear weapons signal the alleged security benefits of nuclear weapons derived by major powers and therefore promote proliferation. Until deterrence theory and associated active roles for nuclear weapons in strategic policies are left behind, nuclear weapons will continue to have perceived value and thus will be difficult to reduce, let alone eliminate. The policies of nuclear weapon states, and of the North Atlantic Treaty Organization

(NATO), should pave the way for the only lawful stance: that the weapons will not be used in any circumstance whatever. With regard to the geopolitical underpinnings of nuclear postures, it is particularly important that US allies communicate that "extended deterrence" is not a justification for an expansive role of nuclear weapons.

Fundamentally, only a binding global agreement can firmly establish the obligations not to possess, use, or threaten to use nuclear weapons. Unquestionably, there are major challenges to overcome in developing an institutional system that would reliably provide for verified and enforceable elimination of nuclear warheads and delivery systems. It is worth considering reaching agreement, through a framework approach, on the basic norms prior to detailed negotiation of all matters relating to verified elimination and its enforcement.

The call for undertaking a systematic approach to nuclear disarmament now reflects a mature understanding of the means to be employed and the challenges to be met. Governments and civil society should press for the NPT Review Conference to adopt a commitment to commencement of preparatory work, deliberations, and negotiations on a universal convention or framework of instruments for the sustainable, verifiable, and enforceable elimination of nuclear weapons.

Recommendations from Chapter 11:

All states with nuclear weapons should:

- reaffirm the NPT unequivocal undertaking to accomplish the total elimination of nuclear arsenals;
- reaffirm the principle of irreversibility and commit not to increase or modernize their nuclear forces and capabilities;
- reaffirm the principles of transparency, verification, and accountability in fulfilling disarmament obligations and agreements;
- declare that they will not design, develop, or produce new-design nuclear warheads, or modify or modernize existing warheads to add military capabilities;

- halt research, development, testing, and component production, with production and research facilities subject to an intrusive verification regime at the earliest possible time;
- close and clean up all nuclear test sites;
- commit to regular reporting on nuclear warhead and delivery system arsenals, fissile material stockpiles, spending on nuclear forces, and steps and plans for disarmament;
- reaffirm the NPT commitment to a diminishing role for nuclear weapons in security policies as a step toward non-use in any circumstance and the elimination of the weapons;
- agree to legally-binding security assurances not to attack non-nuclear weapon states with nuclear weapons;
- commit not to use nuclear weapons for pre-emptive strikes;
- reject counterforce and countervalue doctrines;
- phase out "extended nuclear deterrence" and strengthen regional cooperative security mechanisms;
- end deployment of nuclear weapons outside the territory of possessor states;
- reaffirm the NPT commitment to reduce the operational status of nuclear weapon systems and implement steps to take nuclear forces off quick-launch status; and
- commit to preparatory work for a nuclear weapons convention or framework agreement.

The US and Russian governments should reduce their arsenals on their own in a transparent and verified manner. To build a more stable bilateral relationship, and to move toward global nuclear disarmament, unilateral and bilateral reductions should achieve the following:

- maintain transparency and predictability;
- mandate steady reductions in all nuclear warheads, deployed and reserve, strategic and non-strategic;

- mandate reductions in strategic delivery systems, whether for nuclear or non-nuclear weapons, and prohibit multiple warhead missiles;
- require verified dismantlement of all excess warheads and delivery mechanisms;
- provide for international monitoring in addition to bilateral verification, to establish accountability to the entire community of states; and
- reach levels of total warheads low enough to allow the next phase to encompass other states possessing nuclear arsenals. All warheads—deployed, spare, reserve, awaiting dismantlement, etc.—must be counted in the total. The total likely will need to be in the hundreds on each side to attract meaningful participation from other possessor states, which should be consulted on this key point.

All governments should:

- negotiate for a fissile material (cut-off) treaty that bans production of fissile materials for nuclear weapons, brings all weapons-usable materials under safeguards, and fosters reduction of existing stocks; and
- renounce and/or oppose nuclear sharing arrangements and "extended nuclear deterrence"; and
- commence negotiations on a global treaty on missiles and anti-missile systems.

All governments and civil society actors should:

- oppose conditioning approval of the CTBT on deals for entrenching and expanding weapons complexes, retaining the option of designing and manufacturing modified or new-design warheads, and modernizing delivery systems;
- call for the closure of all nuclear test sites;
- seek an NPT commitment to establishment of a UN-based, comprehensive accounting system covering size of nuclear arsenals, nuclear weapon delivery systems, fissile material stockpiles, and spending on nuclear forces;

- demand a commitment not to modernize nuclear weapons or related infrastructures;
- support an NPT commitment to initiatives to create a zone free of nuclear, biological, and chemical weapons in the Middle East;
- work for cooperation among existing nuclear weapon free zones and the creation of new zones; and
- support an NPT commitment and a UN General Assembly resolution to commence preparatory work, deliberations, and negotiations on a universal convention or framework of instruments for the sustainable, verifiable, and enforceable global elimination of nuclear weapons.

Chapter 12: A nuclear weapons convention: framework for a nuclear weapon free world

A nuclear weapons convention (NWC) is conceptualized as an international treaty designed to prohibit all aspects of development and testing of nuclear weapons and to prevent the spread of technology and know-how in relation to the weapons. The convention would provide a framework for the elimination of nuclear weapons. It would also be the implementation of the universal societal condemnation of nuclear weapons and the codification of the customary norm against all weapons of mass destruction. The model NWC, developed by experts in law, science, disarmament, and negotiation in 1997 and updated in 2007, is a comprehensive draft of the international nuclear disarmament agreement required to achieve the nuclear weapon free world envisioned by the nuclear Non-Proliferation Treaty (NPT).

The aim of an NWC is not to provide an alternative to the NPT, but rather to develop an additional instrument that would build upon the NPT and other nuclear non-proliferation and disarmament measures. The model NWC provides a nondiscriminatory approach to nuclear disarmament and non-proliferation and opens the door for immediate engagement by the non-NPT nuclear weapon states. It has been designed to overcome the divide between incremental and comprehensive approaches to a nuclear weapon free world by providing an umbrella or goal for individual steps.

If the NPT is the "cornerstone" of the nuclear non-proliferation and disarmament regime, subsequent related treaties have provided mortar with which we can now secure the regime's "capstone," a nuclear weapons convention.

Recommendations from Chapter 12:

- Citizens should encourage their governments to work towards an NWC and educate each other about the benefits of abolishing nuclear weapons globally. Civil society groups should push the goal of a NWC into the mainstream and onto the negotiating agenda, where they can engage with governments on the legal, technical, and political aspects of such a convention. Before the Review Conference, civil society groups should push governments to identify the need for some sort of nuclear prohibition treaty in their statements and working papers. After the Review Conference, civil society groups should participate in the Nuclear Abolition Action Day on 5 June 2010 to inspire and keep up the momentum for a NWC.
- After the Review Conference, a group of like-minded states should initiate a series of preparatory conferences to examine the political, legal, technical, and institutional requirements for an NWC.
- The NWC and the elimination of nuclear weapons must be grounded in a broader movement toward political, economic, and social justice and equity in which the majority of the world's people are empowered to live a healthy, dignified, and productive life. The elimination of nuclear weapons must serve as the leading edge of a global trend towards demilitarization and redirection of military expenditures to meet human needs and restore the environment.

Chapter 13: Toward a fissile material (cut-off) treaty

Controlling fissile materials has long been seen as central both to nuclear disarmament and halting proliferation, and, more recently, to reducing the risk of nuclear terrorism. The five nuclear weapon states parties to the nucle-

ar Non-Proliferation Treaty (NPT) have stopped highly enriched uranium (HEU) and plutonium production for weapons. Israel, India, and Pakistan continue to produce fissile materials for weapons purposes, and North Korea resumed production in 2009 after a two year suspension. The civilian stockpile of plutonium, which is weapon-usable, is growing at a significant rate because of large-scale reprocessing of spent fuel from nuclear power plants in France, India, Russia, and the United Kingdom.

In 2009, the Conference on Disarmament (CD) agreed to a programme of work that included a mandate for negotiating a fissile material (cut-off) treaty, or FM(C)T. However, the CD was unable to implement this programme before the end of the 2009 session or to adopt a new programme in early 2010. The core of the problem is a difference among states over the scope of a possible treaty, most notably whether and how the treaty might include the safeguarding and reduction of existing fissile material stockpiles. Pakistan's delegation in particular has been obstructing the start of negotiations, citing concerns about India's larger fissile material stockpiles.

A minimal FM(C)T, as sought by some nuclear-armed states, would aim only to prohibit production of fissile materials for nuclear weapons. This would place nuclear-armed states in the same position as the non-nuclear weapon states in the NPT as regards production of fissile material for weapons. However, an FM(C)T limited to ending production for weapons would serve to freeze the existing situation of nuclear-armed states holding stocks of fissile materials in weapons as well as stocks in the form of civilian fissile materials, weapon-origin material declared excess, and military reactor fuel reserves. Today, these non-weapon stocks together are sufficient to make tens of thousands of nuclear weapons.

A draft treaty proposed by the International Panel on Fissile Materials (IPFM) bars the use for weapons of civilian fissile materials, material declared excess, and military reactor fuel reserves. It would not compel reduction of nuclear weapons or weapons-usable stocks, but provides a mechanism for bringing under safeguards material that becomes excess due to reductions in warheads and in stocks dedicated for weapons uses. An FM(C)T that placed non-weapon stocks under safeguards would fulfill the commitment by NPT nuclear weapon states at the 2000 NPT Review Conference to place under safeguards all fissile material designated as no longer required for military purposes.

An FM(C)T that imposed safeguards on all non-weapon stocks would be verifiable. All the civilian activities in the nuclear armed states would be subject to the same IAEA safeguards used in non-nuclear weapon states, which aim to ensure fissile materials are not diverted from peaceful purposes to nuclear weapons programmes and that there were no undeclared fissile material production activities. Verification challenges involving weapon-origin material could be met by using techniques developed from the 1996 US-Russia-IAEA Trilateral Initiative. There would be need also to establish a system of managed access for inspectors to nuclear weapon sites and military reactor fuel facilities. There is a precedent for this in the Chemical Weapons Convention. The use of HEU for naval fuel would also pose a new verification challenge. Nuclear navies that use highly enriched uranium would need to agree to a system of safeguards or, like France, convert to low-enriched uranium naval fuel.

Recommendations from Chapter 13:

- States should commit at the Conference on Disarmament to implement the NPT 2000 Review Conference decision to begin negotiations on a verifiable FM(C)T with a broad scope—taking into account both disarmament and non-proliferation objectives—and complete them within five years.
- In parallel with an FM(C)T, states should declare a moratorium on all further separation of plutonium and all production of highly enriched uranium (HEU) and agree to phase out all such production for military and civilian use. This will prevent the stockpiling of weapons-usable fissile material as part of naval propulsion and civilian nuclear energy programmes after an FM(C)T comes into force.
- To assist the process of FM(C)T verification and to lay a basis for the future verification of nuclear disarmament, states should make complete and comprehensive public declarations of their HEU and plutonium stockpiles and production histories.

Chapter 14: Learn, adapt, progress: lessons from Ottawa and Oslo

While unique, the Ottawa and Oslo processes (leading to the Anti-Personnel Mine Ban Treaty and the Convention on Cluster Munitions, respectively) offer potential lessons for multilateral action in other areas of disarmament and arms control. Both processes established a strong link between specific weapons and their impact on human beings. Both processes focused on research, data, and field expertise to ground its work. Both processes were characterized by broad partnerships between civil society organizations, governments, and intergovernmental organizations, which advanced a common goal using the various tools at the disposal of the different actors. Together, these factors contributed to a shift in who bore the "burden of proof" in terms of the legitimacy of these weapons: producers and possessors were challenged by evidence that belied their claims about the versatility and acceptability of anti-personnel mines and cluster munitions. Discourse shifted from focus on the military utility of or necessity for such weapons to a broader one encompassing the political and legal acceptability (or not) of their use. All of this contributed to collective reframing to a state in which prohibition of the weapon in question could be envisaged.

These experiences are relevant to other international security issues, not least for nuclear disarmament efforts. It has also been observed that they are germane in the context of regulating the global trade in conventional arms, reducing the global burden of armed violence, advancing a science of human security, stigmatizing the use of explosive force in populated areas, and dealing flexibly with weapons contamination. Of course, ad hoc multilateral initiatives like the Ottawa and Oslo processes are not in themselves a comprehensive prescription for strengthening disarmament or humanitarian law or alleviating human insecurity. Both do, however, show that progress is possible. And they underline that "root and branch" reform of multilateral disarmament and arms control mechanisms is needed to foster creative problem-solving and better ensure that processes are aligned to security goals rather than simply shaped by the dictates of established process or held hostage by those who wish to obstruct meaningful progress.

Recommendations from Chapter 14:

- When thinking about their work, government representatives working on nuclear disarmament issues should consider what might be learned from recent international initiatives to address the human impacts of other weapons. These include the Ottawa and Oslo processes on anti-personnel mines and cluster munitions respectively, which each "re-framed" the discourse and acceptability of these weapons in broader terms than before. Although these are, of course, very different from the nuclear disarmament context, focusing on evidence of the human impacts of weapons alongside their purported military advantages or technical characteristics, engaging civil society, shifting the burden of proof for the continued acceptability of a weapon onto users and producers, and building legitimacy through inclusion of a diverse range of actors were all important to success on these issues. These factors also helped in overcoming the obstacles in traditional multilateral forums preventing effective progress in addressing the problems the existence and use of such weapons create.
- Civil society actors should also consider lessons from other international initiatives to deal with armed violence, with attention to those related to campaigning and building alliances. Gaps between various communities, like those between practitioners active in disarmament and those working in areas such as development, public health, and the environment should be bridged. Greater informal dialogue and a common vocabulary would help.
- Both governments and civil society should develop a discourse that draws attention to the impact of the development, production, deployment, and use of nuclear weapons rather than accepting untested claims or assumptions favouring inertia.

Introduction The language of nuclear disarmament

Ray Acheson

What can be said but not practiced is better not said;
When you utter words, you should always consider their end.[1]
-Zen Buddhist Baiyun

In his April 2009 speech in Prague, US President Obama said he would "seek ... a world without nuclear weapons." Most people around the world—activists and politicians alike—took these words at face value. They believed the US President had just committed his administration to embarking on a path toward the elimination of nuclear weapons. However, the operative promises of Obama's Prague speech were of further investment in the US nuclear arsenal, not disarmament.[2] Obama caveatted his "vision" of a world without nuclear weapons by saying that until all nuclear weapons have been eliminated, the US will "maintain a safe, secure, and effective arsenal to deter any adversary, and guarantee that defense to all our allies."[3] However, in reality, "The vain search for an 'effective' arsenal that can deter 'any' adversary requires unending innovation and continuous real investment, including investment in the extended deterrent to which Obama referred."[4]

Not surprisingly, the Obama administration's fiscal year 2011 budget request called for increased funding for nuclear weapons programmes, including "critical infrastructure improvements".[5] Darwin BondGraham, co-author of the chapter "Rhetoric vs. reality: the political economy of nuclear weapons and their elimination," points out that the funding "surge" is unnecessary if the US is planning to reduce its nuclear weapon stockpile. Instead, he argues, "these projects are necessary to lock-in nuclear weapons spending at the labs for many decades, and fully commit the US to nuclear weapons, regardless of how well international treaty discussions might go."[6]

The budget request came three days after US Vice President Joe Biden wrote an op-ed in the *Wall Street Journal* explaining that the government

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would seek an increase of $5 billion over five years for nuclear weapons.[7] Biden's article itself came ten days after George Shultz, William Perry, Henry Kissinger, and Sam Nunn (the "four horsemen") wrote their third *Wall Street Journal* op-ed, which laid out arguments for why funding for the nuclear weapon laboratories needed to increase.[8]

Led by these "four horsemen," the political and defence intellectual elite in the United States have crafted a new dominant discourse around nuclear weapons. This discourse has spread to the wider international community and is now used by elites in other nuclear weapon states and by those in states that shelter under the US nuclear umbrella. This discourse is couched in terms familiar to nuclear weapon abolition advocates—terms such as disarmament, elimination, and world free of nuclear weapons. It thus appears different than the nuclear weapons discourse created by such elites during the Cold War, which included terms such as mutually assured destruction and strategic stability. Yet, there is one key term present in both discourses: nuclear deterrence.

There is wide recognition among civil society and military strategists alike that nuclear deterrence is irrelevant to the perceived threats facing the world today—such as terrorism, climate change, food, water, and energy shortages, and increasing global economic disparity. Indeed, nuclear weapons are antithetical to mitigating these converging crises, as their development, deployment, and proliferation increases global tensions, disparities, polarizations, and environmental degradation and squanders the economic, political, and human resources that could otherwise be used to confront and solve these crises.

In fact, the only thing that nuclear weapons seem to deter is disarmament—this "contagious doctrine of deterrence"[9] has been used as a rationale by all the governments that possess nuclear weapons to acquire these weapons originally and to maintain them now.

Yet, the new elite champions of nuclear disarmament around the world continue to emphasize the importance of maintaining an "effective nuclear deterrent" until nuclear weapons are eliminated. Another important aspect of the new mainstream discourse maintains that until non-proliferation is absolutely assured, those who possess nuclear weapons will need to retain theirs. This illogic—we will keep the weapons until we no longer "need" them—illuminates the reality of the elite political establishments' intended

actions behind the rhetoric of their words. These actions seek absolute guarantees that no other states will ever acquire nuclear weapons under any circumstance at any point in the future while in the meantime preserving and enhancing their own nuclear capacities.

Nuclear disarmament in this now-mainstream discourse is in fact "arms control as the pursuit of military advantage by diplomatic means."[10] In particular, the US, UK, and French governments have issued varying degrees of verbal support for nuclear disarmament, but in terms that describe disarmament "entirely for what it means for the rest of the world—securing nuclear materials and preventing other states from going nuclear or further developing their existing arsenals."[11] Based on reports and statements issued by these governments[12], it appears that the US, UK, and French governments plan to offer some comprehensive rhetoric on their commitment to nuclear disarmament as a future goal while making firm demands on the rest of the world for commitments to nuclear non-proliferation as a present imperative. These states, which already work to maintain an unequal world order of nuclear haves and have-nots through the nuclear Non-Proliferation Treaty (NPT) and increasingly seek to implement the Treaty's rules in a discriminatory fashion, have adopted a discourse about nuclear disarmament and non-proliferation that advances their own narrowly perceived interests in a way that is detrimental to common security.

A discourse of nuclear weapons that establishes non-proliferation as disarmament—and modernization of and investment in nuclear weapons infrastructure as a necessary precursor to disarmament—serves to further entrench the perception and role of nuclear weapons as instruments of power. In his chapter in this book on "Iran's challenge to the nuclear order," Michael Veiluva argues that the "political, ideological, and even theological attributes attached to nuclear weapons" and the resulting *perceptions* of their role and value is a critical component in any decision to obtain and retain them. As the "platinum credit card of state power, influence, and nationalistic pride," he argues that nuclear weapons are "endowed with more complex and significant political attributes that combine to create units of international exchange as well as conflict."

Zia Mian of Princeton University, who has written the chapter "Toward a fissile material (cut-off) treaty," likewise has noted, "Nuclear weapons, first and foremost, are weapons. They are instruments of violence and the threat

of violence. The strategies and policies for their development, deployment, and use are not contained within them. Nuclear weapons are given meaning and purpose by the politics of nuclear weapon states."[13]

This perception of power inevitably attracts others. But part of the value of nuclear weapons is that they offer admittance into a very exclusive club, wherein the powerful can ensure the maintenance of a world order compatible to their interests. Newcomers, unless willing to "play by the rules" and acquiesce to the hegemonic world order, challenge not only the privileged status afforded by nuclear weapons but the very world order that sustains them.

As Carol Cohn, Felicity Hill, and Sara Ruddick argue in the chapter, "The relevance of gender for eliminating weapons of mass destruction," the concept of proliferation, as used in the mainstream discourse, constructs some nuclear weapons as a problem and turns a blind eye to others. It asserts that there are legitimate possessors "implicitly not only entitled to those weapons, but to modernize and develop new generations of them as well."

Proponents of this perspective work to prevent proliferation in order to prevent nuclear weapons from "falling into the wrong hands". They purport that the "problematic" nuclear weapons are only those that "spread" into the arsenals of other, formerly non-possessor states. Cohn, Hill, and Ruddick note that the "legitimate" nuclear weapon possessors consider themselves prudent, mature, restrained, while the unruly others are irrational, unpredictable, incompetent. This discourse serves to further entrench and politicize the differences between nuclear and non-nuclear weapon possessors. It gives these "others"—emasculated by the heavily gendered attributes assigned to them—one more reason to desire nuclear weapons.

The mainstream nuclear disarmament discourse, therefore, does not help close the gaps in a world starkly divided between haves and have nots, powerful and powerless. It is, quite simply, not intended to lead to the elimination of nuclear weapons or reduce their perceived value.

It is thus difficult but imperative to force an examination of the assumptions and language surrounding nuclear weapons and their elimination. Hugh Gusterson, a professor of anthropology and sociology who specializes in nuclear culture, argues that it is necessary to understand "the importance of discourses and practices that permeate all corners of society and whose power may lie in their dispersed and routine ordinariness."[14] Carol Cohn notes that part of the difficulty in analyzing the discourse arises because as-

sumptions in established discourses are treated as "objective reality" rather than as beliefs stemming from personal identities, values, or position.[15]

This book, a collaborative work of several non-governmental researchers, writers, activists, and scholars, critically examines the mainstream discourse of nuclear weapons. It explores some of the most important challenges to nuclear disarmament that governments and civil society will face at the 2010 NPT Review Conference and beyond. The authors of this book strive to cut through the dominant discourse to highlight the prospects and pitfalls for nuclear disarmament in the current world order—and offer some suggestions on how to move beyond this order to a better one, more conducive to nuclear disarmament as well as to social and economic justice for human beings.

Part I of the book highlights several challenges to nuclear disarmament. It begins by further investigating the problems of rhetoric that have been identified here and goes on to examine issues related to nuclear sharing arrangements within the North Atlantic Treaty Organization and between the United States and the United Kingdom; the relationship between nuclear weapons and nuclear energy; the implications (and complications) of both nuclear weapons and energy in the contexts of India, the Middle East, and Iran; and the threats from missiles, missile "defence," and space weapons.

Part II begins again with an examination of discourse, suggesting an alternative analytical framework that includes human security and gender analysis. It lays out some specific recommendations for achieving concrete nuclear disarmament in the near and long-terms and includes chapters on the negotiation of a nuclear weapons convention and a fissile material (cut-off) treaty. The final chapter highlights some lessons from other arms control and disarmament processes that could assist along the road to nuclear abolition.

Throughout, the authors demonstrate that nuclear disarmament must be pursued in the context of a broader movement for social, environmental, and economic justice and equality. Abolishing nuclear weapons without affecting change in the systems that sustain, promote, and in fact *require* the existence of nuclear weapons to survive is impossible. The military utility of nuclear weapons may be diminishing in the current world order, but nuclear weapons are still useful to the economic and political elite of many countries and will thus be pursued by others seeking the same elite status. The first step on this road is exposing the doublespeak around nuclear weapons and their elimination.

PART I: CHALLENGES

Chapter 1 Rhetoric vs. reality: the political economy of nuclear weapons and their elimination

Darwin BondGraham, Jacqueline Cabasso, Nicholas Robinson, Will Parrish and Ray Acheson

A state's interest in acquiring and retaining nuclear weapons is the product of multiple institutions and constituencies dispersed throughout its government, corporate, academic, and political spheres of power. All nuclear-armed states wield these weapons because specific constituents benefit from investment in the weapons' production and maintenance. Further, these interests within nuclear-armed states reinforce and invigorate similar interests in other nuclear-armed states. For example, the US and UK nuclear industries have collaborated with each other for decades (see "US-UK nuclear sharing: deterring disarmament"), while the US and Indian nuclear industries are gearing up for future collaborations (see "The US-India nuclear deal: violating norms, terminating futures").

This institutional inertia that maintains the nuclear-armed state and militates against concrete steps toward disarmament is itself encapsulated in a specific geopolitical and domestic order best understood as imperial-

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ism. States with imperial ambitions utilize nuclear weapons, as one means among many, to coerce other states on virtually every matter of international relations. Seen from this angle, nuclear arsenals are not "stockpiles" hidden away in silos and subs awaiting a dreaded day of possible use, but instead are one of many tools used by imperial states to maintain global inequalities between states and within states.

The United States provides an excellent model to explore both the institutional and imperial underpinnings of the nuclear-armed state. The US is the hegemonic nuclear-imperial state. It provides the clearest illustration of the strategic value of these weapons within the current global political economy. While the other nuclear-armed states have similar interests and constituencies, US nuclear weapons exist within the broader context of the country's unrivaled military supremacy—its military budget, foreign military bases, and history of military interventions. US nuclear weapons are uniquely entrenched in the apparatus and theology of the United States' hegemonic world order. Other nuclear-armed states fit into this order; their policies both take direction from the United States and help provide cover for US policy. Thus, they stand together at international fora, confirming each other's need for a strong "nuclear deterrent" and demanding stricter measures to stem further proliferation. Despite this, the international community looks to the US government to "take the lead" in nuclear disarmament. Yet a careful analysis reveals that the *direction* the United States is leading —which other nuclear-armed states either implicitly or explicitly support—is not toward disarmament at all, but toward the indefinite retention of nuclear weapons in order to preserve the present global order.

The current US administration's nuclear policy agenda, from its budgetary priorities to treaty aspirations, reveals both the institutional and imperial political economies of the "nuclear threat". Furthermore it demonstrates the bi-partisan consensus tying both the Democratic and Republican party establishments to these institutional powers and the larger imperial project.

Visions and vagaries

Although the Obama administration has committed the United States to nuclear disarmament in stronger rhetorical terms than any administration

in recent memory, its nuclear weapons programmes and policies are actually designed to lock in a virtually insurmountable advantage over other nations in the area of nuclear weapon technologies, while legitimating a more bellicose conventional military and diplomatic stance against accused proliferators. This foreign policy is being given ideological cover by a group of elder (Cold Warrior) statesmen who have in recent years donned a mantle of sober anti-nuclearism, but who remain politically, administratively, and financially invested in the long-term maintenance of the US nuclear weapons complex. The same strategy is being mirrored by the other principal nuclear weapon states, also seeking to use anti-nuclear rhetoric as a weapon against non-nuclear states, particularly those that would transgress the established geopolitical order.

At face value the goals of this political project include non-proliferation, achieving new arms control treaties, new stringent fissile material controls, and the eventual elimination of nuclear weapons, all ostensibly to make the world universally more secure. These aims—to the extent that they are genuine, especially in the case of the last one—are in fact entirely subordinate to the two instrumental goals actually driving current US nuclear weapons policies.

The first is to secure domestic political conditions ensuring the long-range funding of nuclear weapons programmes, principally at the three largest sites of the US weapons complex: the Los Alamos, Livermore, and Sandia laboratories. This means that arms control treaties and platitudes that aspire to a "nuclear free world" will be traded for multi-billion dollar infrastructure investments in the nuclear weapons complex, as well as the programmatic authority to design new weapons. This is entirely about supporting and placating the politically powerful laboratories, corporations, universities, Congress members, and military branches that embody the nuclear weapons complex. As the Los Alamos Study Group's Greg Mello has pointed out, *aspirations* to *seek* disarmament are radically different from *commitments* that will *achieve* measurable steps toward disarmament. "Somehow we have gone from, 'I will put a chicken in every pot,'" observes Mello, "to 'I will seek to put a chicken in every pot.'" Thus disarmament politics involve vague non-commitments of "seeking," while the nuclear weapons labs, military, and corporate contractors receive plump chickens by the billion.[1]

The second instrumental goal of this political project is to preserve asym-

metric military dominance for the nuclear weapon states, a dominance which is inversely related to waning economic and political hegemony. This massive boosting of "defence" spending relative to all other nations is itself a means toward another end: to sustain a world in which the richest one percent of adults own more than 40 percent of all wealth, while almost half the planet's population own less than 1 percent.[2] Thus the international and domestic politics surrounding nuclear weapons are, in the most straightforward sense, about political economy, the distribution of wealth, and control over social and economic development.

Within this context "disarmament" is promoted as a vague "vision," which can only be reached through the rigorous pursuit of preconditions—the absolute assurance that no state will seek to develop nuclear weapons at any point in the future under any circumstances. In the meantime, the United States claims that as long as nuclear weapons exist, it will need to maintain an "effective deterrent" to any possible nuclear "outbreak". More than just keeping nuclear warheads in its quiver, this "hedge," as it has been called by all post-Cold War American administrations, means investing billions of dollars in a modernized nuclear weapons complex capable of maintaining existing weapons indefinitely, including through the manufacture of nuclear weapons components such as plutonium pits.

US leadership against any real de-valorization of nuclear weapons has been more or less matched by Russia and has prompted other nuclear-armed states, such as the United Kingdom and France, to begin outlining policy recommendations for a "nuclear weapon free world" that do not actually include steps for disarmament. Like the United States, these governments focus almost exclusively on strengthening or demanding new non-proliferation restrictions to be imposed on non-nuclear weapon states, while at the same time maintaining the status quo (i.e. no real progress) on nuclear disarmament.

In the context of the nuclear Non-Proliferation Treaty (NPT), this spells danger for the 2010 Review Conference. Trading disarmament rhetoric for practical measures on non-proliferation will be unlikely to satisfy most non-nuclear weapon states. Putting some arsenal reductions on the table as proof of intent to move toward eventual disarmament, while simultaneously investing heavily in nuclear weapons research and production facilities capable of building the nuclear threat anew, and far into the future, is

not disarmament. If the danger of nuclear war is to be eliminated, ceasing to plan and build for an eternal nuclear threat must come early, not late, in the process, and it will have to be linked to a more general demilitarization and demobilization of US, Russian, European, and other major military forces. If we seriously comprehend the wider political economy of which nuclear weapons are a part, then we should acknowledge that the rhetoric of political leaders from the nuclear weapon states cannot be trusted. Calls for the US to "lead" the world toward nuclear abolition are naïve at best, and disingenuous at worst.

Rhetoric: The four horsemen

In early 2007, four honoured US Cold Warriors published what appeared to be an unlikely op-ed in the *Wall Street Journal* calling for a "world free of nuclear weapons". The essay was signed by none other than the former Secretaries of State George P. Shultz and Henry Kissinger, former Secretary of Defense William S. Perry, and former Georgia Senator and long-time Chair of the Armed Services Committee Sam Nunn. Now referred to as the "four horsemen" by those who work on nuclear policy, they wrote that complete nuclear disarmament is "a bold initiative consistent with America's moral heritage." The essay implored international leaders to work "energetically on the actions required to achieve" the lofty goals outlined within.

In January 2008, the four horsemen followed up with a second op-ed, also in the *Wall Street Journal*. In their article, titled "Toward a Nuclear-Free World," they noted that the US and Russia "have a special responsibility, obligation and experience to demonstrate leadership." For the two states possessing 95% of the world's nuclear weapons they advised:

- Extending key provisions of the Strategic Arms Reduction Treaty;
- Taking steps to increase the warning and decision times for the launch of all nuclear-armed ballistic missiles, thereby reducing risks of accidental or unauthorized attacks;
- Discarding any existing operational plans for massive attacks that still remain from the Cold War days;
- Undertaking negotiations toward developing cooperative multilateral ballistic missile defence and early warning systems, as proposed

by Presidents Bush and Putin at their 2002 Moscow summit meeting; and

- Dramatically accelerating work to provide the highest possible standards of security for nuclear weapons, as well as for nuclear materials everywhere in the world, to prevent terrorists from acquiring a nuclear bomb.[3]

Notably, they said nothing about nuclear weapons research, development, and production activities, for at the time they were already working through back-channels to lobby for a massive spending surge for the US nuclear weapons complex.

Nevertheless, reaction to the two op-eds was swift and far-reaching. Within a year, they were endorsed by more than two-thirds of living former US secretaries of state, secretaries of defense, and national security advisors. During the 2008 election, Presidential candidates John McCain and Barack Obama both joined the chorus with verbal nods to the four horsemen's essays. President Obama has held public meetings with them, and his administration's nuclear posture review, arms control negotiations, and preparations for the NPT are clearly being influenced by this brain trust.[4] Shultz, Perry, Kissinger, and Nunn have also succeeded in inspiring esteemed statespeople in Belgium, Germany, Italy, the Netherlands, Poland, and the United Kingdom to issue similar statements. Their vision for a "nuclear weapon free world" is constantly cited in international fora and op-eds around the world.

But what does this supposedly new "consensus" actually entail? The novelty of such a hawkish and bipartisan coalition led by the four horsemen, ostensibly promoting the goal of nuclear disarmament, has, curiously, been spared critical reflection by long-time anti-nuclear activists and analysts. Indeed, many of the more established arms control, disarmament, and peace organizations have fallen all over themselves to cite the four horsemen's words and the supposedly new political terrain it maps out. This eagerness to embrace their "vision" represents a failure—or an unwillingness—on the part of anti-nuclear advocates to understand the larger political economy in which nuclear weapons play only a part.

Beneath its enticing veneer of humanitarian concern for "future generations," the work of Shultz, Perry, Kissinger, and Nunn reflects a pragmatic strategy to maintain US military and economic dominance well into the 21st century, resulting in the formation of a new intellectual paradigm perhaps

best described as "anti-nuclear imperialism". Association with this campaign by those seeking nuclear abolition may turn out to be counterproductive. For, far from embodying the spirit of nuclear abolitionism with its inherent links to anti-war and social and environmental justice movements, this strategy actually represents a clever new kind of nuclear militarism.

In now-declassified conversations with Richard Nixon, under whom he served as National Security Advisor, Henry Kissinger said candidly that the NPT was "made at the expense of other countries," and thus should have little bearing on US policies. We believe that it is this kind of realpolitik, concerned mainly with enhancing US power over other nations, that has been inspiring the recent nuclear "disarmament" rhetoric of Kissinger, Shultz, Perry, Nunn, and others.[5]

More rhetoric: The Obama "vision"

In public fora around the world, President Obama's speech on 5 April 2009 in Prague has been praised as a world-changing event. The speech inspired a tidal wave of hope and opened up the space for a badly needed renewal of advocacy and action to abolish nuclear weapons. The Nobel Committee cited President Obama's "vision of a world free of nuclear arms" in their decision to award him the 2009 Nobel Peace Prize. However, Obama made a number of conflicting statements in his Prague speech, and his foreign policy has been similarly characterized by contradictory positions emphasizing the importance of diplomacy while relying heavily on the use of force. These include renouncing torture, but refusing to prosecute the torturers; planning for the withdrawal of US troops from Iraq while escalating the US military presence in Afghanistan; and promoting diplomacy and the rule of law while conducting bombing raids on civilian targets in Afghanistan, Pakistan, and now Yemen, using unmanned drone aircraft.

In his Prague speech, Obama made an historic admission that "as the only nuclear power to have used a nuclear weapon, the United States has a moral responsibility to act" for their elimination. This is a welcome acknowledgment. However, while Obama has repeatedly said that he will pursue the goal of a world without nuclear weapons, this statement is invariably followed by a disclaimer that as long as nuclear weapons exist, the US will

maintain a strong nuclear deterrent. This disclaimer reflects the influence of a massive powerful military-industrial complex that has perpetuated the role of nuclear weapons as the cornerstone of US national security policy for nearly 65 years.

The reverse of Obama's statement is more accurate: as long as the US maintains a nuclear "deterrent," nuclear weapons will exist. And, as long as the US has nuclear weapons, other nuclear weapon states will maintain their arsenals, and some non-nuclear weapon states may seek to acquire nuclear weapon capabilities in order to obtain a deterrent or counter-balance against the vastly asymmetrical military power wielded by the US and other principal nuclear states.

It is important to understand what deterrence really means in US doctrine. A typical definition appears in a September 2008 Defense Department report:

> Though our consistent goal has been to avoid *actual* weapons use, the nuclear deterrent is 'used' every day by assuring friends and allies, dissuading opponents from seeking peer capabilities to the United States, deterring attacks on the United States and its allies from potential adversaries, and providing the potential to defeat adversaries if deterrence fails [emphasis added].[6]

In other words, the US uses the threat of nuclear attack the way a bank robber holds a gun to the head of a teller. In his 2007 book, *Empire and the Bomb: How the U.S. Uses Nuclear Weapons to Dominate the World*, Joseph Gerson documented at least 30 occasions since the atomic bombings of Hiroshima and Nagasaki when every US President has prepared or threatened to initiate nuclear war.[7] Most recently, during his presidency, Bill Clinton made a covert nuclear threat against an alleged underground chemical weapons facility in Libya,[8] and President George W. Bush had contingency plans drawn up for battlefield use of nuclear weapons in Iraq.[9] The policy of nuclear deterrence is not passive and it is not benign.

This policy has been embraced by other nuclear-armed states. The French government, for example, likewise seeks to preserve its "security" through retaining and even threatening to use nuclear weapons. In a speech on 21 March 2008, French President Nikolai Sarkozy proclaimed, "Our nuclear deterrence protects us from any aggression against our vital interests emanating from a state—wherever it may come from and whatever form it

may take." To the ever-fluid definition of deterrence, he added, "It cannot be ruled out that an adversary might miscalculate the delimitation of our vital interests or our determination to safeguard them. *In the framework of nuclear deterrence, it would be possible, in that event, to send a nuclear warning that would underscore our resolve.* That would be aimed at reestablishing deterrence [emphasis added]."[10]

The Commission established by the US Congress to give advice on the 2010 Nuclear Posture Review, chaired by none other than William Perry, reported in May 2009, "The United States requires a stockpile of nuclear weapons that is safe, secure, and reliable, and whose threatened use in military conflict would be credible." It argued, "The conditions that might make the elimination of nuclear weapons possible are not present today and establishing such conditions would require a fundamental transformation of the world political order."[11] The UK government is now similarly arguing that the time is not ripe for it to consider eliminating its nuclear weapons, has instead announced plans to work on establishing "the conditions in which there is no requirement for the continued existence of nuclear weapons."[12]

Almost as if to ensure that such conditions are not created, in July 2009 the US Senate adopted a series of amendments to the 2010 Defense Authorization Bill. One of these amendments calls on the President to make sure that the US-Russia START follow-on does not limit US ballistic missile defense systems, space capabilities, or advanced conventional weapons systems. *Yet these are precisely the issues that Russia has raised as impediments to deeper nuclear arms reductions.*[13] Another amendment requires the President to deliver a plan to modernize the US "nuclear deterrent".[14] All of the amendments were adopted by voice votes, meaning that many Democrats, as well as Republicans, said "Aye."

Further, the author of the modernization amendment, Republican Senator Jon Kyl (AZ), along with Democratic Senators Byrd (WV), Levin (MI), and Kerry (MA) and Republican Senators McCain (AZ), and Lugar (IN), on 23 July 2009, signed a letter to the President calling on him to submit, *in connection with the new START*, a plan "to modernize the nuclear weapons infrastructure, maintain the key capabilities and competencies of the nuclear weapons workforce—the designers and the technicians—and to maintain the delivery platforms."[15] This demand was reinforced by a second letter to Obama, dated 15 December 2009, signed by 41 Republican Senators.[16]

This Senatorial wing of the pro-nuclear weapons coalition is poised to extract as many dollars and permissions from the administration as possible in exchange for not blocking the ratification of the START-follow on agreement. As a down payment, the Obama administration has recently committed $5 billion in funding for the Department of Energy National Nuclear Security Administration's weapons activities between 2011 and 2016. The budget request for fiscal year 2011 increases spending on the nuclear weapons stockpile, complex, and related nuclear weapons programmes to $7 billion—10% above spending in 2010—much of which will be used to push ahead with the construction of a plutonium pit factory at the Los Alamos National Laboratory and a uranium processing factory at the Y-12 site in Tennessee.[17] Billions of additional dollars to support nuclear weapon systems are buried in the Department of Defense budget.

An even pricier set of anti-disarmament conditions will likely be attached to Comprehensive Test Ban Treaty (CTBT) ratification, thus rendering the historic intent of the Treaty mute and making it even more unlikely that the other holdout states will ratify it. Renewed push for ratification of the CTBT will, as it did in the late 1990s, provide pro-nuclear lobbies embedded and linked to the weapons labs with a powerful bargaining chip. "It is impossible to pass a clean CTBT ratification bill in the US," says Greg Mello. "Such a notion is 14 years too late. Largely as a result of the last CTBT 'deal,' nuclear warhead budgets rose 89% here in real (inflation-corrected) terms between 1995 and 2005. If warhead budgets were $4.77 billion today as they were in FY1995 (in 2008 dollars), surely we would not be talking about all these upgrades, new factories, and so on."[18]

Reality: Putting nuclear weapons in context

The United States spends as much as the rest of the world's countries combined on its military. In fiscal year 2008, the United States spent an estimated $52.4 billion on nuclear weapons-related programmes alone.[19] This staggering amount is a drop in the bucket compared to overall US military spending that year ($711 billion), but it exceeds the entire military budgets of nearly every other country. In 2006, only China ($121.9 billion), Russia ($70 billion), the United Kingdom ($55.4 billion) and France ($54 billion)

spent more on their militaries than the US spent on its nuclear weapons related programmes.[20]

Another way of looking at the value the US places on nuclear weapons is that, in dollar terms, its nuclear weapons programmes are actually larger than the national budgets of most nations on earth. For example, Bangladesh, Bolivia, and the Democratic Republic of the Congo, with national budgets of roughly $16, $8, and $2 billion, respectively, do not even combine to reach half of what the US spends on nuclear weaponry.[21] In a domestic context, the US leadership's commitment to nuclear weapons is evident in the fact that they choose to tax every American household $453 dollars per year to pay for nuclear warheads and weapons systems.[22]

President Obama's remarks in Prague not withstanding, when he presented his first military budget request, for fiscal year 2010, he said, "Going forward, we will continue to make the investments necessary to strengthen our military and increase our ground forces to defeat the threats of the 21st Century."[23]

To meet the challenge of abolishing nuclear weapons, we must broaden our understanding of how nuclear weapons fit into a historical continuum and a larger scheme. The Encarta Encyclopedia describes militarism as "advocacy of an ever-stronger military as a primary goal of society, even at the cost of other social priorities and liberties." Unfortunately, this definition accurately describes the historical trajectory and still the current reality of US national security policy. The threatened first use of nuclear weapons remains at the heart of that policy. In many cases the architecture of US militarism is "hidden in plain sight," yet is kept out of mainstream discourse. Elements include over 800 overseas bases in more than 140 countries, and an additional 6000 bases in the United States and its territories, maintained by the Pentagon.[24] The US military dominates the globe through its operation of 10 Unified Combatant Commands whose areas of operation now cover the entire Earth, the final piece being Africom—the Africa Command.[25] The US is currently building new bases in Colombia and as the military escalation continues, will build more bases in Afghanistan as well. The 234 years of US history have been marked by nearly continuous military interventions around the world. From 1945 to 1989, only the Soviet Union rivaled the US in terms of military reach and power. Since 1991, the US has existed as the world's sole hyperpower.

Nuclear weapons exist within—and not apart from—this system of extended military bases and Unified Combatant Commands, and the history it derives from. The US is the only country that deploys nuclear weapons on foreign soil, at North Atlantic Treaty Organization (NATO) bases in five European countries.[26]

Another element of the "hidden architecture" is the nuclear weapons infrastructure of laboratories and production facilities that derive from the Manhattan Project. In addition to these we would add the intellectual and corporate bastions of nuclearism, including the think tanks, academic centers, industrial corporations, lobbyists, and other institutional agents heavily vested in preserving high levels of nuclear weapons spending.[27]

Indeed, the new elite "nuclear disarmament" campaign led by Kissinger et al is best understood as an intellectual project of the conservative Hoover Institution at Stanford University, where it was incubated during conferences in 2006 and 2007.[28] For roughly four decades, this influential right-wing think tank has enjoyed a little-known, but fateful administrative and political affiliation with the US nuclear weapons complex, with many of its fellows coming out of the weapons labs, and many of its administrators beholden to the military industrial corporations which profit from running the weapons complex. The link between Hoover and the nation's two primary nuclear weapons labs—managed by a University of California and Bechtel Corporation-led consortium—provides a revealing window into the inner-workings of US nuclear policy-making. This secretive process is driven by a handful of elite think tanks and powerful multi-national firms, working in conjunction with the national nuclear weapon laboratories at Los Alamos, New Mexico and Livermore, California.[29]

Reality: the pursuit of non-proliferation through the language of disarmament

In recent years, the common thread among supporters of the Shultz, Perry, Kissinger, Nunn "vision" is a desire to legitimize US action against alleged "rogue states" and to tighten control over what has, since the mid-1990s, been called the "nuclear black market". A secondary, but equally important goal is to provide financial and programmatic support to the weapons labs

in order to sustain the US capacity to design, test, and build new nuclear weapons—with or without a CTBT. These practical agendas are more or less obscured behind the rhetorical disarmament agenda.

A collaborative project between Stanford and Harvard Universities called the Preventative Defense Project is illustrative of this trend. Currently co-directed by Clinton administration Defense Secretary and "four horsemen" member William Perry and former Los Alamos Lab Director Siegfried Hecker[30] the concept of Preventative Defense in the post-Cold War era is:

> premised on the belief that the absence of an imminent, major, traditional military threat to American security presents today's leaders with an unaccustomed challenge and opportunity to prevent future Cold War-scale threats to international security from emerging…. [The US defence establishment's] highest priority is to contribute to forestalling developments that could directly threaten the survival and vital interests of American citizens.[31]

This mission echoes a statement made in 1991 by General Colin Powell, who said, "You've got to step aside from the context we've been using for the past 40 years, that you base [military planning] against a specific threat. We no longer have the luxury of having a threat to plan for. What we plan for is that we're a superpower."[32]

To this end, Perry, with former Project co-director Ashton Carter,[33] has promoted a US policy leading toward future disarmament as the best means of facilitating what they believe is necessary US military action against those nations they simplistically label as "bad guys". In recent years they have published articles and op-eds advocating US military action against North Korea,[34] alarmist tracts about rising China,[35] and justification of the US-India nuclear technology sharing deal. In their 2003 essay "Good Nukes, Bad Nukes," they called for ratification of the CTBT as a way to lock in a global nuclear status quo, while also justifying US military strikes against would-be transgressors of this geopolitical order. "The treaty does have an impact even on 'bad guys' like Iraq, Iran and North Korea," they wrote. "When the United States moves against such regimes, it does so with the support of the global opprobrium for nuclear weapons that the treaty enshrines."[36]

Translating this philosophy into official US government policy are the highly vaunted US resolution on nuclear non-proliferation and disarmament adopted unanimously at the 24 September 2009 UN Security Council

Summit chaired by President Obama and the previous week's announcement that the White House had cancelled plans to deploy a long-range missile defence system in the Czech Republic and Poland. Both of these initiatives appeared to signal a welcome change of course in US nuclear weapons and foreign policy. However, both cases merit a closer look at the reality behind the rhetoric.

While the scrapping of the missile defence project seemed to be a positive development, reflecting the will of the majority of Czech and Polish people, it was accompanied by the little-noticed unveiling of a replacement plan, officially directed at Iran, for strengthening missile defences in Europe using "proven" land and sea-based technologies.[37] These theater missile defences—part of the US "strategic triad" of nuclear and conventional offensive weapons, missile defences, and research and development capabilities—are intended to work in conjunction with the offensive weapons systems, like swords and shields, to protect US troops and bases and other "strategic assets" around the world. They are a source on ongoing of concern to Russia, endangering prospects for further US-Russia arms reductions.[38]

Turning to the UN Security Council resolution, while it recycles a list of disarmament measures previously agreed to by the nuclear weapon states—notably the 40-year old commitment in the NPT "to pursue negotiations in good faith on effective measures relating to nuclear arms reduction and disarmament"—there is not one new or concrete disarmament measure called for. On the other hand, the nuclear non-proliferation and anti-terrorism clauses are far-ranging and specific, invoking the enforcement authority of the UN Security Council—coincidentally, controlled by the five NPT nuclear weapon states.[39]

The United States is by no means alone in pursuing aggressive non-proliferation measures in the name of disarmament. France is one of the strongest proponents of imposing stricter non-proliferation requirements on non-nuclear weapon states as a precondition for nuclear disarmament. During the UN General Assembly First Committee's 2009 session, for example, the French ambassador argued that the "crises of proliferation are now the greatest threat to international peace and security" and that their resolution is necessary to create a safe international context in order to pursue nuclear reductions. He called for the international community to be "united and resolute" and "rigorous with those who violate international [non-prolifera-

tion] norms."[40]

Likewise, in February 2009, the United Kingdom released an information paper called *Lifting the nuclear shadow: Creating the conditions for abolishing nuclear weapons*. The paper, which serves as "a call to accelerate disarmament to prevent proliferation to new states and to ultimately achieve a world that is free from nuclear weapons," outlines conditions and steps that are "potentially attainable" within the next few years "toward a global ban on all nuclear weapons". These include "stopping proliferation" in Iran, North Korea, and Syria; "tightening controls" on nuclear materials and technology; "strengthening international commitment to preventing proliferation"; "managing the growth in nuclear power"; and finally, "reducing arsenals" and "going to zero".

In the meantime, the UK's paper dismisses the concept of a nuclear weapons convention, arguing, "most of the states with nuclear weapons, including the UK, while accepting that some form of such an agreement is likely to be necessary in due course to establish the final ban, consider that it would be premature and potentially counter-productive to focus efforts on it now when the many other conditions necessary to enable a ban have yet to be put in place." Ironically, the paper notes, "Words alone will not rid the world of nuclear weapons."[41]

In July 2009, the UK government released a second report, *The Road to 2010: Addressing the nuclear question in the twenty first century*. The report is intended to "lead" global efforts for a successful NPT Review Conference. As noted by the Acronym Institute for Disarmament Diplomacy in the UK, the plan "stops short of announcing any new steps towards disarmament by the UK" and does not even mention its plans to renew Trident, the UK's "strategic deterrent".[42] Instead, the plans—just like in *Lifting the nuclear shadow*—focus exclusively on preventing the spread of nuclear weapons rather than refraining from upgrading its nuclear weapon systems, reducing its arsenal, or ending its "special relationship" with the United States that fuels its capacity to upgrade its own nuclear weapon system (see "US-UK nuclear sharing: deterring disarmament").[43]

Reality: Fewer but newer nukes forever?

In November 2009, General Kevin Chilton, Commander of Strategic Command, predicted the United States will still need nuclear weapons 40 years into the future. Chilton said his prediction was not inconsistent with the president's vision of a nuclear-free world: "The president himself has said such a world will not be reached quickly and perhaps not in his lifetime and I agree with that." He added that the idea of a world without nuclear weapons:

> includes a vision of a different world order than what we have today …. That's why most people who talk about that vision caveat it with, 'I don't think it will happen in my lifetime.' It's not because we couldn't physically cut up every weapon in the world in 40 years. *We could*. The question is would it be a safer world if we did [emphasis added].

Quoting from Obama's Prague speech, Chilton said his command must focus on "the president's confirmation that as long as nuclear weapons exist the United States will maintain a safe, secure and effective arsenal to deter any adversary and to guarantee that defense to our allies."[44]

To this end, the US nuclear weapons research and production infrastructure is being renovated through a massive "Complex Transformation" programme.[45] At the end of September 2009, the Democratically-controlled Congress voted to spend $6.4 billion in FY 2010 to maintain and enhance the "safety, security, and reliability" of the US nuclear weapons stockpile—slightly more than in 2009. This includes the "Stockpile Life Extension" programme for the W76 Sea-Launched Ballistic Missile warhead, carried aboard the US Trident submarines currently patrolling the world's oceans, ready to target any location on earth with a computer keystrokes. Under this programme the W76 is being given a new capacity to destroy "hard targets," making it more suitable for a first-strike. It also includes funding to study modernization of the B61 gravity bomb, and plan for a "long-term 21st century weapon". This legislation contains increases in funding for the production of plutonium pits—the cores of hydrogen bombs.[46]

According to Defense Secretary Robert Gates, kept on by President Obama from the Bush administration, the forthcoming Nuclear Posture Review, a Congressionally-mandated review of US nuclear strategy currently underway, is likely to recommend development of new warhead designs (under the guise of "safety and reliability") as part of a broader effort to

maintain and modernize the nation's "nuclear deterrent".[47]

A litmus test for the sincerity of the four horsemen's desire to pursue nuclear abolition occurred shortly after publication of their initial op-ed. Since 2005, the directors at Los Alamos and Lawrence Livermore had been promoting a programme called the Reliable Replacement Warhead (RRW), which they hoped would take the place of the more generic "Stockpile Stewardship," as the raison d'etre of the nuclear weapons complex. Under the rubric of "replacing" existing nuclear warheads and enabling a quantitative reduction in the US arsenal, the labs sought to develop a new model nuclear weapon, receive billions of dollars in funding for production infrastructure, and train cadres of weapons scientists for future careers in the nuclear enterprise.

Throughout the 2007–08 Congressional debate over the RRW, Kissinger and Shultz proved to be among the most prominent advocates of the new nuclear weapons programme. As Congressional Subcommittee hearings concerning the programme were in full swing, Kissinger wrote in a letter to Senator Pete Domenici (R-NM), "Specifically, I believe that research and design of the RRW should continue and that the infrastructure to support our current programme should be urgently strengthened." In a joint letter to Domenici, Shultz and Perry wrote, "upgraded infrastructure is needed ... to manufacture warheads of any design. This work should proceed since a robust infrastructure will be necessary at every phase of the process of reducing and eliminating nuclear weapons."[48] The Congressional Commission tasked with making recommendations for the 2010 Nuclear Posture Review, headed by William Perry and *facilitated by the US Institute of Peace*, in its final report, released in May 2009, listed the construction of a plutonium pit factory at the Los Alamos lab, capable of flexible manufacturing new pit designs for new warheads, among its highest priorities.[49]

One month earlier, it was reported that the US has been using Britain's Atomic Weapons Establishment to carry out research into its own nuclear warhead programme. US-UK cooperation in nuclear weapons research has been ongoing since the Manhattan Project, though the details are secret. Speculation is that the US is or has been using the UK's facilities to get around restrictions placed on development of a new RRW by the US Congress. In a 2008 interview, John Harvey, policy and planning director at the US National Nuclear Security Administration, said:

> We have recently, I can't tell you when, taken steps to amend the MDA [Mutual Defence Agreement], not only to extend it but to amend it to allow for a broader extent of cooperation than in the past, and this has to do with the RRW effort.[50]

(For more details, see "US-UK nuclear sharing: deterring disarmament").

In January 2010, Shultz, Perry, Kissinger and Nunn peeled away some of the disarmament rhetoric from their "vision" in a starkly titled op-ed, "How to Protect Our Nuclear Deterrent," again appearing in the *Wall Street Journal*. Declaring that,"Maintaining high confidence in our nuclear arsenal is critical as the numbers of these weapons goes down," they wrote, "The United States must continue to attract, develop and retain the outstanding scientists, engineers, designers and technicians we will need to maintain our nuclear arsenal, whatever its size, for as long as the nation's security requires it."[51] Calling for a substantial increase in funding for the US nuclear weapons laboratories and a modernized nuclear weapons infrastructure, they warned, "[T]he deadliest weapons ever invented could fall into dangerous hands."

In their op-ed, the authors invoked the spectre of nuclear weapons falling into "dangerous hands" three times. Yet in whose hands are nuclear weapons "safe"? (The only hands that have so far used them?) As the Hans Blix-led Weapons of Mass Destruction Commission wrote in its 2006 report, *Weapons of Terror: Freeing the World of Nuclear, Biological and Chemical Arms*, "The Commission rejects the suggestion that nuclear weapons in the hands of some pose no threat, while in the hands of others they place the world in mortal jeopardy. Governments possessing nuclear weapons can act responsibly or recklessly. Governments may also change over time."[52]

In a profoundly disturbing speech to the US Institute of Peace on 21 October 2009, US Secretary of State Hillary Clinton said:

> We are sincere in our pursuit of a secure peaceful world without nuclear weapons. But until we reach that point of the horizon where the last nuclear weapon has been eliminated, we need to reinforce the domestic consensus that America will maintain the nuclear infrastructure needed to sustain a safe and effective deterrent without nuclear testing. So in addition to supporting a robust nuclear complex budget in 2011, we will also support a new Stockpile Management Program that would focus on sustaining capabilities.

Citing General Chilton, she added, "This is what the military leaders, charged with responsibility for our strategic deterrent, need in order to defend our country," noting, "As the President has acknowledged, we might not achieve the ambition of a world without nuclear weapons in our lifetime or *successive* lifetimes."[53]

In a 29 January 2010 *Wall Street Journal* op-ed of his own, Vice-President Joseph Biden gave a ringing endorsement of the four horsemen's latest op-ed. The Obama administration's fiscal year 2011 budget request, released a few days later and welcomed by the National Nuclear Security Administration as "a critical step toward implementing President Obama's nuclear security vision," asks for a nuclear weapons spending surge in order to modernize the US arsenal, build a 21st century nuclear weapons complex with plutonium pit manufacturing and uranium processing capabilities, and more.[54]

Whatever the Obama administration's true intentions are, not only will investing in a modernized nuclear weapons infrastructure be viewed as hypocritical by other nations, it will also provide future presidents, whatever their foreign policies may be, the means to design and manufacture new nuclear weapons if they want to, with all that that implies. Likewise, regardless of whether the individual motivations of the four horsemen are sincere, their institutional loyalties and larger political agendas reflect a political economy that is not only fundamentally at odds with nuclear abolition, but is an anathema to peace and justice.

Ultimately, if the Hoover "no nukes" initiative is to have any genuine value, it will be because it helps to reveal the political and ideological trappings of an entrenched power structure that has for too long avoided criticism and exposure, and has made end-runs around arms control and disarmament activists whose naïve best intentions are no match for the calculated strategies of the weapons labs and their allies. In the meantime, the widespread international endorsement of their "vision" makes it even more difficult to press for a vision that is not rooted in major power hegemony that gives other nuclear weapon states an excuse to put off their own disarmament obligations to the very distant future.

Modernization, indefinite retention, and deterrence: Not just an American fetish

At end of 2009, there were approximately 23,360 nuclear weapons in the world, possessed by China, France, India, Israel, Pakistan, the Russian Federation, the United Kingdom, and the United States. Nearly half of them are active or operationally deployed. The United States and Russia possess 96% of this global nuclear arsenal. The United States is the only nuclear weapon state to deploy its nuclear weapons on foreign soil, with approximately 200 nuclear bombs at six air bases in five NATO countries.[1]

Like the United States, Russia is reducing the number of nuclear weapons in its arsenal, but is also modernizing its remaining forces. When the Soviet Union disbanded in 1991, Russia inherited approximately 35,000 nuclear weapons, a massive and sophisticated nuclear weapon infrastructure, and the world's largest stockpile of fissile material.[2] As of late 2009, Russia had reduced its nuclear arsenal to approximately 4600 warheads in its operational arsenal—2,600 strategic and 2000 nonstrategic—with an additional 7,300 warheads in reserve or awaiting dismantlement. The anticipated START follow-on, if it enters into force, will further reduce deployed strategic warheads to between 1500 and 1675 and strategic launchers to between 500 and 1100. However, mirroring US national security policy, plans for modernization of Russia's nuclear forces are underway. In a November 2009 speech, President Dmitry Medvedev announced that the Russian military would receive "more than 30 ballistic land- and sea-based missiles" and three nuclear submarines in 2010.[3] This is in line with previously announced Russian intentions to continuously modernize all three legs its nuclear triad—land-based intercontinental ballistic missiles (ICBMs), submarines, and bombers, in order to maintain a "credible strategic deterrent force".[4]

Russia's sprawling nuclear weapons complex includes two major design centers and three research institutes under the Ministry of Atomic Energy's Directorate of Nuclear Warhead Design and Testing;

a number of related research institutes under different agencies' supervision; and various fissile and other radioactive materials production, processing, and storage facilities.[5] Unlike the US "Stockpile Stewardship" programme, which is based on modifying and extending the service lives of existing warheads, maintenance of Russia's nuclear stockpile has been based on the periodic reproduction of warheads. However, seemingly adopting the US method, in July 2009, President Medvedev announced that by 2011 Russia would develop supercomputers to monitor the effectiveness of its nuclear deterrent.[6]

On 5 February 2010, Russia published its new Military Doctrine, which replaces a 2000 document. Despite concerns that the role of nuclear weapons might be expanded in the new Military Doctrine, the 2010 document essentially reaffirms the nuclear policies elaborated in 2000. Like its predecessor, the new Doctrine retains the first-use option, reserving the right to use nuclear weapons not only in response to a nuclear attack or an attack with biological or chemical weapons, but also in response to a conventional attack.

The new Doctrine places the expansion of NATO's mission and movement of the military infrastructure of NATO member countries closer to the borders of the Russian Federation at the top of its list of external military dangers to Russia. It also identifies the deployment of strategic missile defence systems, the militarization of outer space, and the deployment of precision nonnuclear strategic weapon systems as threats that undermine global security.

The main mission assigned to nuclear weapons by the new Doctrine is deterrence, defined as the "prevention of nuclear military conflict or any other military conflict." This mission assumes "the maintenance of strategic stability and the nuclear deterrence capability at the level of sufficiency." The notion of "sufficiency" is defined as ability to inflict "predetermined" or "tailored" damage to an aggressor.

In a new development, the doctrine introduces the use of high-precision conventional weapons to provide for strategic deterrence, along with nuclear weapons. This is an indication that Russia plans to follow the US lead in developing a conventional global strike capability.

In April 2009, following US President Obama's Prague speech, Russian President Medvedev signed a joint statement with Obama committing the "two countries to achieving a nuclear-free world." In the May 2009 "Strategy of National Security until Year 2020," President Medvedev also committed Russia to pursuing a world free of nuclear weapons.

Possibly reflecting these commitments, some analysts believe that the new Military Doctrine appears to somewhat reduce the role of nuclear weapons in Russia's national security policy. For example, while the 2000 Doctrine foresaw resorting to nuclear weapons "in situations critical for [the] national security" of Russia, the 2010 version contains stricter language allowing for their use in situations when "the very existence of [Russia] is under threat." In general, the 2010 Doctrine devotes less attention to the nuclear component of Russia's armed forces than its predecessor.

However, at the same time President Medvedev signed the 2010 Military Doctrine, he also signed a classified companion document, "The Foundations of State Policy in the Area of Nuclear Deterrence until 2020." There is no way to determine if Russia has constrained the use of nuclear weapons or exactly what its nuclear posture is unless Medvedev decides to declassify the second document.[7]

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1 Robert S. Norris and Hans M. Kristensen, "Nuclear Notebook: Worldwide deployments of nuclear weapons, 2009," *Bulletin of the Atomic Scientists*, November/December 2009. For a comparative analysis of the nuclear weapons modernization programs in the United States, Russia, France, the United Kingdom, and China, see Kingston Reif, "Nuclear Weapons, The modernization myth," *Bulletin of the Atomic Scientists*, 8 December 2009, at <http://www.thebulletin.org/web-edition/features/nuclear-weapons-the-modernization-myth>.

2 "Russia Profile: Nuclear Overview," Nuclear Threat Initiative Research Library, at <http://nti.org/e_research/profiles/Russia/Nuclear/index.html>.

3 Robert S.Norris and Hans M. Kristensen, "Russian nuclear forces, 2010," *Bulletin of the Atomic Scientists*, January/February 2010.

4 "Russia Profile: Nuclear Chronology, 2006–2009," Nuclear Threat Initiative Research Library, <http://www.nti.org/e_research/profiles/Russia/Nuclear/chronology_2006-2009.html>.

5 "Russia Profile: Nuclear Warhead Production Complex," Nuclear Threat Initiative Research Library, at <http://www.nti.org/e_research/profiles/Russia/Nuclear/facilities_warhead.html>.

6 Norris and Kristensen, supra note 3.

7 Nikolai Sokov, "The New, 2010 Russian Military Doctrine: The Nuclear Angle: Contrary to expectations, the new Russian Military Doctrine reduces reliance on nuclear weapons," James Martin Center for Nonproliferation Studies, 5 February 2010. See also Simon Saradzhyan, "Nuclear 'Constraint' in Russia," International Relations and Security Network, 16 February 2010. The official text of the 2010 Russian Military Doctrine and an unofficial English translation can be accessed at World Politics Review, at <http://worldpoliticsreview.com/documents/show/133>.

Recommendations

- If the danger of nuclear war is to be eliminated, ceasing to plan and build for an eternal nuclear threat must come early, not late, in the process, and it will have to be linked to a more general demilitarization and demobilization of US, Russian, European, and other major military forces. All states possessing nuclear arsenals should halt research, development, testing, and component production while reductions of arsenals are in progress, not afterwards. Production and research facilities should be subject to an intrusive verification regime at the earliest possible time. States should reduce nuclear arsenals in a manner that supports concurrent general disarmament of "conventional" forces.
- Civil society and government leadership in non-nuclear weapon states need to recognize the dangers of uncritically endorsing the rhetorical "vision" espoused by the Obama administration, four horsemen, and other nuclear elites, and instead push forward a concrete agenda for nuclear disarmament to be pursued in tandem with non-proliferation measures. Within this concrete agenda for nuclear disarmament, these actors should recognize the paradoxically pro-nuclear weapon aims of the United States that can be accomplished through ratification of the Comprehensive Test Ban Treaty (CTBT) under current conditions.
- Taking this into account, disarmament NGOs in the United States and other nuclear weapon states should rigorously oppose funding for nuclear weapons research, design, and production and should oppose construction of any new nuclear weapons complex facilities as a condition of CTBT ratification. If this cannot be accomplished, perhaps it would be best to forgo CTBT ratification entirely, focusing instead on budget and infrastructure developments within nuclear weapon states.

Chapter 2 NATO nuclear sharing: an anachronistic obstacle to nuclear disarmament and regional security

Martin Butcher and Nicola Butler

The North Atlantic Treaty Organization (NATO)'s Strasbourg-Kehl summit in April 2009 launched a review of the Strategic Concept—the Alliance's highest level policy guidance. The review offers an opportunity to update policy on nuclear weapons and to strengthen the nuclear Non-Proliferation Treaty (NPT). NATO hopes to agree a new Strategic Concept at its Lisbon summit in late 2010.

NATO can play a key role in achieving a nuclear weapon free world by ending Cold War practices such as nuclear sharing, withdrawing tactical nuclear weapons from Europe, and working more closely with Russia to eliminate tactical nuclear weapons. The Strategic Concept review also offers the opportunity to reduce the role of US, British, and French nuclear weapons in Alliance strategy. While some within NATO are opposed to change, a review of nuclear policy is long overdue and vital to strengthening the nuclear non-proliferation regime.

Since the end of the Cold War, NATO has dramatically reduced the number of nuclear weapons deployed in Europe. However, the weapons, policies, and doctrines that remain in place are disproportionately damaging to relations with Russia and to the non-proliferation regime. They are a Cold War anachronism that undermines European security. Furthermore, nuclear sharing practices are a *prima facie* violation of Articles I and II of the NPT because they involve the eventual transfer by the United States to non-nuclear weapon states control over nuclear weapons. The legal justification for this was set unilaterally by the United States and many states party to the NPT acceded to the NPT without being aware of this policy.

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In Brussels, on 7 July 2009, at the launch of NATO's public consultation on a new Strategic Concept, International Atomic Energy Agency Director General Dr Mohamed ElBaradei called on the Alliance to decrease heavily its "reliance on nuclear weapons," arguing, "Insisting that nuclear is the supreme guarantee is the absolute wrong message to the rest of the world."[1]

What does NATO's nuclear sharing policy entail?

NATO's 1999 Strategic Concept asserts that strategic nuclear weapons provide the "supreme guarantee" of Alliance security. Three NATO members—the United States, United Kingdom, and France—possess over 10,000 nuclear weapons between them. Four NATO members that are formally non-nuclear weapon states parties to the NPT—Belgium, Germany, Italy, and the Netherlands—maintain "nuclear sharing" arrangements under which they could be given wartime use of some of the 200 American-owned and controlled nuclear free-fall bombs believed to be still stored in Europe. Until 2001, Greece, and until 2005, Turkey, also participated in nuclear sharing. Neither of these countries maintain active nuclear forces now, though Turkey still hosts US nuclear weapons on its soil.

During the Cold War, NATO nuclear sharing was credited with persuading countries like Germany and Italy to give up their national nuclear weapons programmes and join the NPT. But it now stands in the way of more effective non-proliferation approaches and progress towards building a world free of nuclear weapons. The basic fact is that 25 of NATO's 28 member states, nominally non-nuclear, rely on nuclear weapons for their national defence.

NATO's 1999 Strategic Concept states that war prevention requires "widespread participation by European Allies involved in collective defence planning in nuclear roles, in peacetime basing of nuclear forces on their territory and in command, control and consultation arrangements." Some NATO countries host US nuclear bases and tactical weapons on their soil; some of their aircraft are equipped to carry nuclear weapons and their pilots are trained to fly nuclear missions. All allies except Iceland and France participate in Alliance nuclear planning as part of the Nuclear Planning Group.

Undermining Articles I and II of the NPT

Article I of the NPT states in part,

> Each nuclear weapon State Party to the Treaty undertakes not to transfer to any recipient whatsoever nuclear weapons or other nuclear explosive devises or control over such weapons or explosive devices directly or indirectly;

Article II imposes a complementary obligation on non-nuclear weapon states not to "receive the transfer" of nuclear weapons. NATO nuclear sharing appears to breach these obligations. NATO argues that nuclear sharing is compatible with the NPT, based on a US interpretation that the Treaty does not deal with arrangements for deployment of nuclear weapons within allied territory, as these do not involve any transfer of nuclear weapons or control over them unless and until a decision were made to go to war, at which time the Treaty would not longer be controlling.[2]

However, in 1985, the NPT Review Conference agreed as part of its Final Document that "the strict observance of the terms of Articles I and II remains central to achieving the shared objectives of preventing under any circumstances the further proliferation of nuclear weapons and preserving the Treaty's vital contribution to peace and security, including to the peace and security of non-Parties."[3] Though not made explicit, this language was intended by the delegation that introduced it to constrain NATO nuclear sharing arrangements. Since then, a growing number of NPT states parties, including more than 100 nations in the Non-Aligned Movement, have called on NATO members to transform their doctrine and policies to bring them into conformity with their NPT obligations.

Since the mid-1990s, the US interpretation has become increasingly controversial. At the 1995 NPT Review and Extension Conference, the Mexican delegation asked for clarification on whether nuclear sharing breached Articles I and II. Mexico's concerns were taken up by the Non-Aligned Movement. Several proposals questioning the US interpretation were put forward for inclusion in the Main Committee I's final report, including acknowledging

> that among States parties there are various interpretations of the implementation of certain aspects of Articles I and II which need clarification, especially regarding the obligations of nuclear weapon States

> parties ... when acting in cooperation with groups of non-nuclear-weapon States parties under regional arrangements.[4]

For diplomatic reasons NATO is not named, but it is clear from the context (and a reading of the various statements during the NPT PrepCom) that these concerns related principally to NATO states and Russia.

In 1998, Egypt proposed that "the 2000 Review Conference state in clear and unambiguous terms that Articles I and II of the Treaty on the Non-Proliferation of Nuclear Weapons allow for no exceptions and that the NPT is binding on States Parties at all times."[5] This mirrored the language of the final document of the 1985 Review Conference in which States Party to the NPT agreed by consensus that Articles I and II apply "under any circumstances". No NATO states dissented from that consensus.

In 1999, the New Agenda Coalition proposed that "all the articles of the NPT are binding on all States Parties and at all times and in all circumstances."[6] The Egyptian delegation further proposed "that the PrepCom recommend that the 2000 Review Conference state in clear and unambiguous terms that Articles I and II of the Treaty on the Non-Proliferation of Nuclear Weapons allow for no exceptions and that the NPT is binding on State parties in times of peace and in times of war alike."[7] Though not adopted then, this needs to be put back on the NPT table.

NATO countries claim to support the full implementation of the NPT, but have often opposed disarmament proposals endorsed by the majority of non-nuclear states in multilateral fora such as the NPT and UN General Assembly First Committee. The Principles and Objectives for Nuclear Non-Proliferation and Disarmament adopted as part of the decisions to extend the NPT in 1995 contained a number of commitments relevant to the Alliance, including the establishment of additional nuclear weapon free zones and further steps to assure non-nuclear weapon states parties to the Treaty against the use or threat of use of nuclear weapons. NATO's nuclear policies have constituted an obstacle to improving negative security assurances and to any initiative to establish a nuclear weapon free zone in Central Europe.

Similarly, NATO policies run counter to much of the Programme of Action adopted by NPT states at the 2000 Review Conference (and endorsed by NATO itself in December 2000), notably the commitments to transparency, further reductions in non-strategic weapons, reductions in the operational status of these weapons, and a diminishing role for nuclear weapons

in security policies.

Despite this continued criticism within the NPT context, NATO members hold that their nuclear sharing is in compliance with the NPT, arguing that the arrangements predated the NPT and that "general war" would end the validity of the NPT, as the purpose of the treaty is to prevent such a war. This interpretation is open to challenge. If any other NPT state tried to share nuclear weapons using similar arrangements, the NATO countries would be the first to condemn them for breaching Articles I and II of the NPT. And, in the past, Belarus has suggested it would like a similar arrangement with Russia. In effect, NATO maintains a privileged practice that it would not want others to emulate.

Dr. John Burroughs of the Lawyers Committee on Nuclear Policy has argued,

> There is a *prima facie* case that NATO nuclear sharing violates Articles I and II.... The United States itself has acknowledged that there could be a transfer of control in the event of war, and the United States is presently *assisting* non-nuclear weapon states in *acquiring* such possible *control*. The NPT does not provide that it becomes ineffective in time of war. Nor is there any basis in international law for maintaining that it does so. The NPT does provide for withdrawal upon three months notice of extraordinary events that a state regards as having jeopardized its supreme interests, but this is not relied upon by the United States.[8]

NATO's nuclear sharing arrangements would amount to *de facto* proliferation in times of war. This is particularly destabilizing in the post 9/11 context: under the Bush administration, the US government declared a "war on terror" and changed military doctrines to provide for nuclear weapons to be used in preemption or retaliation. These doctrines, currently under review by the Obama administration, would allow the United States to start a war using nuclear weapons, thereby creating the conditions under which it says the NPT is not operative, and then use nominally non-nuclear NATO nations to participate in a nuclear attack. If this seems somewhat theoretical, the United States is reliably reported to have drawn up plans for a nuclear attack on the Iranian uranium enrichment facility at Natanz during the Bush administration—which would create the circumstances that would allow activation of NATO sharing programme.

Growing support for removal of NATO nuclear weapons

There are increasing calls from government figures, parliaments, and citizens groups for NATO nuclear weapons to be removed from Europe. The US Task Force on Department of Defense Nuclear Weapons Management found that senior figures in United States European Command (USEUCOM) see US nuclear weapons as having "no military value" and see "no military downside to the unilateral withdrawal of nuclear weapons from Europe."[9] Their 2008 report argues that the reason for retaining these weapons is "the political value" that allies place on them. This fails to recognize growing opposition to these weapons in European countries.

Germany. In mid-October 2009, the newly formed German coalition government stated in its policy document that, "in the context of talks on the Strategic Concept for NATO we will advocate within NATO and towards out U.S. allies a withdrawal of remaining nuclear weapons from Germany."[10] Foreign Minister Guido Westerwelle then initiated a round of visits with close allies, at which the issue was discussed. He raised withdrawal of nuclear weapons during the NATO Foreign Ministers meeting on 3 and 4 December 2009 in Brussels. Opposition Social Democrats also support withdrawal. In May 2009, German foreign minister Frank-Walter Steinmeier told the German magazine *Der Spiegel*, "these weapons are militarily obsolete today" and promised that he would take steps to ensure that the remaining US warheads "are removed from Germany". Similarly, Social Democrat spokesperson for disarmament Rolf Mützenich called on Angela Merkel to discuss the issue with US President Obama, "with a view to relatively quickly reaching an agreement on the withdrawal, preferably within the next couple of months."[11]

Previously, in January 2009, in response to the letters published in the *Wall Street Journal* by Kissinger, Schultz, Perry, and Nunn, former chancellor Helmut Schmidt, former President Richard von Weizsäcker, along with former Ministers Egon Bahr and Hans-Dietrich Genscher, published an oped in *New York Times* calling for all remaining US warheads to be withdrawn from German territory.[12] Much earlier, in January 2006, nine parliamentarians from the then-newly formed party Die Linken introduced a resolution to German parliament calling for the German Air Force to end its NATO commitment to deliver US nuclear weapons in times of war.[13]

In April 2005, the Liberal Party in Germany proposed a resolution in Parliament asking the government to insist on the withdrawal of US nuclear weapons from German territory. The proposal was overwhelming supported by the German public and politicians.[14]

Netherlands. In the first week of November 2009, Dutch Foreign Minister Maxime Verhagen met his German counterpart. They discussed issues including nuclear withdrawal and Verhagen agreed that the Netherlands would also work for the withdrawal of US nuclear weapons from Europe in the context of the Strategic Concept talks and US-Russia arms control negotiations.[15]

On 23 November 2009, the daily Dutch newspaper NRC Handelsblad published an article by Ruud Lubbers (former Prime Minister of the Netherlands), Max van der Stoel (former Minister of Foreign Affairs), Hans van Mierlo (former Minister of Defence and of Foreign Affairs), and Frits Korthals Altes (former Minister of Justice) called "Toward a Nuclear Weapon Free World".[16] The article calls for the Netherlands to play an active role in ensuring that the revision of NATO's Strategic Concept "will lead to the withdrawal of American nuclear weapons from the territories of non-nuclear weapon states."

Previously, in February 2001, Dutch parliament held a debate on the Netherlands' role in NATO nuclear sharing. Several Dutch political parties supported the unilateral removal of US nuclear weapons from the Netherlands, but two of the three governing parties argued for negotiated removal, while a slight majority in parliament's Lower Chamber supported increased transparency by NATO. During the debate, Dutch Minister of Foreign Affairs Jozias van Aartsen argued, "We are part of an alliance which possesses nuclear weapons, this is part of NATO's strategic concept and this therefore means that Holland must play a role in this." He went on to assert, "in all the negotiating fora which we have on this in the coming years, that the aim remains the abolition of nuclear weapons."[17]

Belgium. On 15 October 2009, legislation proposing a ban in Belgium on the manufacturing, fixing, sale, shipping, and possession of nuclear arms was submitted to the Belgian Senate. Consideration and full passage of the bill will take until May 2010 to carry out. The current proposition, prepared by Socialist Senator Philippe Mahoux, is the first step in the process of effectively banning all kinds of nuclear weapons in Belgium. Mahoux said the

resulting law would be in keeping with Belgium's commitments under the NPT and could help promote arms control.[18]

On 3 November 2009, Belgian Foreign Minister Yves Leterme met Guido Westerwelle and the two also agreed to work for the withdrawal of US nuclear weapons from Europe. A week earlier, Leterme had told the Belgian Senate that he would seek the withdrawal of nuclear weapons from Belgium in concert with other NATO allies.

Earlier, on 22 March 2005, the Commission of Foreign Affairs and Defence of the Belgian Senate adopted a resolution requesting the Belgian government to broach the possibility of removal of US nuclear weapons from Europe.[19] On 21 April 2005, the Belgian Senate unanimously echoed this call.

Norway. In December 2007, Steinmeier and his Norwegian counterpart, Jonas Gahr Støre, launched an initiative "to identify areas in which NATO can better define its profile on disarmament, arms control and nuclear nonproliferation." In April 2009, State Secretary Espen Barth Eide of the Norwegian Ministry of Defence told *Arms Control Today* that "all issues are on the table in NATO, including the presence of U.S. nuclear weapons in Europe as well as tactical nuclear weapons and de-alerting."[20] The Norwegian Coalition government has committed itself to initiate a discussion in NATO about how the alliance can contribute to realizing the goal of a world without nuclear weapons. Through commitments that include all countries. The issue of the role of nuclear weapons in the Alliance will be an important part of this work.[21]

Italy. On 23 June 2009, the Italian Parliament adopted by consensus a resolution submitted by Parliamentarians for Nuclear Non-Proliferation and Disarmament Council member Federica Mogherini, which calls on the government to increase its efforts for nuclear disarmament. The resolution highlights a number of proposals and initiatives including the nuclear weapons convention, the UN Secretary-General's five-point plan for disarmament, and the European Parliament resolution of 5 June 2009. The resolution calls on the Italian government to:

- work as President of G8 with other G8 leaders to take substantial steps towards the goal of a total elimination of nuclear arsenals;
- foster, within NATO, a discussion on the need to rethink the role and importance assigned to nuclear weapons; to promote a constructive

> dialogue towards a European Nuclear Weapon Free Zone; and to advance the goal of zero nuclear weapons.

On 27 March 2008, 67,248 Italian citizens submitted a bill to Italian parliament to have Italy declared nuclear weapon free. On 24 July 2008, four Italian statesmen—Massimo D'Alema, Gianfranco Fini, Giorgio La Malfa, and Arturo Parisi—and one scientist, Francesco Calogero, drafted an op-ed on a nuclear weapon free world, though they did not mention the removal of nuclear weapons from Italian soil as one of the steps in this direction.[22]

Turkey. There is a growing debate in Turkey as to whether nuclear weapons are necessary for national defence. It has been reported that an advisor to the Turkish Prime Minister has said publicly that they are not. When asked if Ankara's commitment to a nuclear weapon-free Middle East mean that the Turkish Government would support withdrawal of the weapons now or possible under some future agreement, Ibrahim Kalin, chief foreign policy adviser to the Prime Minister, reportedly "began ... with all the standard things":

> That it was up to the United States, that this is a conversation that should occur within NATO, Turkey's commitment to a nuclear-weapon free region was a serious proposal, etc. Then he said something remarkable: As for his own personal opinion, Kalin said, Turkey "would not insist" that NATO retain forward-deployed nuclear weapons. Conventional forces are sufficient, he added, to meet Turkish security needs. Kiniklioglu [a Turkish MP who serves as deputy chairman of foreign affairs for the party] didn't flinch."[23]

Strategic Concept review

A debate on the role of US nuclear weapons in NATO during the NATO Strategic Concept revision is now unavoidable. A majority, if not all, basing countries now wish or would accept the removal of US nuclear weapons. The Strategic Concept review provides NATO nations with an excellent opportunity to live up fully to their obligations under Articles I and II and to strengthen the NPT by allowing the loophole on nuclear sharing to be closed once and for all. On 3 August 2009, NATO launched a web module on its new Strategic Concept that provides access to background information, re-

lated opinions, and a bibliography, and also includes a public discussion forum. The forum promises that comments posted there "will be periodically transmitted to both the Secretary General and the group of eminent persons as an input to their deliberations. NATO will give feedback as appropriate."[24] The Secretary General has also appointed a twelve member "expert group" to consult with governments, think tanks, non-governmental organizations, and international organizations on the Strategic Concept and to submit its conclusions to the Secretary General in April 2010. In order for the process of civil society input to be as informed as possible, some groups, including NATO Watch, have urged NATO to "loosen its access to information rules," pointing to the classified status of significant background studies, such as the advice of the Military Committee, and to make public the presentation of the expert group's analysis and recommendations and the Secretary General's report.[25]

Recommendations

- NATO's non-nuclear members should cease equipping their aircraft and training to use US nuclear weapons in times of war. This would be timely and economically attractive, since all nuclear sharing nations must replace their aging fleets of aircraft over the next decade, and could use this opportunity to reorient defence budgets while giving up the anachronistic nuclear role.
- As part of its Strategic Concept review, NATO should remove US tactical nuclear weapons from Europe and end the policies of nuclear sharing and deterrence based on the potential first use of nuclear weapons. NATO should use this decision in a leverage strategy to persuade Russia to mothball and eliminate its tactical nuclear forces as well.
- These actions should be publicly announced (unlike recent withdrawals) to contribute to a positive atmosphere at the NPT. NATO members should then initiate a further programme of action to strengthen the NPT, including committing to the goal of a nuclear weapon free world and practical steps to achieve this aim.
- To begin this process, at the 2010 Review Conference, NPT states should strengthen the Treaty by declaring that it is binding on all state parties "under any circumstances". NATO member states should issue a joint declaration accepting this and stating their intention to comply promptly.

Chapter 3 US-UK nuclear sharing: deterring disarmament

John Ainslie

For over 50 years, the US and UK governments have shared information on the design of nuclear weapons. They have also traded warhead components including radioactive material. But these exchanges have been kept off the political radar. Linton Brooks, a former head of the US nuclear weapons programme, described the collaboration as "often unnoticed and inevitably unquestioned".[1] The dialogue and trade is not only hidden from nuclear Non-Proliferation Treaty (NPT) meetings and other disarmament conferences—it is often even concealed from diplomats in the two participating countries. Most of the exchanges are in the form of secret meetings between technical specialists, isolated from wider policy discussions. According to Brooks, the US State Department and the British Foreign Office are, to a large extent, excluded. In most cases only technical experts are inside the bubble. For example, at least one senior US nuclear policy officer has a more intimate relationship with his British counterparts than with his own State Department.[2]

The main mechanism for US-UK nuclear sharing is the Mutual Defence Agreement (MDA). First signed in 1958, the Treaty has been amended and extended several times. It is very comprehensive and facilitates the exchange of blueprints, special nuclear material, and components for nuclear weapons. It also covers missiles and the reactors for nuclear submarines. Day-to-day exchanges are limited more by bureaucratic process than by the wording of the Treaty.

The second plank of the sharing arrangement is the Polaris Sales Agreement (PSA) of 1963, which, with its amendments, has given Britain access to US Polaris and Trident missiles and all the support systems that they require. The current arrangement is that Royal Navy submarines take a number of

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Trident missiles from a common pool.[3] There are no distinct UK missiles.

The MDA was signed just after the UK detonated its first hydrogen bomb. But this British hydrogen bomb design was never put into production. Shortly after the Treaty was agreed, the Atomic Weapons Establishment (AWE) began manufacturing Red Snow hydrogen bombs. These were a direct copy of the US Mk-28 design.[4] Subsequently, the UK Polaris, Chevaline, and WE-177 warheads all had a secondary (fusion stage) based on a US design.[5] The UK has never deployed a thermonuclear weapon of genuinely British origin.

In 2008, on the eve of the fiftieth anniversary of the MDA, the Project on Nuclear Issues interviewed over 30 people who had been involved in implementing the Agreement. The resulting book and audio tapes provide valuable insights into the relationship.[6] One lesson is that the exchanges have expanded in both breadth and depth over recent decades.

Richard Wagner, former US Assistant to the Secretary of Defence for Atomic Energy, said that the scale of collaboration increased from the 1980s onwards:

> The general trend was to continually expand the scope of what could be talked about … the technical people from both sides would propose expansion, this was discussed at policy level—sometimes the policy dimension wouldn't allow full expansion as requested from the technical level—but generally it did.... My main memory is of a continuous expansion.[7]

The exchanges became more important after 1992, when nuclear tests ended.[8] From that point on, scientists had to rely on experimental data and modelling. It was useful for the United States to have access to an outside body which could check their calculations.

Glen Mara, Director for Weapons Programs at Los Alamos Laboratory, explained, "There has generally been an increasing slope through all the international agreements to enhance and expand collaboration … as we approach this 50th anniversary and discuss enhanced collaboration I think it is just going to accelerate."[9] He said that a key issue was the exchange of experimental data between the two countries, noting, "There are attempts now to speed up the process." The US Nuclear Posture Review in 2002 initiated new "enhanced collaborations" between AWE and the US nuclear weapons laboratories on specific topics.[10] The 2010 Posture Review is likely to have a

significant impact on the UK programme, but the relevant details may not emerge into the public domain.

Admiral Pete Nanos, formerly Director of Los Alamos National Laboratory, has said that the US-UK relationship has become so close that Aldermaston has "essentially become almost like a third weapons laboratory" for the US.[11]

Frank Miller, an American official who was given a knighthood by Britain for his work implementing the MDA, has said that in the 1980s, the discussions between the US and UK governments moved beyond nuclear weapons technology to sharing nuclear policy and targeting concepts. The policy staff from the two countries have two annual week-long meetings where they share their thinking.[12]

Today, a US Joint Chief of Staff's instruction outlines how British planners require access on "a daily and continuing basis" to information from the US nuclear targeting system.[13] The US Navy supplies software for the UK's nuclear target planning complex at Corsham in Wiltshire.[14]

The UK Trident warhead

The nuclear warhead deployed on Royal Navy submarines today is not a pedigree British bulldog. It is a mongrel: while the weapon has some British features, it has others which are identifiably American.

In December 2009, the UK government identified three of the parts of the warhead which are procured from the US: the Neutron Generator (NG), Gas Transfer System (GTS), and the Arming, Fusing, and Firing System (AF&F).[15] The NG produces neutrons to start the fission process. The GTS inserts tritium into the pit to boost yield. The AF&F is the brains of the warhead. It controls when the device will explode and fires the detonators. These three "made in America" parts are each fundamental to the design. Without them the warhead would be a dud. The UK government buys these vital components from the US to save money.[16]

One ingredient which could be marked with a Union Flag rather than the Stars and Stripes is the high explosive. This is a distinct British formula, EDC 37, rather than the US equivalent, PBX9501. US laboratories have assisted in research to establish the effectiveness and safety of the British explosive.

It is likely that some of the radioactive materials in the UK Trident warhead are of US origin and that some others have been processed in US facilities. Under the MDA, the US supplied the UK with 7.5 tonnes of highly enriched uranium (HEU) and 6.7 kg of tritium in exchange for 5.4 tonnes of British plutonium between 1960 and 1979.[17] There were subsequent transfers but the materials and quantities involved have not been disclosed. During the 1990s, tritium produced at Chapelcross power station in Scotland was supplied to the US. In January 2010, the UK government acknowledged that it obtained HEU for the military programme from the US Department of Energy under the MDA. It claimed that this "does not contravene our obligations under the non-proliferation treaty".[18]

The plutonium pit and HEU secondary of the UK Trident warhead were fabricated at Aldermaston.[19] It is not clear to what degree their designs are of British or American origin. In 1978, the UK tested a warhead design for a high velocity re-entry vehicle. This had a yield of less than half that of the US W76 warhead.[20] One purpose of this series of tests was to persuade the US to disclose information on their equivalent devices. The design of the UK Trident warhead was completed in the early 1980s. A significant increase in yield would have been difficult to achieve without substantial US input. The UK government claims that the warhead is a British design, but one US expert has described it as "their W76 variant".[21]

Current collaborations

Mk4A upgrade. The UK Trident warhead is similar to the US W76-0/Mk4.[22] These US warheads are being upgraded to a new W76-1/Mk4A version between 2009 and 2021. A significant part of this modernization has been the development of a new Mk4A AF&F. In 2007, the UK government acknowledged that it was introducing this Mk4A AF&F into the UK Trident warhead.[23]

The W76-0/Mk4 warhead was initially designed for the relatively inaccurate C4 missile and so was not given a fuse that was suitable for hardened targets, such as missile silos and underground bunkers.[24] This warhead and its UK equivalent are now deployed on the D5 missile, which is more accurate. The improved fuse in the Mk4A was designed to take advantage of

the accuracy of the D5 missile. It gives the warhead a near-ground-burst capability.[25] This and other modern features mean that the Mk4A is more effective against hardened targets.

Sandia National Laboratory in the United States is helping AWE to incorporate the Mk4A AF&F into the UK warhead. In 2006, AWE was planning how to transfer "systems integration" capability from the US to the UK.[26]

The W76-1/Mk4A life extension programme in the US affects not just the AF&F. A wide range of warhead components are being replaced, remanufactured, or refurbished. The full scale of the UK Mk4A refurbishment programme is not known. One feature that is likely to be included is a new GTS. The costs of the upgrade are hidden within the £1 billion per year AWE modernization budget.[27]

British involvement in the US Reliable Replacement Warhead programme. John Harvey, Director of Policy at the US National Nuclear Security Administration (NNSA), has said that in 2004 the MDA was amended as well as extended. The change gave Britain access to information on use control technology—how warheads can be modified to prevent unauthorized detonation. This data was fundamental to the Reliable Replacement Warhead (RRW) design. According to Harvey, the MDA was amended to enable the UK to participate in RRW.[28] Frank Miller confirmed that British scientists had been working on their own equivalent of the RRW.[29] Some have called this the High Surety Warhead.[30] In 2007, Des Browne, the UK Defence Minister, said that work was being done, in collaboration with the US, to inform decisions on future warheads and that this included reference to RRW.[31]

In December 2006, there was an exchange of letters between President Bush and Prime Minister Blair on the renewal/replacement of Trident. This resulted in a new wave of enhanced collaborations with the US into how to refurbish or replace the UK Trident warhead.[32]

The Obama administration has abandoned the RRW programme. The US Department of Energy is now focussed on refurbishing the W76 Trident warhead rather than replacing it. AWE can be expected to follow a similar course. As Glen Mara explained, "If the US decides to stay with the legacy stockpile ... it is much more difficult for the UK to embark on a transformed stockpile, i.e. to go it alone, because there are so many inter-dependencies ... in a large part I would expect the UK in many regards to follow the US."[33]

Collaboration on new fuses and multi-point safety. Plans for new US nuclear weapons are like ground-elder. You may think you have eliminated it, but the weed can pop up again next year, kept alive in a fragment of root. One part of RRW that has survived is the project to develop a new AF&F. The UK government is involved in this joint programme, along with the US Navy and US Air Force, to design a common fuse for the W78 intercontinental ballistic missile (ICBM) warhead and the W88 Trident warhead. But it is hard to reconcile the UK's involvement in this project with recent practice. AWE has been purchasing, from the United States, the AF&Fs used on the W76 warhead rather than making its own. There is no mention of the W76 in descriptions of the new common fuse programme.

A second remnant of RRW that is still growing is research on enhanced surety. This programme aims to produce new safety and security features for warheads by 2020. Under this heading, AWE is collaborating with the US laboratories in the development a multi-point safe warhead design.[34] Current warheads are "one-point safe," i.e. they should not produce a nuclear yield if the high explosive detonates at one point. A multi-point safe warhead would not produce a yield even if the explosive detonated simultaneously at several points. This change cannot be achieved by modifying the current British warhead.[35] Multi-point safety could only be accomplished in a new UK design.

Upgrading the Atomic Weapons Establishment. The great fear of scientists at AWE is that the flow of information from the US will reduce to a trickle, or even worse, that the tap will be shut off. Over 50 years, they have learned that if they want to see the blueprints for the latest American gadget, they have to bring something to the table that is of value to the US laboratories.[36] This creates an external imperative driving British scientists to develop more sophisticated features for nuclear weapons. Sometimes the demand to impress the US laboratories matches the requirements of their own production plan, but not always. And that production plan is itself fundamentally distorted by the "special relationship".

AWE is now two-thirds owned by two American companies, Lockheed Martin and Jacob's Engineering. From 2006 to 2009, the facility was run by Don Cook, an American scientist from Sandia National Laboratory. He has since moved on to the number two post in the US nuclear weapons programme.[37]

In 2005, when AWE was looking forward to the prospect of developing an anglicized RRW, a massive programme was started to replace or modernize most the facilities at Aldermaston and Burghfield. This work was being done in conjunction with the US programme. From the US perspective, upgrading AWE will "improve British technical capability and thus the technical value of ongoing exchanges."[38]

There has for decades been joint research into high energy density physics to support the two nuclear weapons programmes. When the US National Ignition Facility (NIF) was first proposed, it was planned that the UK would build a module within it. This module was abandoned and instead a new laser, Orion, was built at AWE. The new US and UK facilities were designed to complement each other by accessing "different parts of the temperature and pressure space relevant to the operation of nuclear warheads," and like the earlier generation US and UK laser physics collaboration, are intended to "allow experiments designed for one laser to be investigated further on a second laser."[39]

One rare example of how AWE's expertise can be of value to the US laboratories has been hydrodynamic research. US scientists have "borrowed" the hydrodynamic test facilities at Aldermaston.[40] Today the capabilities of the new Los Alamos DAHRT building dwarf those at AWE. But there are plans for the UK to catch up by building a new facility, Hydrus, at Aldermaston. Hydrus would be invaluable if AWE were to design a plutonium pit for a new nuclear warhead. Going ahead with this project would signal that this is the UK's intention.

The UK government plans to build a new Enriched Uranium Facility (EUF). There have been exchanges between those working on EUF and on its US counterpart, the Uranium Processing Facility (UPF) at Y12. The two have similar missions.[41] The main goal of the US plant is to manufacture the secondaries and radiation cases for thermonuclear weapons. It is reasonable to deduce that this is also the main purpose of the UK facility, although the UK government is unwilling to say as much. If the option of building a new warhead was deleted from the government's plan, then EUF could be abandoned or reduced to an HEU storage facility.

US scientists and software engineers are creating simulations of nuclear explosions on the most powerful computers in the world. AWE is trying to emulate this. It has been said that US scientists do not give AWE com-

plete warhead codes. Nevertheless, there is extensive dialogue over how the simulations are created. The transfer of experimental data, from which the models are built, has accelerated.

The upgrading of AWE is not a short term project. It will be years before the new and refurbished manufacturing and warhead assembly buildings could be fully operational. The experimental facilities, Orion and Hydrus, and the related advanced computing facilities, are designed to make long-term contributions to the UK nuclear programme. These projects would be consistent with a plan which assumes that the UK will continue to have nuclear weapons in 2060. However, they are not in harmony with the UK's obligations, under Article VI of the NPT and the 13 practical steps agreed at the 2000 NPT Review Conference.

Future submarine programmes. Over the next ten years, as well as introducing the Mk4A warhead, the US Navy is upgrading the fire control, navigation, and missile guidance elements of the Trident weapon system.[42] The combined effect will be to increase the flexibility, accuracy, and effectiveness of Trident. The UK purchases these systems from the US and has bought into all of the modernization projects.

The two countries are also working together to develop new ballistic-missile submarines. The first British vessel is due to enter service in 2024 and the last could still be at sea in 2060. The first new US submarine is scheduled for 2027 and some of the vessels are due to remain in service until 2080.[43] The fleet of 12 American vessels is expected to cost around $80 billion.[44] The official estimate for the British programme is that procurement costs will be between £15 and £20 billion, plus operating costs of around £1.5 billion per year.[45] The two governments are funding the development, in the US, of a common missile compartment for the new vessels. The launch tubes will be designed to accommodate a new missile larger than Trident, which is scheduled to enter service in 2040.[46]

Many politicians in the UK, from across the political spectrum, are saying that the price is too high.[47] Senior military figures have joined them in arguing that Britain can't afford to build a new version of the Trident system. The UK government plans to base the new submarines at Faslane in Scotland. The Scottish parliament and Scottish government, reflecting the views of civil society and the general public, are opposed to the renewal or replacement of Trident.[48]

Significance of US assistance for the UK nuclear programme

The British nuclear weapons programme is like an old mill. The flow of information and material from the US is the water that keeps it turning. If the sluice-gate is closed and the flow stopped then the programme will grind to a halt. Then the machinery can be dismantled and the building converted to another function.

In the 1990s, the UK abandoned the air-delivered part of its nuclear forces, not because of a change in nuclear policy but because the US scrapped plans for the SRAM-T missile that the Royal Air Force had been hoping to deploy. A capability based on new free-fall bombs would not have been effective. An Anglo-French missile was not feasible. The UK government concluded that, even with French assistance, building a new nuclear missile without US help was unaffordable.[49]

For many decades, the late Sir Michael Quinlan argued that Britain had to remain a nuclear weapon state. In his later years, he said that it would be preferable to keep nuclear weapons, but not at any price. Commodore Tim Hare, a former Director of Nuclear Policy at the MOD, has argued that US support is critical if Britain is to have an affordable nuclear force. He described the MDA and PSA as

> pivotal to us being able to maintain an affordable nuclear deterrent capability in this country. I would go as far as to say that without those two agreements I think the road by which we have maintained an independent nuclear deterrent capability would have been much, much more rocky than it has been. Largely because through those two agreements we are able to maintain a capability at an affordable price and I think that has made it more acceptable to the nation and the public at large.[50]

He added that Britain would probably not have remained a nuclear weapon state if the public had been asked to pay as much as French governments had spent on their nuclear forces.[51]

For the UK, to deploy thermonuclear weapons on accurate submarine-launched ballistic missiles, without US assistance, would be extremely expensive. It would be cheaper for the country to have fission bombs which could be dropped by aircraft. But these would be less destructive and limited in their application.

The UK government has been like a shopper who sees an item at a sale price and feels that he must buy it—regardless of whether or not he needs it. He has been enticed by the fact that this special offer is available only to him and to no one else. But today his empty wallet is forcing him to consider whether perhaps this is something that he can do without.

Benefit to the US of nuclear sharing

The loss of British cooperation would have only a minor impact on the US. There have been areas where the UK has helped. For example, in recent years, the Los Alamos Nuclear Laboratory restarted the production of plutonium pits after a long pause. The UK, which had built a replica of the Los Alamos plant at Aldermaston in the 1990s, offered to assist. The US Department of Energy is manufacturing the new pits from cast rather than wrought plutonium. AWE has always used cast plutonium and has supplied data to the US on the performance of cast-plutonium pits, from hydrodynamic experiments at Aldermaston and from subcritical tests of British devices at the Nevada Test Site.

The US nuclear weapons programme has also benefited from the expertise of British scientists such as Charlie Martin. Martin was described by his American colleagues as "the father of pulsed power".[52] He has said that Aldermaston was repaid tenfold for every bit of help he gave to the US programme. Martin was at the forefront of hydrodynamics research—he led the development of experiments that examine the way a warhead implodes, by detonating dummy warheads. He pioneered the use of a non-fissile isotope of plutonium in these tests. At one time, the US laboratories were not permitted to conduct these experiments with non-fissile plutonium in America for legal reasons, so they conducted their tests in Aldermaston.[53]

One of the perceived benefits to the US from the special relationship has been that the AWE can peer-review the work of the Los Alamos and Lawrence Livermore laboratories. But John Harvey of the NNSA has questioned whether this still works. The relationship with AWE has grown so close that British scientists are no longer outsiders. They have worked intimately with the US laboratories for so long that they share the same perspectives. Harvey compared the relationships that the United States has with the British

and the French nuclear programmes. The links with France are not as close, though the French have been able to peer-review some aspects of the US nuclear weapons, including safety issues, in a way that Britain no longer can.[54]

Another benefit to the US is having an ally. As Frank Miller said, "It's always useful to have someone else in the dock with you."[55] He explained that at international disarmament conferences the US often faces criticism from many nations. One payback from the MDA is that Britain stands alongside America and shares its guilt.

The legality of US-UK nuclear sharing and the nuclear Non-Proliferation Treaty

The US has assisted, encouraged, and induced the UK to manufacture and deploy sophisticated thermonuclear weapons. Had the UK been a non-nuclear weapon state this would be a flagrant breach of Article I of the NPT. Article I prohibits any nuclear weapon state from assisting a non-nuclear weapon state to develop a nuclear capability. However, it is less rigorous in regulating exchanges between those countries which acquired nuclear weapons prior to 1970. Article I only explicitly prohibits the transfer of "nuclear weapons or nuclear explosive devices" between nuclear weapon states.

At the 1995 NPT Review Conference, the Mexican delegation argued that the exchanges of nuclear components and technology between the US and UK were in violation of Article I.[56] This view was supported by members of the Non-Aligned Movement but was refuted by the US, UK, and several other NATO members.

The US and the UK argue that nuclear sharing under the MDA was practiced at the time the NPT was being negotiated. During these negotiations there was no indication that these practices would end and there were no objections to them before 1995. However, an argument can be made that the US did not make this position clear prior to the opening of the Treaty and did not formally communicate this to other states when they signed and ratified the Treaty.[57]

One key issue is whether the supply of designs, materials, and components constitutes the transfer of a nuclear explosive device. The NPT does not define the terms "nuclear weapon" or "nuclear explosive device". If the

US supplied a complete flat-pack nuclear weapon, for assembly in the UK, this would be a clear breach of Article I. This would apply even if the parts and drawings were delivered separately and at different times. The actual practice has been more complex. At least three key components are procured from the US and there are extensive consultations over design and production. Some of the radioactive material may be of US origin or processed in the US. A case can be made that these exchanges are so comprehensive that they constitute the transfer of nuclear explosive devices in breach of Article I.

Even if this trade was not formally prohibited by Article I, it is damaging because it reinforces the widely-held impression that the Treaty is an unfair bargain. There cannot be one acceptable practice for two nations and another for the rest of the world. If the US and UK continue to engage in this wholesale nuclear trade across the Atlantic then it will become more difficult for other countries to listen when the US and UK call for action to prevent similar information and materials from crossing other national boundaries.

Consideration should also be given to the obligations placed on the US and UK by Article VI, in the context of the preamble to the Treaty.[58] The preamble recognizes the need to make every effort to avert the danger of nuclear war. The effect of the nuclear sharing arrangement is to increase rather than reduce this risk. For example, the introduction of the Mk4A fuse will make the UK Trident warhead more effective and more suitable for a preemptive strike.

The preamble also calls for the cessation of the nuclear arms race. The nuclear sharing arrangement has encouraged the UK to produce sophisticated nuclear weapons which Britain would not otherwise have developed. Aldermaston continues to endeavour to be at the forefront of nuclear weapons technology in order to retain access to information on the latest American designs. This is not consistent with ending the nuclear arms race.

The MDA has resulted in the UK deploying more potent nuclear forces than would otherwise have been affordable. Britain is only able to have thermonuclear warheads on submarine-launched ballistic missiles because of the assistance provided by the US. So the MDA has been an obstacle. It has discouraged the UK from making progress towards disarmament, as required by Article VI.

The MDA is directed towards "improving the UK's atomic weapon design, development or fabrication capability" and "improving the UK's state

of training and operational readiness".[59] The AWE website says that the UK programme has made significant advances is several areas of research because of the MDA. Legal advice on the renewal of the MDA in 2004 concluded,

> These statements make it clear that the MDA is important to the UK's ongoing nuclear programme. It is strongly arguable that this is not in accordance with the obligations under Article VI or the assertion of the 2000 Review Conference to take steps leading to nuclear disarmament.[60]

The US and UK governments are obliged to fulfill the 13 practical steps agreed to at the 2000 NPT Review Conference. There is room for the UK to be more transparent about its nuclear forces, but the MDA prevents the disclosure of information which might otherwise be made public. The UK could take concrete measures to reduce the operational status of its nuclear forces by ending Continuous At Sea Deterrence (CASD) and storing all warhead on-shore, but this would involve breaking with US practice. The UK could make further unilateral steps to reduce its nuclear capability, reduce the role of nuclear weapons in its security policy, and make progress towards the elimination of its nuclear arsenal. The US government's support for the British programme does not encourage the UK government to take these steps. On the contrary, the special relationship is leading the UK to modernize its nuclear arsenal and to make plans that assume Britain will still retain nuclear weapons in 2060.

There is a glimmer of hope in this relationship. Both countries have projects which are considering how to tackle nuclear proliferation. They are each exploring methods of detecting illicit nuclear transport and procedures for verifying disarmament. The budgets for this work are small compared with the amounts spent on sustaining and renewing nuclear weapons. But this points to an alternative way that scientists from the US and UK can collaborate to promote rather than discourage disarmament.

Recommendations

- The US and UK governments should end their exchange of nuclear weapons information and materials in the interest of respecting their obligations under the NPT and promoting rather than deterring disarmament and non-proliferation.
- Other governments and civil society should hold the US and UK governments accountable to their obligations under the NPT and should encourage the US and UK governments to promote disarmament by ending their nuclear sharing arrangements.
- The US and UK governments should instead increase their collaboration on verification, non-proliferation, and disarmament technologies.

Chapter 4 Nuclear energy: shackling progress toward a nuclear weapon free world

Unlike the nuclear Non-Proliferation Treaty (NPT), the model nuclear weapons convention (NWC)[1] discourages the use of nuclear energy, recognizing that the continued reliance on nuclear power and its potential expansion pose a challenge to verification of a nuclear weapon free world. Recent high-profile cases, including the crises over the nuclear programs in Iran and North Korea, have brought the risks associated with the proliferation of nuclear fuel cycle technology to the forefront of the international agenda.

Article IV of the NPT refers to an "inalienable right" of non-nuclear weapon states to develop nuclear energy for peaceful purposes. A possible problem for the confident achievement and sustainability of a world free of nuclear weapons, this current norm allows for states to build up the capacity and infrastructure—through ostensibly civilian energy and research programmes—to produce nuclear weapons within a brief time period. However, any right must be exercised in conformity with international law, as is illustrated by the NPT itself, which makes the exercise of the Article IV right contingent on the obligation not to manufacture nuclear weapons. More broadly, the Article IV right is subject to limits based upon the environmental and security rights of other states and the global community. Further, while states surely are entitled to develop energy sources as part of

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the sovereign right of development, that right is subject to restrictions—including on particular energy sources—in the common interest. Accordingly, the qualification of the NPT right to peaceful nuclear energy as "inalienable" should be understood in the context of the NPT bargain, and not as a claim that it is a fundamental aspect of sovereignty. It therefore may be limited or extinguished over time by subsequent developments and agreements, as has the NPT Article V promise of access to the "benefits" of peaceful nuclear explosions—a provision which catered for the possibility of digging canals and mining operations with nuclear explosive devices, but which has subsequently become understood as too environmentally damaging and has been prohibited in the Comprehensive Test Ban Treaty.

The question of the relationship of nuclear power to the achievement of a nuclear weapon free world remains crucial. Appreciation of the extreme environmental risks of nuclear energy, as demonstrated by the Chernobyl disaster, have been partially offset by a push to reduce reliance on fossil fuels creating a new demand for nuclear energy, with a Massachusetts Institute of Technology (MIT) study predicting a three-fold expansion in nuclear energy by 2050.[2] Should these predictions be accurate, the need for nuclear fuel cycle services will expand as well. With some adjustment, the very same facilities and equipment used to produce low-enriched uranium fuel for power reactors can produce high-enriched uranium suitable for use in a nuclear weapon. The separation and reprocessing of plutonium from spent reactor fuel as mixed-oxide fuel is a potentially greater proliferation challenge, as all separate plutonium is directly usable in nuclear weapons. All existing commercial nuclear power reactors produce plutonium as a by-product. The spread of these technologies increases the risk that such facilities might be misused and nuclear material diverted to use in weapons or into the hands of terrorists, or that the knowledge gained from operating such facilities might be employed in a clandestine nuclear bomb programme. The spread of nuclear technology also increase the risk of terrorist attack on reactors and their spent fuel stores.

Verification of nuclear non-proliferation objectives historically has been limited order to maintain the balance between rights and obligations NPT states parties. NPT Safeguards, administered by the International Atomic Energy Agency (IAEA), are restricted to verifying that no nuclear material in each non-nuclear weapon state has been diverted to weapons. The IAEA

only has the authority to comprehensively verify the presence or absence of undeclared nuclear activities or materials in a state if it has accepted the voluntary Additional Protocol. Enforcement is hindered by the treaty's institutional deficits: the lack of a standing secretariat for the NPT and the infrequent meetings of states parties. The UN Security Council has increasingly filled the enforcement gap left by the lack of compliance mechanisms, but under a traditional view its authority is limited to cases that it has found to constitute a threat to international peace, rather than functioning as a reliable enforcer of global treaty regimes.

These concerns over the limits of the NPT safeguards regime led a 2003 MIT team, examining issues related to the expansion of nuclear power, to question the wisdom of any scenario envisioning the growth of nuclear energy. Undoubtedly, the only truly proliferation-proof solution would be the global phase-out of nuclear power. The model NWC does not mandate such a global phase-out, but does provide some encouragement for it through an additional protocol on nuclear energy phase-out. This could be assisted by the establishment of the International Renewable Energy Agency, which provides assistance to states in developing environmentally sound energy technologies.

A variety of proposals exist to mitigate the risks posed by the proliferation of sensitive nuclear technology and they should be explored and possibly implemented in parallel with negotiation of an NWC or prior to its conclusion. The model NWC itself provides additional restrictions and controls on nuclear technology include a prohibition on plutonium reprocessing and on enrichment of uranium beyond 20% U-235—an enrichment level sufficient for most nuclear reactors but insufficient for nuclear weapons. This would require the phase-out of breeder reactors and reactors using highly enriched uranium.

Beyond this, the continued existence of nationally-based nuclear fuel cycle facilities might pose an insuperable obstacle to the verifiability of a nuclear weapon free world. Thus, the IAEA has been studying the possibility of international control of the fuel cycle in order to prevent any state from possessing the national capability to produce material for nuclear weapons.

While there is a definite link between nuclear energy and nuclear weapons, progress towards nuclear disarmament should not be prevented due to continuing reliance by some states on nuclear energy. Thus the model NWC

attempts a balanced approach, permitting nuclear energy while at the same time strengthening controls over nuclear technology and encouraging the phase-out of nuclear energy. Opinions vary on whether the model NWC is too permissive or too restrictive in this respect, but such variance should not prevent progress on either negotiations for the NWC or strengthening nuclear energy controls.

Recommendations

- Governments should accelerate and enlarge their support for development of commercially viable renewable and non-carbon emitting sources of energy, and for energy conservation. They should join the International Renewable Energy Agency to work towards a rapid transition to the widespread and sustainable use of renewable energy worldwide.
- Governments should work towards cessation of the construction of nationally-controlled fuel cycle facilities and transition existing facilities to international control, pending the phase-out of nuclear power.
- Governments and industry should phase-out nuclear power and refrain from promoting nuclear power as a means to combat climate change.
- Citizens should work with each other and their governments to promote a carbon-free nuclear-free future: see http://www.carbon-freenuclearfree.org for information and ideas.

Chapter 5 The US-India nuclear deal: violating norms, terminating futures

Andrew Lichterman and M.V. Ramana

In September 2008, the United States brought a proposal to lift the ban on nuclear trade with India to the Nuclear Suppliers Group (NSG), which sets widely observed export controls on nuclear technology. The NSG's agreement to lift the ban constituted yet another blow to an already beleaguered nuclear Non-Proliferation Treaty (NPT) and global non-proliferation regime.

The implications of the deal for the non-proliferation regime were misrepresented by many, including by Mohamed ElBaradei, Nobel Peace Prize winner and the Director General of the International Atomic Energy Agency (IAEA), who termed it "a milestone, timely for ongoing efforts to consolidate the non-proliferation regime."[1]

Such an assessment is in complete contradiction to the fact that the exemption granted by the NSG will actually allow India to expand its nuclear arsenal, permitting it to buy fuel for nuclear power reactors on the international market while using scarce domestic uranium in nuclear weapons production.[2] It will further aggravate tensions with Pakistan, which has signaled that it would respond in kind to a more ambitious Indian nuclear weapons programme. Thus, the deal could further fuel an arms race between nuclear-armed neighbors that have fought multiple wars.

Advocates of the deal see an increase in India's nuclear capabilities as positive. To quote Ashley Tellis of the Carnegie Endowment: "If the United States is serious about advancing its geopolitical objectives in Asia, it would almost by definition help New Delhi develop strategic capabilities such that India's nuclear weaponry and associated delivery systems could deter against

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the growing and utterly more capable nuclear forces Beijing is likely to possess by 2025."[3] Such thinking only serves to legitimize the ultimate weapons of mass destruction and encourage the United States to ignore its nuclear disarmament obligations under the NPT and India to continue its nuclear weapons build-up.

Violations

Like many other assaults on the non-proliferation order, the US-India deal is a violation of both procedure and substance. The basic bargain underlying the NPT is that non-nuclear weapon states would get access to nuclear technology in exchange for giving up the possibility of developing nuclear weapons. Implicit in this bargain is that this access would be conditioned on not acquiring nuclear weapons. The nuclear deal is a clear violation of this implicit understanding. Procedurally, if such a deal were to be agreed to at all, it should have been voted on by all states parties to the NPT rather than just by a minority of countries, i.e. members of the NSG. By its very constitution, the NSG, consisting mostly of countries that engage in and profit from nuclear commerce, is a biased body, not suited to decide on the future of non-proliferation norms.

The attack on the non-proliferation regime was led by some of the usual suspects. The prime instigator, as the nuclear supplier party to the deal, was the United States. France, the United Kingdom, and Russia joined the fray in the hope of selling billions of dollars worth of nuclear reactors and other accessories. The many NSG states that did oppose the deal were stifled by the United States, which engaged in what Jayantha Dhanapala, former United Nations Under-Secretary General for Disarmament Affairs, described as a campaign of "brutal and unconscionable pressure."[4] There is a sour irony in the NSG making such an exception for India, since the trade cartel was formed largely in response to India exploding a nuclear device in 1974.

In domestic circles, too, the deal was the outcome of procedures that were only superficially democratic. It was widely alleged that the ruling Congress party in India resorted to bribes to members of the Parliament in exchange for supporting it on the deal. The Bush administration rammed the deal through Congress under the cover of the financial crisis as time wound

down in its fall 2008 session. The Senate vote on the deal was overshadowed by the debate on massive bank bailouts that were pending the same day.

The deal also was the last nail on the coffin of the UN Security Council resolution 1172, passed in response to the 1998 nuclear tests by India and Pakistan. The resolution outlined a series of demands on both countries, including calling on them to stop the further development of nuclear weapons, not to deploy their nuclear weapons, to stop developing ballistic missiles, and to stop producing fissile materials for nuclear weapons. The two countries have not complied with any of these demands.

The larger picture

Originally announced in July 2005 by President George Bush and Indian Prime Minister Manmohan Singh, the nuclear deal is part of a broader set of agreements centering on increased US-Indian military cooperation and high-tech trade. US military planners envision India as a possible forward base for operations from South Asia to the Middle East, and perhaps as a junior partner in those operations as well. Arms manufacturers see huge potential profit from increased arms sales, with India being one of the world's largest importers of high-tech weapons. US-based multinationals are gearing up for expansion into India, hoping to use the enhanced "security" partnership as a wedge to further open India to foreign investment and sales, not only in nuclear technology and services but in everything from banking to food and agriculture to big box retail stores.

The ambitions of elites in the two countries to strengthen an array of military and economic ties is reflected in the set of initiatives announced by US President Bush and Indian Prime Minister Singh in July 2005 together with the agreement in principle on nuclear trade and cooperation.[5] Important among these is the establishment of a "CEO Forum" to "harness private sector energy and ideas to deepen the bilateral economic relationship," an agreement for closer cooperation in space technology and commercial space activities and a "Knowledge Initiative on Agriculture". The operations of the latter are dominated by a number of agro-businesses and other corporate giants.[6]

A significant item on the CEO Forum's agenda is to greatly expand the

degree to which foreign banking and financial services companies can do business in India.[7] This position was duly echoed by the US government, with a Treasury Department fact sheet stating:

> the development of the financial sector and trade in financial services will play a key role in promoting private-sector led growth and economic stability in India. Opening the financial sector to foreign participation would make additional long-term financing available for infrastructure development. The development of a greater array of insurance and savings products (including for retirement) would provide for greater income security and reduce the need for high precautionary savings.[8]

In light of the spiraling collapse of the US financial sector, the notion that opening India to its particular brand of radically deregulated, short-term profit-driven "financial services" will promote "economic stability" is highly suspect.[9] The assertion that it would serve the interests of any but a wealthy minority in either country is even less believable.

Nonetheless, both the US and Indian governments seem determined to continue along the same path. The joint statement issued during Secretary of State Hillary Clinton's July 2009 visit hailed upcoming negotiations on a Bilateral Investment Treaty, and called for a "newly configured CEO Forum" to "harness the ingenuity and entrepreneurship of the private sectors of both countries."[10] The priority that Clinton placed on strengthening connections between US and Indian economic elites can be deduced from the fact that "a power breakfast with bankers and billionaires" was the first stop on the first visit to India by a high-ranking Obama administration official, even before she met with her official counterparts.[11]

Likely result

The socioeconomic impact of these proposed new arrangements—how they will affect the mass of the populations in India, the United States, and world-wide—has remained almost entirely outside the ambit of discussion of the nuclear deal. This might not be greatly surprising in the United States, where the debate was primarily over weighing the strategic and non-proliferation benefits and costs. In India, the deal was viewed by the elite, the cir-

cle within which much of the domestic debate within India was conducted, as another marker of India's emergence as a great power. For these elites, the impact of the emerging US-India relationship on the larger population is of little interest. As political commentators and peace activists Praful Bidwai and Achin Vanaik point out, in the last couple of decades, the "upper-crust of society, have set their face against the rest, especially the poor. Culturally, economically, and politically, they are closer to Northern elites and their own kin in North America and Europe. Strongly influenced by social-Darwinist ideas, they see the poor as a drag on 'their' India."[12]

The effect of the US-India deal—or deals—will be to bind India to a development path favourable to particular elements in the US political and economic elite and to their Indian counterparts. In this future, India's development will center on production of goods and services that serve global supply chains controlled by multinational corporations. In addition to consumer goods and export crops that are mass commodities available to many in a few wealthy countries, but are luxury items available only to a fraction of the world's population as a whole, there will be further expansion of "service industries" such as back-office corporate operations ranging from call centers to billing and information technology support. Also part of this global circuit of trade and investment are armaments and the capital goods, and engineering and construction services necessary to build new infrastructure to sustain components of these global production chains in "underdeveloped" regions.

This global circuit of trade and investment emphasizes international supply chains for the production of goods and services that only a small minority of the world's population can afford. In the United States and a few other wealthy countries, cheap imported consumer goods are available to much of the population, but even in those places the general trend is towards extreme polarization of wealth amidst growing economic insecurity for the majority. Still-powerful but declining economic centers in the United States and Europe face competition for resources, markets, and investment from new economic power centers in Asia, where the relatively rapid accession to the global capitalist economy of China and India in particular has opened vast new frontiers for both production and sales.

Aggravating these forces tending towards economic uncertainty and potential conflict among major powers are emerging challenges that present all

humanity with profound choices in the next few decades. We are approaching the end of the age of cheap fossil fuels and nearing limits to the carrying capacity of the planet. A global economic system that long has depended on an apparently limitless world, and also on a hinterland that is "outside" it both materially and conceptually, also must confront a future where everywhere it turns it soon will find only itself.

The set of US-India agreements of which the nuclear deal was the centerpiece will strengthen the trajectory that both countries are on today and will reinforce the kind of global economy that is most favourable to those currently in power. Increased US-India trade and cooperation in high-tech weapons, space, and nuclear technology will produce few well-paying jobs for those below the top 20% of either country in income and little that benefits the majority of the population in either country, further increasing wealth disparities and consolidating the power of elites in both states.

The proliferation of global supply chains producing goods and services for the global metropole pushes the majority of the population to the margins as a growing proportion of land and resources are devoted to serving the needs of an ever wealthier few. Development along these lines is encountering resistance from rural populations everywhere that feel its effects in land expropriations, rising inflation, environmental destruction, and disrupted markets for traditional agriculture. This emerging economic order, which systemically generates huge disparities of wealth both within and among nations, is itself a source of conflict. The answer envisioned by the military elites is to throw ever more sophisticated levels of high-tech violence at these conflicts. The agreements surrounding the US-India deal will buttress this trend.

The role of nuclear power

Nuclear technology is a prototypic element of this global system and—in the future envisioned by the elites of many countries—is poised to become more important as supplies of fossil fuels are depleted. Producing energy in large, expensive centralized facilities, nuclear power is most useful for serving the emerging production and service centers of the global corporate capitalist metropole and the consumption needs of the elites who profit

from them. It has far less promise, however, for solving the energy needs of the vast majority of India's population, much less so in a way that offers any net environmental gains.

Advocates for the deal argue otherwise. On 18 September 2008, speaking at a hearing convened by the Senate Foreign Relations Committee, William J. Burns, Under Secretary of State for Political Affairs in the Bush administration, stated, "For the people of rural India, where only 55 percent of households even have access to electricity, the reality of a reliable, uninterrupted source of electricity will improve quality of life for millions, promote economic development, and help to stabilize spiraling food prices."[13]

Nuclear power, as the most expensive form of centralized electricity generation, is an inefficient way to deliver energy to this population living in villages spread out over a vast country side. As distances increase, the losses incurred during the transmission and distribution become higher, eventually making it uneconomical to deliver electricity. Further, as energy analyst Amulya Reddy pointed out,

> If the goal (objective to be achieved) for all energy systems is sustainable development, then the goal for rural energy systems is that they must be instruments of sustainable rural development. Rural energy systems, therefore, must advance rural economic growth, that is, they must be economically efficient, need-oriented and equitable, self-reliant and empowering, and environmentally sound.[14]

Reddy also emphasized that generating sources be "amenable to local control and enhance it" [i.e., local control and self reliance].

The history of energy planning in India, as elsewhere, also shows that even though large generation projects are often constructed in the name of poverty alleviation and rural development, they are largely focused on meeting the demands of the urban rich. (Note: "demands" should be differentiated from the normative term "needs".) But even in terms of the urban rich, the reality is that nuclear power in India has been mostly a failure, even more than in other countries. Nuclear plants today generate only three percent of India's electricity and less than one percent of its total energy needs. This is unlikely to grow significantly.[15]

Alternative vision

The single most pressing "security" issue of the 21st century will be assuring the essentials of a healthy, dignified life for the billions of people who are left out of a global economy focused on delivering mass consumption items to urban middle classes, luxuries to wealthy elites, and weapons to enforce this inequitable status quo. In the rising global awareness of both looming climate change and limits on oil supplies, there is an opportunity for a different path of both technology development and trade. This path would emphasize environmental sustainability and equity, rather than profits and maximizing consumption. Nuclear energy is neither environmentally sustainable nor socially equitable.

The alternative is to expanding use of decentralized, renewable energy technologies in India also would promote further innovation and bring down prices, encouraging their spread in the US and elsewhere as well. Which exact mix of technologies will and should be determined by a combination of local resource availability, technological adaptability, and democratic principles. This alternative, therefore, is necessarily a vision rather than a rigidly determined path.

Several virtuous, mutually reinforcing cycles can be created in this way: improving energy access; providing employment, and generally broadening the economic potential of areas left out of the current mode of corporate globalization; reducing both greenhouse gas emissions and oil consumption in the United States; and reducing as a consequence the need for access to foreign oil and gas that is a significant factor driving an aggressive US foreign policy world-wide. This kind of approach, furthermore, can more easily be achieved incrementally, with constantly improving decentralized energy technologies being deployed a household, a village, a city at a time, without the kind of massive, one shot capital costs that commit entire regions to a narrow set of technologies and generating facilities for decades at a time.

This is what the 21st century could look like. In contrast, building on the US-India nuclear deal and expanding nuclear power, both in India as well as other countries, would build another set of institutional ties binding us to the power structures, both technical and political, of the last century, strengthening those who profit from centralized control of energy resources, a society that generates and tolerates great disparities in wealth, and a

global weapons trade that further concentrates wealth while raising the risk of catastrophic wars from the local to the global. Nuclear power, nuclear weapons, and arrangements like this deal are all bad risks for ordinary people everywhere, risks that humanity can no longer afford. It is time to chart a different future.

Recommendations

- Decisions about the expansion of nuclear power should be made with the explicit understanding that the technology used to generate nuclear electricity is intrinsically, and under the present circumstances, inextricably, linked to the ability to make nuclear weapons.
- Actors should refrain from engaging in trade and cooperation on nuclear power technologies that flout carefully crafted non-proliferation norms, which will only strengthen the linkage between nuclear power and nuclear weapons.
- NPT member states should establish an explicit prohibition on nuclear cooperation with non-states parties.
- Governments should focus efforts on developing decentralized and local sources of energy rather than promoting nuclear power, which is not the most efficient form of energy for poor populations. Decentralized and local sources of energy also provide a better chance of building an environmentally sustainable, socially equitable world, empowering the majority to live a healthy, dignified, and productive life.

Chapter 6 Nuclear futures for the Middle East: impact on the goal of a weapons of mass destruction-free zone

Merav Datan

A book entitled *The Nuclear Age in the Middle East* by Shimon Yiftah, published in Israel in 1976, opens with an overview of the state of affairs and potential trends in the apparently pending nuclearization of the Middle East. Egypt, Iran, Israel, and Saudi Arabia are mentioned as partners in various nuclear negotiations with France, the Soviet Union, and the United States.[1] These developments are presented as evidence of the dawn of the nuclear age in the Middle East. Yiftah then poses the following questions:

- Do these deals carry regional and international risks of the spread of nuclear weapons to sensitive and explosive region?
- Could the building of nuclear power plants be prevented or delayed?
- What are the motives of France, the Soviet Union and the United States?
- Do Egypt and Israel need nuclear power plants?[2]

Except for secondary facts such as the names of political leaders and the specific partnerships behind some of the deals, the opening pages of this book and the author's questions are as relevant today as they were over 30 years ago.

Today, Iran and Israel are under the international spotlight for assumed or suspected nuclear weapons programmes, outside or in spite of the global non-proliferation regime. Over a dozen Arab states have announced plans to develop nuclear power programmes and are in various stages of negotia-

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tions or research and development. France, the Russian Federation, and the United States are once again key players seeking to influence nuclear developments in the Middle East, this time joined by international bodies such as the International Atomic Energy Agency (IAEA) and newcomers such as Japan.

Leaders and alliances aside, today's political context differs in at least one significant way from that of three decades ago. The international community has a clearly identified and universally agreed vision for the Middle East:[3] a zone free of weapons of mass destruction (WMD). This vision, or goal, has been confirmed at the highest political levels and by all states in the region. It would turn the Middle East into the first freely negotiated WMD-free zone (WMDFZ), improving on the already existing nuclear weapon free zones (NWFZs) elsewhere around the world by incorporating the *de facto* link among nuclear, chemical, and biological weapons, a link that is particularly pertinent to security dynamics in the Middle East.

This article will explore the goal of a WMDFZ in the Middle East, as well as WMD-related programmes and nuclear plans in the region, in an attempt to address the following questions: how does the potential nuclearization of the Middle East affect progress toward the goal of a NWFZ or WMDFZ? What are the underlying interests and concerns behind current plans to pursue nuclear power? What alternative approaches to energy and security needs might contribute to a WMDFZ?

The goal of a WMD-free zone in the Middle East

The goal of a NWFZ in the Middle East has been recognized in UN General Assembly resolutions since 1974 (following a proposal by Egypt and Iran),[4] and the resolutions have been adopted by consensus since 1980. NWFZs have been successfully negotiated and adopted elsewhere around the world, and more such zones are being pursued. But in the Middle East the goal of a NWFZ came to be linked with a WMDFZ in the review process of the Treaty on the Non-Proliferation of Nuclear Weapons (the nuclear Non-Proliferation Treaty, or NPT). This is because of the *de facto* link that states in the region have made among WMD.[5]

A WMDFZ in the Middle East was first put forward by Egypt's President

Hosni Mubarak in 1990.[6] Since 1990 the goal of a WMDFZ has been recognized by all relevant members of the international community, including all states of the region, as well as the UN Security Council.[7] All members of the NPT have acknowledged this goal through the 1995 NPT Middle East Resolution and the Final Document of the 2000 NPT Review Conference, indicating that all states except Israel accept this goal.[8] Israel has acknowledged this goal separately by joining the annual UN General Assembly consensus resolution on a NWFZ with an explanation of vote that refers to the goal of a WMDFZ once regional peace and security have been achieved. Israel's position is that peace and stability must prevail in the region before nuclear issues can be addressed: "the establishment of peaceful relations, reconciliation, mutual recognition and good neighborliness, and complemented by conventional and non-conventional arms control measures" is a precondition for achieving the vision of a WMDFZ or establishing a NWFZ in the Middle East.[9]

The Middle Eastern states may support the goal of a WMDFZ, but the fact remains that WMD, specifically chemical weapons, have been used in the region,[10] and the majority of countries in the region have some form of WMD-related research, development, or weaponization programme.[11] Moreover, the Middle East remains the region with the greatest concentration of states that are not party to one or more of the international treaties dealing with WMD: the Biological and Toxin Weapons Convention (BTWC), the Chemical Weapons Convention (CWC) and the NPT, as well as the Comprehensive Nuclear-Test-Ban Treaty (CTBT). Having already broken the WMD taboo, and in light of deep-rooted political tensions and a frequent resort to the use of force, the potential for nuclear conflict in the Middle East is all too real.

Regional energy needs and security dynamics

Legitimate energy needs have an influence on security dynamics in the Middle East. There is a growing demand for energy in the Levant and Maghreb, and Gulf states are keen to diversify their energy options. This has contributed to a general interest in nuclear energy within the region. The potential "nuclearization" of the region raises concerns about the potential

for nuclear proliferation because of the inherent adaptability of civil nuclear programmes to military purposes.

It should be remembered that nuclear technology was originally developed for military use. The military-to-civil adaptability of nuclear programmes was essentially an afterthought, following the research, development and use of nuclear weapons. The history of nuclear power has shaped not only the inherent physical duality of nuclear programmes, but also their association with political power and national military security. These factors should be kept in mind when assessing energy needs and the nuclear option.

Regional energy needs

The growing need for energy in the Middle East is indisputable. The UN Millennium

Development Goals and other expressions of the right to sustainable development have recognized developing countries' energy needs. Nuclear energy has been promoted by the industry, by nuclear-capable states, and by international bodies as a possible solution to growing energy and climate change concerns.

During 2006 and 2007, more than 10 Arab states announced an interest in exploring nuclear power plans, and several have begun negotiations or discussions with international bodies over facility and fuel possibilities. French President Nicolas Sarkozy, described as "the world's most aggressive salesman for nuclear power,"[12] spent much of December 2007 and January 2008 visiting Middle Eastern Arab states to peddle French nuclear technology. In an interview with Al Jazeera television he framed the nuclear energy option as a matter of equity, rhetorically asking, "why should Arab countries be deprived of the energy of the future?" and even going so far as to suggest that nuclear power could help in the struggle against terrorism: "Terrorism flourishes in the embrace of despair and backwardness. We want to help Arab countries develop, and we want to upgrade the economies of the 21st century."[13]

Sarkozy's efforts bore fruit in the form of deals or offers of nuclear technical advice for Algeria, Egypt, Libya, Morocco, Qatar, Saudi Arabia, and the

United Arab Emirates. However, these deals or offers are still in the form of agreements in principle rather than concrete plans to build nuclear power plants. Before these and other deals lead to the proliferation of nuclear capabilities in the Middle East, it would be valuable to ensure that this is the best approach to meeting the region's energy needs, and that it will not aggravate already existing security tensions.

The duality of nuclear technology—and the political as well as physical implications of this duality—deserves serious attention before any irreversible decisions are taken. The competing interests and conflicting concerns of external players regarding the nuclear energy–nuclear proliferation relationship reflect this duality; actors are worried about the spread of nuclear weapons technology but eager to benefit from the interest in nuclear energy. The United Kingdom is actively involved in talks with Israel and with Arab states on this issue; it unequivocally calls on Israel to join the NPT, while at the same time engaging in activities that undermine this call, such as multi-billion-dollar arms sales to Saudi Arabia.[14] In its turn, the United States supports the goal of a WMDFZ and simultaneously enables Israel to maintain its current nuclear policy.[15]

The status and prestige that even civil nuclear capability bestows is illustrated by the growing international controversy over access to the nuclear fuel cycle. This has become a critical question for the promotion and spread of nuclear energy. Multilateral nuclear approaches and proposals for limited access may be gaining ground among developed and nuclear-capable states, but they are facing growing opposition among developing countries.[16] Most Arab states fall into the category of developing countries that resent the efforts of developed states to limit their access to proliferation-sensitive technologies.

Regional security dynamics

Iran, which has been party to the NPT since 1970, is now the focus of international headlines because of concerns that it seeks a nuclear weapons capability. But these headlines have provoked mixed feelings among other Middle Eastern states, reflected more broadly in the reaction of the Non-Aligned Movement (NAM). The NAM is hesitant to criticize Iran because

of the perceived right to access all parts of the fuel cycle, despite the fact that many NAM countries are concerned about Iran's ambitions. Analysts outside the region and in Israel suspect that the nuclear plans recently announced by a number of Arab states are linked to security concerns regarding perceptions of nuclear proliferation in the region:

The Middle Eastern states say they only want atomic power. Some probably do. But US government and private analysts say they believe that the rush of activity is also intended to counter the threat of a nuclear Iran.

By nature, the underlying technologies of nuclear power can make electricity or, with more effort, warheads, as nations have demonstrated over the decades by turning ostensibly civilian programs into sources of bomb fuel. The uneasy neighbours of Iran, analysts say, may be positioning themselves to do the same.[17]

Israel's nuclear arsenal, calculated by sources originating outside of Israel to be some 100–200 nuclear weapons,[18] remains a concern and is criticized in annual United Nations General Assembly and IAEA resolutions. It also provides a focus for the dissent of various states parties to the NPT, which Israel has never joined. In contrast to Israel's position, discussed earlier, the Arab states' official position is that before arms control and regional security can be addressed, Israel's nuclear weapons must be dealt with.[19]

This deadlock has been described as a "chicken and egg" paradox. As long as each side insists on the realization of its precondition, there will be no progress on any side—a situation that suits the absolutists on all sides. At the root of these polar opposite starting positions are the perceived threats and the perceived military balance between Israel and the Arab states. In the past, when Israel decided to acquire a nuclear capability, its leaders were driven by a subjective but real concern (according to the logic of national security) about the Arab states' conventional military superiority and their determination that the state of Israel should cease to exist. Today there is little doubt about Israel's ability to win a conventional war, but neither this nor Israel's nuclear capability are of much value in confronting the current prevailing security threat: terrorism and cross-border rocket attacks on southern and northern Israel by Hamas and Hizbullah respectively.

The regional security situation has changed in other ways since Israel first developed its nuclear capability and accompanying policy of deterrence through ambiguity. The change in key Arab states' positions on Israel (e.g.

peace treaties between Israel and Egypt and Israel and Jordan, the ongoing peace process—including the Madrid and Oslo agreements—and the offer of normalization embodied in the Arab Peace Initiative[20]), the shifting regional military balance, and the evolving nature of immediate threats to Israel's perceived national security all necessitate a renewed assessment of the real threats to Israel and the best approach to defusing these threats. Israel's current policy in relation to WMD—being the only state in the world not party to any of the three main treaties relating to biological, chemical, or nuclear weapons—suggests to some an intention to retain the option of WMD development and use. Its nuclear potential, in combination with its conventional superiority, could be seen as promoting proliferation of WMD, and serves as a convenient—and the most salient—excuse for the Arab states and Iran to retain or develop WMD capabilities and options even where other considerations should in fact prevail. At the same time, Israel's lack of strategic depth[21] means that any proliferation of WMD across the region is a serious threat to its security; the lack of depth also means it is unlikely to be able to establish an effective system of missile defence unless it is part of and dependent on a multi-layer ballistic missile defence system of the United States.

How then will the nuclear era play out in the Middle East? What are the potential consequences, including unintended, of a dozen or so countries building large-scale nuclear facilities and seeking to ensure non-discriminatory access to nuclear fuel? It is not possible to predict precisely what kind of Pandora's box might or might not be opened by the pursuit of nuclear energy sources and options, but history teaches that in the Middle East conflict can, and does, erupt frequently and suddenly.

Impact on the goal of a WMD-free zone

The goal of a WMDFZ in the Middle East has been used as a "political football,"[22] with each side holding the other responsible for the lack of meaningful progress. But it can also be argued that a WMDFZ is consistent with everyone's long-term security interests and that if any one side indicates a willingness to relax its current entrenched position, others will relax their positions as well. If so, then a show of flexibility is likely to create a real polit-

ical opening and would increase external political pressure on other sides.

In order to reverse the current trend toward proliferation and to make concrete progress toward disarmament, the prevailing concerns of each of the relevant players must be addressed. Once the parties involved are confident that their security concerns can be addressed through the political process, negotiations on the building-blocks of a WMD disarmament regime can have some prospect of moving forward constructively. Progress toward the goal of a WMDFZ in the Middle East, however, depends not only on the states of the region. As we have seen, outside powers also have interests in the region and influence security dynamics.

The *de facto* link among WMD in the region means that there must be progress on nuclear weapons for progress to be achieved on biological or chemical weapons. The inherent duality of nuclear technology, combined with the political value and status associated with nuclear capability, means that the spread of nuclear technologies is likely to hamper such progress. The outside players who seek to promote civil (or more accurately, commercial) nuclear programmes in the Middle East recognize this fact and have sought to address it through proposals for control of the nuclear fuel cycle, such as the IAEA's Multilateral Nuclear Approaches.

The controversy and sensitivity surrounding questions of access to the entire nuclear fuel cycle will determine the feasibility and nature of nuclear energy programmes in the Middle East. Proposals for a regional nuclear fuel supply could address regional access concerns but aggravate regional proliferation concerns, depending on how such a "fuel bank" is established and how secure or proliferation-prone it is perceived to be.

Nuclear energy—and access to the entire fuel cycle—is perceived as a right not only because of Article IV of the NPT but also because it is a stark example of the divide between the haves and havenots. In the nuclear case this divide touches on both development and security issues, generating perceptions of a double double standard: developing countries are denied energy options available to the developed world, and developing countries cannot be trusted to use this technology for nonmilitary purposes, even though they have declared their interest to be for purely peaceful purposes and even though some of the developed countries actually do have nuclear weapons. In short, the potential spread of nuclear technology in the Middle East stands to aggravate all aspects of North–South tension and trigger fierce

debate as plans for the simultaneous promotion and control of this technology are considered and discussed.

These observations relate directly to several of the Arab states now considering or even planning nuclear power plants, especially those in North Africa. Their official and stated position is that their interest is for peaceful purposes, and they continue to take the lead on diplomatic exercises that highlight the goal of a WMDFZ or NWFZ. Without questioning the good faith of these positions, the spread of nuclear technology will still affect regional security dynamics because of its inherent duality, its political prestige, and the demonstrated influence that nuclear capabilities can have, even without acknowledgment or proof of a weapons capability. The cases of Israel and Iran, and regional and international reactions to their nuclear programmes, illustrate this point.

Israel's reservations regarding a WMDFZ are based on regional security concerns and perceptions relating primarily to "conventional" threat perceptions. Perceptions of new nuclear threats arising from nuclear energy programmes will likely galvanize Israel's position and increase Israel's reservations. If the Middle East appears to Israel to be an increasingly hostile neighbourhood, then it has even less incentive to actively pursue regional WMD disarmament according to the logic of national security planning that prevails in Israel.

Security and energy alternatives

The energy–security link for the purposes of this article refers to the security of energy supplies as well as security in the military (so-called "hard security") sense, in an attempt at a more holistic and realistic approach to security and the sources of conflict, which encompasses both development and defence needs. Success in security and disarmament efforts in the Middle East requires that so-called "soft security"[23] issues such as development and human rights be addressed as these are a frequent and recurring source of insecurity and conflict.

Peace process and Middle East WMDFZ efforts will continue to fail unless they are complemented by a process that addresses the past and the more human, social, and psychological elements that undermine security.

This entails not only identifying mechanisms for the promotion of sustainable development and human rights, but also agreeing on a forum for the airing of past injustices. These mechanisms can be initiated on the local level, without waiting for an overall solution. One idea to promote peace and development would be to undertake joint economic programmes around sustainable energy.

Any peace process, including the pursuit of a WMD disarmament regime, must be part of an iterative process. Political demands will need to be constantly checked against underlying security concerns, threat perceptions, and political and social realities in order to prevent a breakdown. Confidence- and security-building measures must then be developed, tailored to address these specific concerns.

Alternative energy sources

Energy security for the region has a direct bearing on the feasibility of non-proliferation and disarmament efforts. The presence of a nuclear power programme complicates non-proliferation efforts as it increases the need for safety and security measures and multiplies the number of proliferation access points, whether to governments (independent of their actual intentions) or to non-state actors. Thus a WMD disarmament regime can only succeed if it accommodates energy needs and related security concerns.

The region's legitimate energy needs can be best addressed through a combination of energy efficiency measures and renewable energy sources, primarily solar and wind. These will not give rise to proliferation or other security concerns. Admittedly, they do not have the political prestige of nuclear technology, but their capacity to address real energy needs could serve to redirect the current interest in nuclear energy and accompanying efforts to achieve nuclear capability. Alternative energy scenarios for the Middle East that propose a combination of energy efficiency and renewable energy sources have been developed and can be built upon.[24]

Nuclear capability and fuel cycle access

A global approach limiting access to sensitive fuel cycle technologies across the board—along the lines of a Comprehensive Fissile Material Treaty,[25] which goes beyond current Fissile Material Cut-off Treaty proposals—could address regional proliferation concerns and engage relevant states in a way that does not aggravate threat perceptions in the Middle East. Recommendation 12 of the WMD Commission, which calls for a verified suspension of sensitive fuel cycle activities, should also be explored in this context.[26] In some cases sensitive fuel cycle activities could be limited and placed under IAEA monitoring as either an interim or a confidence-building measure.

Ratification of the Comprehensive Test Ban Treaty (CTBT)

Of the 44 states whose ratification is needed for entry into force of the CTBT, four are in the Middle East: Algeria, Egypt, Iran, and Israel. Of these, all have signed the CTBT but to date only Algeria has ratified it. Egypt has issued official statements linking its ratification to the nuclear policies of Israel.[27] Egypt's position could relax if it were reassured that regional nonproliferation concerns and disarmament objectives are being pursued in a context that involves Israel and is geared toward disarmament, and if Israel would take the first step of ratifying the CTBT.

Israel participates very actively in CTBT work. On the matter of ratification of the treaty, however, Israel continues to express reservations over the readiness of the verification regime and over Israel's "sovereign equality" status in the treaty's policy-making organs (referring to the geographical groupings of states for the purposes of election to policy-making organs and, presumably, the unlikelihood of Israel being chosen as a representative state of the Middle East and South Asia region).[28]

Israel's verification concerns reflect a belief that a foolproof verification system is a precondition for ratification, a position that is impossible to satisfy, has not prevented the development of verification systems in the past, and ignores the reality that even a less than perfect verification system can be a better guarantor of security than no verification system.

Israel has much to gain and risks little by ratifying the CTBT. It is assumed—and even rumoured—that Israel's primary reason for not ratifying the CTBT is its close relationship with the United States, which has actively rejected ratification of the treaty. However, ratification would in fact—and particularly in light of its relations with the United States—enhance Israel's standing as a responsible state worthy of "sovereign equality", and would reassure the international community and its neighbours that Israel supports nuclear disarmament. As the only country in the region and one of the very few in the world not party to the NPT, and precisely because of its policy of nuclear ambiguity, Israel is in a unique position with respect to the value of CTBT ratification and the message this act would send to the region and the world. If Israel were to ratify the CTBT it would then be harder for Egypt to resist ratification, and if Egypt were to follow suit, Iran would remain the only country in the region that has not ratified the treaty. Ratification by Iran would go some way toward demonstrating the peaceful intentions of its controversial nuclear programme.

No first use of WMD

Unilateral commitments to no first use (NFU) of WMD by the states of the region, based essentially on their current stated policies and relevant treaty membership, would not entail significant risk or require significant departures from current policy, and these commitments could pave the way for a regional no first use of WMD agreement, and a first step toward a WMDFZ.[29] Despite the concerns and unconfirmed reports regarding the nuclear capabilities and ambitions of some states, none of the Arab states is currently known to have a nuclear weapons programme and all are members of the NPT, which would prohibit their developing or acquiring nuclear weapons. Therefore a nuclear NFU pledge would basically be a mere formality.

With respect to biological weapons, the BTWC prohibits the development, production, stockpiling, acquisition, or retention of these weapons and "there is no doubt among the ... states parties to the BTWC that any use of biological or toxin weapons in armed conflict or for hostile purposes would be a breach of the convention."[30] According to international law, states

that have signed but not yet ratified a treaty are legally prohibited from taking action that would violate the affirmative provisions of the treaty. Thus the states that have signed but not yet ratified the BTWC would be legally prohibited from using biological weapons; those states that have neither signed nor ratified do not have biological weapons programmes. Iran is party to the BTWC, the NPT, and the CWC, and has argued before the International Court of Justice that the existing body of international law indicates a prohibition on the use of nuclear weapons.[31] Thus it should have no legally based objection to a pledge of no first use.

The main obstacles to pledges across the region covering all WMD are therefore the chemical weapons-related reservations of several Arab states and the nuclear policy of Israel, which are interrelated: several Arab states and the Arab League as a group are on the record as linking their refusal to join the CWC with Israel's refusal to join the NPT.[32] However, Israel's stated policy that it "will not be the first to introduce nuclear weapons into the Middle East," taken at face value, is essentially a no first use policy. If all states in the region were to make NFU pledges relating to all WMD in parallel, their arguments regarding one another's WMD capabilities would nullify each other.

Conclusions

Understanding the energy-security link in the Middle East is crucial for progress toward a WMDFZ. Further nuclearization of the Middle East—including the development of nuclear energy programmes—is likely to prevent progress toward a WMDFZ, particularly in light of the controversy and sensitivity regarding the question of access to all aspects of the nuclear fuel cycle. The risk of nuclear proliferation inherent in any nuclear programme should be perceived as a matter of physical capability, complicated by the status associated with nuclear capability, rather than a question of trust. Informed domestic debate about real energy needs and security concerns can reveal alternatives.

Israel is in a unique position with respect to the value of CTBT ratification and the message this act would send to the region and the world. The nuclear era is a relatively recent phenomenon in the context of the history

of the Middle East, where the three cultures of Arabs, Jews, and Persians have interacted and coexisted for centuries. For the same reason, the region has the potential to overcome and outlive the dangers and threats created by the nuclear era. This will require progress on regional peace and security that takes into account human and social elements, as well as WMD disarmament, and that begins with active efforts to de-escalate nuclear tension. Further analyses could explore the most logical order or sequencing of these and other efforts. For the present, any of the proposed elements of progress might be pursued independently, yet in parallel, with a view to identifying political openings and flexibility, and repeatedly reassessing the feasibility of these elements and others that stand to contribute to the goal of regional peace and security and a WMDFZ.

The relevance of both the Israeli-Palestinian conflict and WMD proliferation to regional security suggests an additional possible measure of political and symbolic value. The WMD threat is not a priority issue between Palestinians and Israelis, but the conflict between them is often cited, rightly or wrongly, as an obstacle to broader regional security, including arms control and disarmament. Today's Palestinian leaders could issue a decree stating that a future Palestinian state renounces all WMD and will join all WMD-related treaties. As a practical matter, such a decree would be largely symbolic, given the absence of Palestinian WMD programmes, but as a political gesture it would make a direct link between the peace process and WMD disarmament, and it would help set the tone and political approach needed for progress on both issues.

Recommendations

- Governments in the region need to undergo a renewed assessment of the threats they perceive from each other and of the best approaches to defusing these threats. They should address each other's prevailing concerns with an aim to bolstering confidence that their security concerns can be addressed through the political process and show flexibility to create a real political opening. As a starting point, all governments in the region should make unilateral categorical commitments to no possession or no first use of WMD.
- Outside powers also have a responsibility in identifying and solving these threat perceptions and should particularly focus on avoiding double-standards, inconsistent polices, and practices that contribute to conflict in the region.
- Any country considering a nuclear power programme should undertake a comprehensive and critical review of potential proliferation, economic, environmental, and health consequences, as well as alternatives such as renewable energy. The potential contribution of wind and solar energy sources in the Middle East deserve increased support for research and development
- All governments should examine the possibility of a verified suspension of their fuel cycle activities as a confidence-building measure, including the exploration of creative verification mechanisms that prevent the disclosure of sensitive or proliferation-prone information while establishing and maintaining confidence in adherence to commitments..
- The political peace process should provide opportunities for addressing the human, social, and psychological elements that undermine security, including the opportunity to voice historical grievances. For example, governments and/or NGOs could establish a forum for airing past injustices; identify mechanisms for the

promotion of social development and human rights; and undertake joint economic programmes around sustainable energy for the region.

- In the NPT context, all NPT states should consider steps that could pave the way toward implementing the 1995 Middle East resolution, such as convening a conference to explore the conditions necessary for achieving a zone in the Middle East free of nuclear and other weapons of mass destruction and appointing a standing NPT body to follow-up intersessionally and support efforts toward these ends.

Chapter 7 Iran's challenge to the nuclear order

Michael Veiluva

Three nations in the Middle East dominate any present-day discussion of nuclear weapons, yet only one is subjected to an unprecedented degree of international scrutiny. Two have nuclear weapons; the third does not. Yet it is the third nation that is widely considered the threat to world peace and the target of ever increasing economic sanctions.

The first nuclear weapon state in the Middle East is Israel, an "undeclared" nuclear power whose official policy is to refuse to acknowledge its possession of at least sixty to eighty plutonium weapons, and possibly as many as four hundred.[1] Israel never signed the nuclear Non-Proliferation Treaty (NPT) and is not subject to any verification measures by the International Atomic Energy Agency (IAEA). Aided by its close linkages with the United States, Israel's nuclear weapons programme is shielded from any international oversight. It steadfastly refuses to participate in any conventions meant to address its own nuclear stockpile.

The second nuclear weapon state of consequence in Middle Eastern affairs is, of course, the United States, the preeminent nuclear superpower. American bases and troop deployments are spread across the region, operating under the auspices of the largest of its overseas military establishments, Central Command (Centcom). US bases in this region with nuclear-capable forces or that support nuclear missions include Incirlik in Turkey, Diego Garcia in the Indian Ocean, and Bahrain. The US Fifth Fleet is more-or-less permanently deployed at the Persian Gulf, and routinely includes at least

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one to two aircraft carriers, several *Aegis*-class cruisers, and an unspecified number of *Ohio*-class ballistic missile and *Los Angeles* or *Seawolf* class attack submarines. Taken alone, the US Fifth Fleet is one of the largest mobile nuclear weapon strike forces deployed on the planet.[2]

Yet it is neither Israel nor the US Fifth Fleet that attracts international attention over nuclear weapons. Rather, it is Iran, despite repeated confirmation by the IAEA that no nuclear materials have been diverted from its indigenous nuclear fuel cycle programme. Iran has ratified the NPT and implements a safeguards agreement with the IAEA, under which it operates its uranium enrichment facility at Natanz. No concrete evidence exists that Iran has either an atomic explosive device or an active programme to manufacture one. Instead, there are memos of uncertain origin, a "laptop of death," and a history of shadowy contacts with the notorious A.Q. Kahn in the 1990s.

Recent history

Prior to June 2009, political and media interest (at least outside Israel, where *animus* toward Iran borders on hysteria) over Iran's nuclear fuel enrichment programme had in fact waned due to a three year diplomatic stalemate and the absence of a long-sought "smoking gun" to prove that Iran was acquiring a nuclear weapon. Until late 2009, apart from Iran's growing stockpile of low-level (< 5% U-235) enriched uranium and the addition of many additional centrifuge units, there had been few new developments to report. The IAEA continued to certify that there is no diversion of declared nuclear material, but Iran had not complied with UN Security Council resolutions demanding the cessation of all uranium enrichment. Moreover, "significant questions" remained pertaining to specific data points having to do with Iran's furtive explorations of nuclear technology and possible nuclear warhead designs. Iran's declared facilities related to uranium enrichment remained subject to IAEA inspection and inventorying.

Three events in the summer and fall of 2009 renewed American obsession with Iran's programme of uranium enrichment. In June 2009, widespread domestic protests greeted the declaration of victory by Iran's incumbent presidential candidate Mahmood Ahmadinejad over rivals Mir-Houssein

Mousavi and Mehdi Karoubi. Disputes over the election's outcome triggered urban demonstrations, but it soon became clear that the opposition agenda extended far beyond Mousavi's loss. Iranian government and semi-state agencies responded with broad and repressive measures, as hundreds of protestors and opposition leaders were rounded up and jailed; some demonstrators were shot in the streets, events which were captured on video by cell phone and relayed to the world via YouTube.[3] New upsurges of protest at the end of 2009 attested to the longevity of the opposition and its willingness to assume substantial risks.

While Iran's government struggled with internal dissention, the United States and E3 (France, Germany, and United Kingdom) reported that Iran was building a second, underground "secret" enrichment facility at Qom. Iran's last minute disclosure to the IAEA and offer to open the facility to inspection failed to preempt Iran's serious blunder. There is no evidence that the second enrichment facility under construction is intended to produce bomb-grade uranium, but the location of the site in an underground military facility was hardly encouraging. The circumstances of Iran's disclosure of the uncompleted Qom facility recalled how, in 2002, an Iranian dissident group "outed" Iran's construction of the original enrichment plant at Natanz. Then, as now, Iran quickly agreed to IAEA inspection, but this after-the-fact consent only exacerbated perceptions of Iranian evasiveness.[4] To international hawks, the Iranians had seemingly been caught with their hands deep in the cookie jar at last. Obama's diplomats swooped in to skillfully, if temporarily, win over Russia, which had been holding out against the gasoline sanctions advocated by the US.

Before Iran's second uranium enrichment plant at Qom became public, Ahmadinejad's government had offered to engage the US and E3 in direct talks on a wide range of topics, some involving issues of nuclear energy and proliferation, some not. This offer was a more expansive version of previous offers rejected out of hand by the Bush administration, which had insisted on preconditions, including the suspension of uranium enrichment. Perhaps to the Iranian government's surprise, President Obama responded to the proposal by agreeing to direct talks at the end of September 2009. Arms controllers agreed that Obama was shrewdly calling Iran's bluff, hobbled as it was by domestic divisions as well as the latest flap over a new "secret" programme. The long-awaited talks collapsed in October 2009. President

Ahmadinejad expressed receptiveness to offers by Russia and Turkey to act as "honest brokers" to store enriched uranium and to Russia's offer to exchange Iran's product for 20% U-235, required for medical isotope production. For making this overture, Ahmadinejad drew fire from many sectors of the political opposition including enigmatic "pragmatists" such as former president Rafsanjani and the Green Movement opposition. (The Western press utterly missed the significance of Ahmadinejad's discomfiture in staking out a pro-diplomatic position.) Iran's negotiators were induced to beat an awkward retreat to a posture of "no exchange, no transport". Following the unproductive US-E3 talks, Russia and China signaled their willingness to consider further discussion in the UN Security Council despite their considerable trade ties with Iran and Russia's active assistance in opening Iran's Bushehr commercial nuclear power plant, but they dithered on the matter of opposing additional sanctions.

Accordingly, the three-year stalemate with respect to Iran's uranium enrichment may be drawing to a close, which does not bode well for prospects for a peaceful resolution of the conflict over Iran's nuclear technology programme. The West has prevailed on the diplomatic front; Iran's belated disclosure of a second plant has cost it the cover otherwise provided by its historic cooperation with the IAEA process as well. Until September 2009, the IAEA under Director General ElBaradei patiently slogged through discussions about Iran's prior exploratory efforts at possible militarization of its programme while certifying that all uranium was accounted for. ElBaradei's parting shot as IAEA Director General in the Agency's November 2009 official report chastised Iran over its late disclosure of the Qom plant, and the Board of Governors voted to report the matter to the UN Security Council for the first time since 2006. In response, various statements by Iranian politicians and officials threatened to reduce cooperation with the IAEA to the minimum.

Worse was to come. On 18 February 2010, the IAEA released its latest in a series of periodic reports addressing Iran's compliance under its safeguards agreement with the IAEA. This was the first such report issued under the auspices of the new IAEA Director General Yukiya Amano. Although the report confirmed that all declared nuclear material was accounted for, and inspections were continuing, it criticized Iran's lack of cooperation in explaining evidence with possible military dimensions, and for the first time,

suggested that Western fears of a military nuclear weapons programme were not unfounded:

> The information available to the Agency in connection with these outstanding issues is extensive and has been collected from a variety of sources over time. It is also broadly consistent and credible in terms of the technical detail, the time frame in which the activities were conducted and the people and organizations involved. Altogether, this raises concerns about the possible existence in Iran of past or current undisclosed activities related to the development of a nuclear payload for a missile. These alleged activities consist of a number of projects and sub-projects, covering nuclear and missile related aspects, run by military related organizations.[5]

The "crisis" posed by Iran's nuclear programme is now widely perceived as being at a watershed point. The end of 2009 witnessed the passing of yet another "deadline" imposed upon Iran by the United States and major European nations related to negotiations that ultimately seek the termination of uranium enrichment. The deadline was greeted by Iranian authorities with only another cycle of Revolutionary Guard war games. In December 2009, the *New York Times* published an op-ed advocating a US armed strike on Iranian atomic facilities.[6] Meanwhile, the US House of Representatives, echoing the lopsided votes that preceded the Viet Nam War, passed a new energy sanctions amendment against Iran by 412-12.

Understanding the current impasse over Iran's nuclear fuel cycle programme requires more than a retelling of the tortured history of negotiations since 2002 or a parsing of disputed evidence for a nuclear weapons programme. With notable exceptions, nearly all of the commentary directed to Iran's programme devolves upon issues of "breakout," numbers of centrifuges, or the launching of a new ballistic missile. Detached from historical context, Western media (and most politicians) portray Iran's efforts as one-sided, aggressive, threatening, irrational, and merely nationalistic. This viewpoint has only been exacerbated since June 2009, when Iran's internal turmoil following the elections exposed substantial cleavages within the Islamic Republic's political society. The question of Iran's ostensible quest for nuclear weapons is instead founded on *perception* and *assumptions* that are far more notional than objective. In late 2009, the revelation of a second, underground uranium enrichment facility under construction at Qom crystal-

lized the conviction of many that Iran was well on its way to an indigenous nuclear bomb, even though, as yet, no physical evidence exists for the bomb or its attendant programme.

A disinterested observer in 2009 could well wonder why, being already embroiled in two intractable wars in Iraq and Afghanistan, the United States (led by a Nobel Peace Prize-winning president) is yet lurching toward possible conflict with a third Southwest Asian nation, Iran. As this article is being written, the US and its allies are pressing toward a further sanctions resolution from the UN Security Council. Whatever the outcome in that forum, an impregnable bipartisan consensus in Washington will impose further economic measures against the Islamic Republic. On the surface, the prospect for any improvement in Iran's relations with the West appears quite bleak.

Nuclear reification and the global nuclear order

Iran presents a crisis, but also an opportunity, to re-examine the post-Cold War nuclear order, possibly with a more pragmatic endpoint of non-proliferation that involves, rather than exempts, the nuclear weapon states that have ratified the NPT. This re-examination is a necessarily uncomfortable one for the United States, since it touches at the core of that country's military-industrial complex, which has thrived since the end of World War II. It also looks at the role of nuclear weapons in global relations, including the hard question of why, after so many years and statements of good intentions, nuclear weapons are so organically bound up as a lodestar measure of superpower status.

Although nuclear weapons certainly have physical characteristics that are *sui generis*, prime among these being their untold destructiveness, they are endowed with more complex and significant political attributes that combine to create units of international exchange as well as conflict. Leading with the examples of the United States and Soviet Union (USSR), nuclear weapons are considered the platinum credit card of state power, influence, and nationalistic pride. Nuclear programmes are expensive, requiring the diversion and centralization of technical and military resources and investment of state revenue for the benefit of well-situated elites. As the US and USSR witnessed in the 1950s, nuclear weapon programmes are typically

accompanied by the transformation of political culture to accompany the exponential growth of the both internal and external security apparatus that acquire organic permanence even when the historic rationales for their creation no longer exist.

The symbiotic and interdependent relationship between nuclear weapons and other aspects of state/corporate centralism are not acknowledged within the established arms control community, which largely concerns itself with matters of technical capabilities and classic theories of "deterrence". Far less attention is paid to the *reification* of such weapons in the polity of the declared nuclear weapon states—that is, the political, ideological, and even theological attributes attached to nuclear weapons.[7] Stated differently, the *perception* of nuclear weapons by global elites is the more critical component to the decision to obtain them than is their actual use.[8] Viewing nuclear weapons simply as a function of military capabilities is far too simplistic, since it involves far more than basic questions of deterring attacks from one's adversaries. As Daniel Ellsberg has often observed, nuclear deterrence is both an offensive and defensive concept, so that the US has been enabled to advance its interests by threatening nuclear attack on numerous occasions. Indeed, as recognized in recent Nuclear Posture Reviews, the US is presently contemplating the preemptive use of nuclear weapons themselves under the rubric of weapons of mass destruction (WMD) counter-proliferation. Naturally, Iran is a prime focus of such speculative war planning.

Compounding this nuclear reification is the NPT itself. The Treaty was intended to be the capstone of a global security edifice and to be as significant to foreign relations as the Bretton Woods agreement was to world monetary policy. While seemingly pursuing the laudable goal of controlling the proliferation of nuclear weapons, it also attempted to juridically formalize a two-tiered hierarchy of nuclear weapon haves and have-nots. The NPT imposed a mandatory system of controls and verification on non-nuclear weapon states to which the declared five nuclear weapons states—China, France, the Soviet Union, United Kingdom, and United States—are exempt. In exchange, the five agreed to participate in the exchange of peaceful nuclear technology with ratifying non-nuclear weapon states and, in Article VI, of the Treaty, promised to undertake good faith negotiations toward disarmament—a promise whose fulfillment remains quite distant and inchoate.

The global nuclear order has manifested as the *making permanent* the pre-

eminent status of nuclear weapon states and their nuclear institutions. These institutions thrive on a particular symbiosis between threats and response, dominated in the first half century by the US-USSR rivalry. But the demise of the USSR as the United States' main nuclear antagonist revealed a remarkable development: the US, and to a lesser extent the UK and France, proved unprepared to shed the nuclear war economy established in the 1950s. The vast nuclear infrastructure was institutionally *animate*, capable of sustaining its own interests regardless of an external threat to which thousands of nuclear warheads had any relevance. These nuclear institutions now operate much the same as large private corporations: serving constituents, seeking new missions, and acquiring political influence. Indeed, the semi-privatization of the laboratories earlier in the decade[9] should not go unremarked.

The success of these institutions appears in sustained or increased funding—even in recessionary periods—new appropriations, and stable lifecycles even for expensive programmes with little apparent utility.[10] Their bureaucratized linkages within the executive and legislative branches enable the perpetuation of specific foreign policies involving the distant projection of power, under such rubrics as "global strike" or "preempting threats". Even counter-proliferation ably serves as a stalking horse for other foreign policy agendas, as illustrated by the 2003 Iraq war. Numerous security documents attest to the role of nuclear weapons in the "foreseeable future" in both an offensive and defensive mode. Irrespective of occasional diplomatic statements within international fora, this is the face of US nuclear institutionalization that appears to the world.[11]

As the NPT was being ratified, a new class of nuclear weapon states was being born. Led by India, these nuclear-armed states did not sign the NPT and relied upon various degrees of indigenous technological development to acquire nuclear weapons. Ominously, each of these second generation nuclear weapon states were in regions of frequent armed conflict—India with China in 1961, India and Pakistan in 1971, Israel in 1956, 1967, 1973, 1982 (Lebanon), 2006 (Lebanon again), and 2008 (Gaza). The Democratic People's Republic of Korea (DPRK), which withdrew from the NPT in 2003, remains in a state of perpetual cold war with its southern counterpart and the United States. The international community initially responded to the post-1967 nuclear-armed states with complete restrictions on nuclear cooperation with India and Pakistan, sanctions against the DPRK, and, at least

by the Arab nations, boycotts against Israel. However, in the recent "123 Agreement," the United States recognized India's *de facto* status as a full-fledged nuclear power.[12] Since 9-11, the United States has been prepared to close its eyes to Pakistan's nuclear weapons given Pakistan's centrality in the "war on terror". As for Israel, in the context of US politics at least, it is securely enrobed in the protective mantle of an overwhelming US Congressional majority.

The arsenals of the existing nuclear-armed states in the region are considered to be as follows: Israel is estimated to have about 100 plutonium warheads, probably boosted;[13] Pakistan is estimated to have 70 to 90 HEU and plutonium warheads;[14] and India is estimated to have 50 to 70 plutonium warheads, some boosted.[15]

All three nations have devoted years to developing special-purpose ballistic missile and other delivery systems. Israel has an operational inventory of 50 Jericho II missiles (range 1500–1800 km) and has tested a true intercontinental ballistic missile (ICBM), the Jericho III (range > 4000 km). Israel also has a modern fleet of nuclear-capable F-15s and F-16s supplied by the US.[16] Pakistan has a number of short-range solid-fueled ballistic missiles as well as a medium-range liquid-fueled ballistic missile, the Ghauri (range 1200 km). Pakistan is believed to be well along in researching both boosted fission and thermonuclear (fusion) warheads. It also, like Israel, possesses nuclear-capable F-16s as well as Mirages.[17] India, the oldest regional nuclear power, has a dedicated strategic air, naval, and missile arm, and is testing advanced solid-fueled ICBMs.[18]

Of course, this does not even begin to approach what the United States can deploy in the Persian Gulf region, which includes nuclear-armed aircraft carriers and Ohio-class Trident ballistic missile submarines hovering off Iran's shore, as well as B-2 bombers from Diego Garcia.[19]

In short, the nuclear establishment has widely signaled that they are prepared to "live with" India, Pakistan, and Israel, not only because they believe they are powerless to do anything about them, but also because these countries for now are prepared to live within the rules of the established order in which the US remains the worlds' leading nuclear *croupier.* In other words, as long as certain nations led by the US remain the sole gatekeepers to the nuclear club, the occasional entry of a new member will not disrupt the balance.

Iran's special status as a nuclear outcast arises out of a thirty-year history of hot and cold conflict in a region central to US strategic interests. Even if there were no nuclear issues, the US-Iran relationship has remained consistently hostile since President Carter in 1980 declared the willingness to protect the free flow of oil from the Persian Gulf by all means necessary. The Carter Doctrine has unerringly remained the official policy of all US administrations to the present day.[20] Hence, Iran's nuclear weapons programme has, despite the absence of direct proof, furnishes an easy target for domestic and international consumption. Taken in combination with Iran's complex and somewhat opaque state organization and repression of internal dissent, few Western elites demonstrate any inclination for objectivity. Hyping the threat of a nuclear Iran provides the US government with a chance to impose sanctions against Iran and encourage a change of government to one more "friendly" to US interests.[21]

Perception versus fact

In the eight years since the "outing" of Iran's nuclear fuel enrichment programme, no hard evidence has come to light of any ongoing military programme that would make use of indigenously-enriched uranium, a situation confirmed by numerous US intelligence agencies in the December 2007 National Intelligence Estimate. Notwithstanding these facts, and the intensity to which Iran's enrichment programme has been scrutinized, it is an article of faith among most American politicians and mainstream arms control organizations that Iran is well underway to producing one or more atomic weapons, if it has not already done so. The actual usefulness of such weapons garners little discussion. By dint of repetition, the conviction becomes fact, much as it did over Iraq's alleged WMD before the 2003 war. Unfortunately, the revelation of a second enrichment plant and Iran's execrable timing of its disclosure added another layer of circumstantial evidence suggesting that Iran is leaving a wide door open to "breakout" and becoming a nuclear weapon state. It is becoming increasingly difficult to provide alternative explanations for Iran's behavior that carry much weight in a public discourse dominated by strident and increasingly bellicose Western voices, and its assertions of national sovereignty and self-determination are too easily inter-

preted as evasiveness and secretiveness.

Iran's penchant for secretiveness may, in the end, overwhelm whatever legal justification under NPT Article IV it genuinely has for pursuing an indigenous uranium enrichment programme and the likelihood that it is, in fact, intended only to produce fuel and research isotopes. The tone of the February 2010 IAEA report suggests that the Agency's patience in working with Iran may be all but exhausted. Iran correctly points out that the NPT encourages, and does not prohibit, such civilian programmes. Technically, it is not in violation of any treaty. Yet as long as Iran exhibits mannerisms consistent with a secret intent to develop nuclear weapons, the West's *impressions of Iran's unspoken intent* will take centre stage over whatever direct evidence (or lack thereof) is obtained by the IAEA and state intelligence agencies.

Despite the absence of concrete evidence of a programme to manufacture nuclear weapons, the *circumstantial* case against Iran admittedly gained considerable ground in 2009. The disclosure of the underground Qom facility, Iran's aggressive rocket programme (including the launch of an advanced solid-fueled intermediate range ballistic missile in late 2009), and intractability with the remaining IAEA workplan issues lend support to those who believe that even if Iran has no active atomic weapons programme, it is laying a foundation toward nuclear "breakout". As reflected in the IAEA's February 2010 report, to use lawyer's parlance, the evidentiary tipping point may be nigh where there is enough "to take the case to the jury." Just before the IAEA's report, Ahmadinejad announced that he had directed his engineers to initiate production of 20% enriched uranium to feed into a small research reactor dating from the Shah-era Atoms-for-Peace programme.[22] The purpose of the research reactor is to produce scientific and medical isotopes, which did little to quell the buzz among foreign arms control experts.[23]

President Obama's Iran policy, which he announced in the early months of his administration, was the so-called "unclenched hand," namely, talks without preconditions and abstinence from the bellicose threats that routinely issued from his predecessor. The aftermath of the Iranian elections disrupted the relatively benign, if tepid diplomatic environment. Iran's apparent rejection of the US demand to cease enrichment and ship its stock abroad for enrichment, combined with the above developments, have set the White House to obtain new UN Security Council sanctions or impose them itself.[24]

Because of these ominous developments, Iran's nuclear programme requires a clear-eyed appraisal without becoming overwhelmed by Iran's dynamic internal political situation or escalating rhetoric. For American observers, this approach is not only normatively desirable, but a practical necessity, since US policy toward Iran exhibits all the hallmarks of "manufactured consent"—the creation of a popular consensus (Iran has or soon will have nuclear weapons) despite (still) the absence of proof. Unfortunately, Iran's elites appear to be their own worst enemy, as they seemingly have nothing but disregard for world opinion. In this context, the recent domestic conflict inside Iran only matters to US policy makers as a lever to extract concessions from Iran's elites, as opposed to genuine human rights concerns. Even more than the credit sanctions imposed by President Bush (which still remain), the gasoline sanctions being considered in Congress are intended to affect broad swaths of the Iranian economy.[25] The supporters of these new punitive measures explicitly link the subject of uranium enrichment to their conclusion that as a result of the flawed election outcome, the Islamic Republic lacks fundamental *legitimacy*.

If the foregoing seems somewhat gloomy, it is. Whatever the true facts on Iran's nuclear programme, events since mid-2009 may prove an unfortunate tipping point to encourage further punitive measures toward Iran. Once isolated not only from the West and the IAEA, and abandoned by Russia and China, Iran's elites will confront the unpalatable choice of ending enrichment (a blow to national sovereignty), or worse, may grasp the unthinkable. To do this, they must evict the IAEA inspectors, the necessary prelude to reintroducing low enriched uranium into the centrifuges to produce the 90-plus percent U-235, highly enriched uranium for military use. Somewhere along this timeline, Israel, perhaps aided by France or the US, may take matters into its hands and launch a preemptive strike, an event that might devolve into history's second one-sided atomic war. Even if the war does not escalate, the effect on the region, not to mention already-depressed world economies, likely will be catastrophic.

The legal setting: conflicting objectives

One source of the controversy surrounding Iran's nuclear fuel programme arises from weaknesses built into the NPT itself. On one hand, Article IV of the NPT expresses the "inalienable" right of a signatory nation to develop a peaceful atomic energy programme.[26] The same Treaty recognizes that within this "right," there exists the potential that these same technologies can be applied toward building a nuclear weapon. This tension is particularly acute when fuel cycle facilities, such as those for uranium enrichment, are involved. Article III[27] of the NPT does not prohibit or restrict a non-nuclear weapon state from developing an indigenous fuel cycle programme, provided such a country complies with NPT "safeguards" imposed on nuclear materials through agreement with the IAEA[28] and, obviously, forbears from developing atomic weapons (NPT Article II).

A core problem within the NPT is how to balance these conflicting treaty goals. The result has been a shifting standard of proof that requires a state seeking a nuclear energy or fuel cycle programme such as Iran to demonstrate the negative—namely, that it has neither diverted nuclear materials nor engaged in any weapons-related or undeclared nuclear activity. As with other arms control treaties, enforcement is ordinarily understood to be dependent upon *objective* verification data yielded by inspections and reporting requirements, but in the case of Iran, issues of subjective intent have prevailed.

The other bargain within the NPT implicates the programmes of the nuclear weapon states. Part of the bargain for Article III's intrusion into national sovereignty was NPT Article VI, by which the NPT nuclear weapon states (the China, France, Russia, United Kingdom, and United States) agreed 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." Whether the US and other nuclear weapon states have satisfactorily performed their Article VI obligations is a vast subject left to other sections of this publication, but given the deployed stockpiles combined with modernized production and testing, there is much to criticize.

The potential for dual-use of a nuclear energy programme is not only legal but practical, since, in addition to enriching uranium to highly enriched

uranium (HEU) levels, spent nuclear fuel can be "reprocessed" for plutonium. Within the West, nuclear power proponents have historically dismissed any such linkage between their own atomic energy programmes and those of their allies and trading partners and nuclear weapons proliferation. Tens of nations have functioning nuclear energy reactors and a dozen or so enrich uranium. But in the case of Iran, the linkage to weapons is presumed, so that its nuclear fuel programme is widely viewed as a nuclear weapons programme in-being.

However, pre-revolutionary Iran, unlike nearby nuclear-armed states Israel and Pakistan, signed the NPT, in which it pledged as a non-nuclear weapon state to forbear using nuclear materials for anything other than for peaceful purposes. Iran committed to a verification and oversight regime administered by the IAEA. Prior to the NPT, the Shah's government had already signed a nuclear safeguards agreement with the IAEA for the purpose of verifying that nation's non-proliferation obligations, including the non-diversion of nuclear material. The 1974 safeguards agreement is the operative compact in force today between Iran and the Agency. Israel, Pakistan, and India have no such safeguards agreements with the IAEA.

One danger in this discussion is to place too much faith in the IAEA, which remains dominated by the "P5+1" (the five declared nuclear weapon states plus Germany), and which further institutionalizes the tensions identified above within the NPT. The IAEA was not founded as a nuclear police agency or regulatory watchdog. Rather, it was formed in the 1960s (when atomic energy was touted as "too cheap to meter") primarily to promote the spread of atomic power around the world, more resembling a trade association than an enforcer. The IAEA remains structured around a set of agreements between the Agency and member nations; the Agency's verification jurisdiction is limited to non-nuclear weapon states parties to the NPT. The IAEA has no power to inspect American nuclear facilities or facilities in countries (such as Israel) that never signed a comprehensive safeguards agreement. Nor does the IAEA have any jurisdiction to inspect military facilities where declared nuclear materials are not stored.

Under the individual safeguards agreements between the IAEA and NPT states parties, the IAEA certifies that the state party has not diverted nuclear materials from declared facilities. It may decide to take certain steps, including referral to the UN Security Council, if it believes it cannot carry out its

mandate or otherwise believes a state party may have violated provisions of the agreement. This process is central to the current standoff between the US and Iran, in which the United States, through the IAEA, has demanded that Iran prove it has *not engaged in any nuclear weapons-relevant research*, a difficult task that Western lawyers would recognize as attempting to "prove the negative," or more dramatically, "guilty until proven innocent".

Even in its February 2010 report, the IAEA has not declared outright that Iran has or ever had any nuclear weapons programme, although it is increasingly concerned with the volume of evidence submitted by other nations' intelligence services. IAEA reports state that Iran has *not* diverted nuclear material. In contrast, the US position, bolstered by a large bipartisan consensus in Congress, considers Iran's uranium enrichment as the functional equivalent of a nuclear weapon programme.[29] Moreover, under the United States' upside-down burden of proof standard, finding fault with Iran's conduct is a relatively easy process.

The current impasse between Iran and the United States over uranium enrichment actually has little to do with the IAEA safeguards agreements or the shortcomings in reporting and verification by Iran to date. Rather, the conflict is over Iran's refusal to abide by a political *sanction* selected by a few powerful states and endorsed by the UN Security Council, namely a *demand to suspend uranium enrichment*, an activity that many nations engage in and which is encouraged by NPT Article IV. To suspend this programme remains a non-negotiable issue for Iran.

Iran's brief to the IAEA

The Iranian note to the IAEA of 24 March 2008[30] is perhaps Iran's most comprehensive statement of the legal and political justification for its continuing resistance to the UN Security Council sanctions resolutions demanding cessation of its uranium enrichment programme. The central postulate of Iran's March 2008 note is the "inalienable right" to peaceful nuclear energy guaranteed by NPT Article IV, and the violation of that article by the US-brokered sanctions. This point, standing alone, begs the question of whether Iran has met the conditions for exercise of this right under Articles II and III. These conditions would include:

- To not accept any nuclear weapons or other nuclear explosive devices (Article II);
- To not seek or receive any assistance in the manufacture of nuclear weapons or other nuclear explosive devices (Article II);
- To enter into a safeguards agreement with the IAEA over all of its fissionable nuclear materials (Article III);
- To not divert any fissionable nuclear material subject to Article III;
- To follow all procedures provided in the safeguards agreement with respect to such agreements, including verification (Article III).

As of September 2009, the IAEA had never determined that Iran had violated any of these conditions. But since the United States and the E3 continue to insist that "unanswered questions" remain, particularly as to the acquisition of weapons information (via the "laptop of death" and other miscellany), the IAEA has likewise refrained from giving Iran any statement that it has completed the modalities required under the IAEA's 2007 workplan. The IAEA remains unwilling to declare the nuclear issues closed, the consequence of enormous pressure from the West and Iran's prickly history of responsiveness. Iran otherwise correctly points out that the United States opposed the 2007 workplan when it was announced.

Iran's formal letter also correctly identifies the conflict between US demands that it cease uranium enrichment on one hand and the IAEA's mandate to verify the non-diversion of fissionable material on the other. Since 2007, the IAEA agreed that it had no evidence of any such diversion. However, once the IAEA inserted commentary to both reports citing transparency issues and lack of forthrightness on Iran's part, the door was open to the United States and its allies to impose the negative burden of proof upon Iran to establish an impeccable and possibly impossible performance history. Three UN Security Council resolutions have sanctioned Iran for its enrichment programme. Iran points out in its 24 March 2008 statement that since the enrichment programme is peaceful and subject to IAEA inspections, the UN Security Council resolutions violate Article IV of the NPT as well as the UN Charter. Therefore, in the absence of hard evidence of any diversion of nuclear materials into a weapons programme, or indeed any weapons programme at all, from whence does the right to sanction Iran originate? This question posed by Iran underscores the shaky legal foundation of the sanctions resolutions, even though for the moment, all five permanent members

of the UN Security Council have apparently reached some consensus as to their threshold legitimacy.

The UN Security Council's morality lesson (if there is one) may be that uranium enrichment is *special*, since the difference between weapons-grade HEU and low-enriched uranium (LEU) is one of degree (albeit a quite substantial degree) only. However, NPT Article IV makes no such distinction between enrichment and other nuclear energy-related programmes. Moreover, the fact that the IAEA has never found any shortcoming, with respect to verification of Iran's enrichment activities, deprives the sanctions orders of an evidentiary basis. Instead, the UN Security Council appears concerned of the possibility of Iran's future withdrawal from participation in safeguards (to enable Iran to produce HEU and funnel the same to a weapons programme) and is acting on the worst case scenario, an eventuality Iran has consistently denied will come to pass.

In sum, while Iran overstates what the IAEA has actually concluded or decided, there is enough to its legal position to give pause to non-aligned nations with a stake in equitable enforcement of international agreements, who harbour concerns that the permanent members of the UN Security Council believe they can reshape treaty obligations to suit their own political purposes. For this reason, the continuing sanctions against Iran, whatever the disputed "facts," erode the IAEA and NPT legal regimes.

Iran at the crossroads

The United States provided a number of restricted and classified intelligence records to the IAEA in February and March of 2008, some of which were not shown to Iranian officials. Some of these records pertained to military procurement of possible nuclear-related equipment, the "green salt" project (a uranium conversion technology), high explosives testing, and research into a missile re-entry vehicle.[31] In February, Iran had declined to respond to some of these issues due to lack of time. During a meeting in Tehran on 21–22 April 2008, Iran agreed to address the alleged studies, procurement, and research activities of military related institutes and companies, as well as questions raised by the IAEA earlier in the year. Iran provided a written response to the Agency's question on 23 May 2008.[32]

Iran claims many of the documents are forgeries or manipulated, contain inconsistencies, or otherwise refer to matters in the public domain. Iran has identified its work on high-speed detonators as for civilian or conventional military application. The IAEA confirmed that it had no information, apart from a document on uranium metal, on the actual design or manufacture by Iran of components of a nuclear weapon or of certain other key components, such as initiators, or on related nuclear physics studies.[33] Obviously, Iran continued to defy the three outstanding UN Security Council resolutions demanding that it cease uranium enrichment.

The din of the Western press has drowned out any positive aspects of the IAEA reports.[34] As the oft-quoted arms control expert David Albright told Congress in 2008:

> The Iranians are certainly being confronted with some pretty strong evidence of a nuclear weapons program, and they are being petulant and defensive. ... The report lays out what the agency knows, and it is very damning. I've never seen it laid out quite like this.[35]

The IAEA has emphasized that the Agency is troubled not so much by hard data, but by the general impression that Iranian officials are not being cooperative, and hence, are hiding something. This suspicion—not yet supported by empirical data of a weapons programme—was reflected in a June 2008 Congressional Research Service report.[36] All of the nuclear materials are accounted for, but this is apparently no longer sufficient. Iran's protestations that it is subject to a double standard are inadequate to satisfy the inspectors or ward off further sanctions.

Iran has accumulated, subject to IAEA verification including surprise inspections, low-level (<5% U-235) enriched uranium suitable for the operation of a commercial scale nuclear power plant, but not a nuclear weapon. As of February 2010, Iran's uranium enrichment centrifuges had produced slightly over two thousand kg of LEU.[37]

Breakout paradigms

The lacuna of direct, weapons-related evidence has had little effect on the US bipartisan near-consensus that Iran is doing both. This consensus survived the 2007 National Intelligence Estimate that found no evidence of

an ongoing nuclear weapons programme, and will easily shrug off the recent statement by the Office of the Director of National Intelligence that Iran's accumulation of sufficient HEU from existing stockpiles of LEU for a bomb would take until 2013, far longer than most media accounts. The Director of National Intelligence, Dennis Blair, testified in March 2009 before a US Senate panel that Iranian advances in missile technology were not necessarily indicative of a desire to acquire nuclear weapons.[38] Likewise, the many IAEA reports verifying the absence of any diversion of nuclear materials attract scant mention in the US.[39] Western policy makers and arms control experts also give no weight to Iranian *fatwas* and pronouncements denouncing nuclear weapons and other forms of WMD. Instead, the burden of proof placed on Iran presents it with a nearly impossible task, particularly when so much is a matter of subjectivity instead of hard evidence.

In response, the arms control discourse has shifted from looking for actual evidence of a weapons programme toward speculation into *when* Iran can "breakout" from enrichment to production of atomic bombs. The advantage of this school of thought is that it need not rely upon any evidence of a weapons programme in place today, as long as advancements in uranium technology bring Iran closer to the day when it can begin production of HEU for bombs. As with current US strategic policies advocating preemption, the mere "threat" is enough.

The "breakout" threat is now incorporated into the official US position on Iran's nuclear programme. In his statement to the IAEA Board on 9 September 2009, President Obama's representative to the IAEA, Glyn Davies, remarked that uranium enrichment "moves Iran closer to a dangerous and destabilizing possible breakout capacity." He added, "We have serious concerns that Iran is deliberately attempting, at a minimum, to preserve a nuclear weapons option."[40]

The topic of nuclear "breakout"—the hypothetical future transition from a civilian to military nuclear programme—provides endless employment for arms control experts to apply known facts (quantities of LEU produced) to speculative future outcomes. The principal flaw in the analysis is that, in the end, it rests on the same presumptions of bad intent as those (many in Israel and in Congress) who assert that Iran presently has an active, *secret* weapons programme. In fact, many countries, including the dozen or so that have active uranium enrichment such as Japan, have equal or greater "breakout" ca-

pability to develop nuclear weapons, but none of these have attracted IAEA notice or UN Security Council interest.

For example, arms control experts at the Institute for Science and International Security (ISIS) concluded in February 2009 that if Iran re-enriched *all* of its then-existing stock of LEU to HEU levels, it could manufacture enough HEU for a Hiroshima-sized atomic device.[41] ISIS somberly announced that Iran had finally achieved a "nuclear breakout" capability, meaning that it had both the technological capacity and nuclear material for an atomic weapon, and required only the political decision to implement one. Of course, this leaves open a number of political and technical questions about how such an explosive device (weighing well over a ton) would be usefully deployed. Predictably, the American media obsessed over the benchmark, but not its practical relevance. Coincidentally, in the same month as the ISIS pronouncement, Iran successfully launched a small domestic satellite into orbit, thereby demonstrating to some that it now possessed the capacity to launch an intermediate-range ballistic missile at least capable of striking Israel. (Iran had launched a Russian-made satellite into orbit in 2005.) This was an impressive feat since only nine countries have launched domestically-produced satellites, but still quite a distance from acquiring a reliable ballistic missile force to which Iran would theoretically wish to entrust the fruits of its entire uranium programme for the last three years.

Not all agree with the nuclear breakout paradigm, which is the theoretical underpinning for most recent threat assessments directed at Iran by various arms control experts.[42] New IAEA Director Amano opined in late 2009 that not only is there no evidence Iran has a weapons programme, but there is no evidence that it even *wants* to develop a nuclear weapon.[43] As with the statements of the outgoing Director ElBaradei, Amano's comments fell on deaf ears in the US, in contrasts with statements to the contrary by the US Joint Chiefs and Israeli intelligence.

Concerns about Iran's newly found "breakout" capability obscure several basic facts. Any rush by Iran to feed LEU into the fuel enrichment plant or a clandestine enrichment facility would hardly escape IAEA notice; at a minimum, a necessary precondition to breakout would be the well-publicized expulsion of IAEA inspectors followed by months of frenetic enrichment activity as LEU was converted to HEU. The political blowback to Iran would be enormous, particularly since it occupies a leadership role among

the NAM on nuclear disarmament. Iran (in contrast to the US) has gone on record many times to renounce nuclear weapons in international fora. There are other reasons to believe that Iran's vocal position (ignored by US opinion leaders) is not merely rhetorical; despite being repeatedly subjected to poison gas and nerve agent attacks from Iraq during the long war, the more technologically-capable Iran never employed chemical warfare in the conflict.

Masks of deterrence

Unfortunately, the West's negative perception of Iran's uranium enrichment programme has enhanced the position of those in the US who advocate a reinvigoration of the nuclear weapons complex and related defence sectors such as the manufacturers of global strike dual-use systems and missile defence. On the diplomatic side, the United States' constant message that Iran is aggressively acquiring nuclear weapons has corroded domestic willingness to ratify the Comprehensive Test Ban Treaty and is exploited to justify American intransigence in considering further "concrete steps" to negotiate disarmament specified by NPT Article VI.

Iran is cited often in US reports as a principal justification for developing new dual-use weapons systems to preempt "emerging threats". As refined by various internal strategy documents, the doctrines embrace first-use of nuclear or conventional weapons against all manner of threats to US "national security" by terrorist organizations, quasi-state institutions such as Hezbollah, or "rogue states" like Iran.[44] Given the numerous non-state groups believed to nurse grievances against the US or one of its key allies, the universe of potential targets of a "global strike" is nearly infinite. Unlike the Soviet Union, the deterrence of which (we were told) required the largest and heaviest of weapons systems such as massive bombers, intricate underground silos, and ballistic missile submarines, the new "complex and challenging" security environment is now thought to require ever more sophisticated delivery systems and warheads.

President Bush renounced the Anti-Ballistic Missile (ABM) Treaty and in the last years of his administration moved ahead with plans to construct an ABM shield in Eastern Europe, to the understandable distress of the Russians. Bush averred that the shield was actually intended to address "the

Iranian threat," which fooled few outside the US, since Iran lacked the capability (let alone any historical conflict) to seriously threaten Europe.[45] President Obama informed the Russian Federation in 2009 that this was one of a number of retrograde Bush initiatives to be abandoned by the United States. But more recently, Secretary of State Clinton reintroduced the notion of a less expansive missile shield to ostensibly protect Middle Eastern allies such as Saudi Arabia.[46]

Ways forward

A vital need exists within the United States to vigorously challenge the prevailing consensus among most political and media elites that Iran is either arming itself with nuclear weapons or is on the verge of doing so. Despite the hard lesson learned from the build up to the Iraq war, the sustained campaign of disinformation directed to the subject of Iran's nuclear programme resembles American media attitudes toward Iraq in late 2002. What is particularly striking today is that this attitude has survived and prospered despite repeated US intelligence statements to the contrary and a lack of support from IAEA inspectors. If there is still no hard evidence of a military nuclear programme, the failure to find any is not from lack of trying over the last eight years.

Likewise, the Iranians must somehow overcome years of behaviour that only feeds Western perceptions of secretiveness. Instead of clinging to legal *minutae*, Iran's leaders must genuinely cooperate with IAEA pleas for cooperation and transparency. Instead of belatedly disclosing new programmes, they need to exercise good faith in informing the Agency as soon as a decision to proceed with construction is taken. Hopefully it is not yet too late, but enormous damage has been done by recent developments.

The standoff with Iran involves both "micro" and "macro" issues. The most immediate "micro" issue, which before June 2009 appeared to be shared by the Obama White House, was the resumption of direct talks between the US and Iran without preconditions and participation with European (and possibly Russian) negotiators, which would permit Iranian participation in a nuclear programme with appropriate international verification.

The harder issues are "macro," requiring long-term and difficult paths

to mutual recognition and respect. As detailed in numerous histories, the relationship between Iran and the US has been punctuated by intervention and hostility since the 1950s. The US actively aided the overthrow of Mossadegh in 1953 and sponsored a repressive aristocracy for the next quarter-century. As some Americans recall the taking of the "embassy hostages" in 1980, many Iranians recall American support of Saddam Hussein during the Iran-Iraq war. American forces intervened toward the end of the war to sink Iranian ships and strike other facilities. This difficult history must be acknowledged.

The cycle of sanctions premised upon Iran's pursuit of nuclear enrichment has been ineffective and should be suspended. Whatever the economic or environmental merits of Iran's programme, Iran is correct in asserting that this is a privileged activity under NPT Article IV, particularly since, amidst all the hubbub, Iran has allowed the IAEA to inspect its facilities and account for all the uranium. Lacking a factual link to a military weapons programme, the US and its allies have only fallen back to suppositions of evil intent, or more recently, hypothetical "breakout" scenarios, that ought not to prevail in international forums. In the current situation, Iran is to be denied enrichment not because it violates any treaty or agreement, but because the UN Security Council ordered Iran to suspend its programme.

When subjective intent overpowers objective facts, states that are trying in good faith to ascertain precise "rules of the road" on regulated nuclear activities will undoubtedly suspect that political interests are superseding technical guidance. The IAEA's verification that all declared nuclear material is accounted for has taken second chair to considerably less precise observations that Iran is "less cooperative" or provided "inadequate responses" to legacy issues. The IAEA should not be a politicized process, but a technically neutral one. Nor is it a military intelligence service.

The campaign of sanctions against Iran, instead of enhancing the goal of non-proliferation, erodes it. As noted throughout this chapter, the very nature of the question, the proof of a negative (prove to me you are not producing nuclear weapons) defies meaningful certainty as a standard. What is left is what is in the eye of the beholder. Simply denying the good faith of the opposite party in negotiations only guarantees a walkout. Punitive measures, also predicated on non-facts, only exacerbate the potential for failure.

The present controversy further arises in the setting of a flawed treaty.

If certain nuclear activities are indeed to be more regulated than others, or banned entirely, these should be clearly stated. If the standard for a permitted atomic programme is whether you are considered an enemy or friend, this is not a legitimate universal treaty goal. If the nuclear weapon states intended to promote the spread of peaceful nuclear energy within the NPT framework, that is a bed they have to be prepared to lie in, provided they treat the responsible agency (the IAEA) with the independence and objectivity required for the job.

The other overarching issue involves the interplay between NPT Articles II, III, IV, and VI, particularly as applied to Iran. By and large, the non-aligned state parties have performed well under their safeguards agreements with the IAEA. To date, the significant nuclear proliferators have been non-NPT signatories—Israel, India, Pakistan. Unfortunately, the nuclear weapon states have largely considered the disarmament directive of NPT Article VI like a feel-good suggestion akin to the 1928 Kellogg-Briand Pact renouncing war. A nice statement, but quite impossible in practice. Thus it is that nearly all official statements of US strategic guidance in this decade have declared that nuclear weapons will remain part of US defence strategy for the foreseeable future. This should not be so—as former IAEA Director General ElBaradei remarked in 2007, the nuclear weapon states have to "begin to take nuclear disarmament seriously."

Recommendations

- Within the United States and the E3 countries, opinion leaders and the public need to educate themselves and vigorously challenge the prevailing consensus among most political and media elites that Iran is either arming itself with nuclear weapons, or is on the verge of doing so.
- Iranian leaders can exhibit more genuine cooperation with the IAEA and transparency around their uranium enrichment programme. Instead of belatedly disclosing new programmes, Iran's government needs to exercise good faith in informing the Agency as soon as a decision to proceed with construction is taken. Whether or not such late disclosure is "technically" consistent with prior agreements, Iran's situation is beyond such fine lines and its leaders must exhibit good faith.
- The United States and Iran need to continue engaging in direct talks without preconditions and with the participation of European and Russian negotiators, to achieve a result that is consistent with national rights under the IAEA.
- Iran should reaffirm its prior Non-Aligned Movement statements and its official and secular commitments to forswear atomic weapons and promote regional and universal nuclear disarmament.
- The cycle of sanctions premised upon Iran's pursuit of nuclear enrichment should be suspended.
- The IAEA must remain technically neutral, employ sound expertise, and resist efforts to expand its jurisdiction based upon influence by the declared nuclear states.
- The US and Iran should take steps to de-militarize the Persian Gulf, particularly in the Strait of Tiran.

- The legal non-proliferation regime, and the NPT in particular, must be rigorously examined to address the permanence of nuclear weapon institutions and to discount the value of such weapons in international relations.
- Southeast and South Asian nations, without exception, should commit to a specific programme to defuse nuclear tensions and avoid a catastrophic arms race, accompanied by a commitment by the nuclear superpowers to honour such programmes and not introduce nuclear weapons in the region or sponsor/assist local nations to stockpile theirs.

Chapter 8 Missiles, missile defence, and space weapons

Jürgen Scheffran, Ray Acheson, and Andrew Lichterman

The missile threat

Although the missile threat was reduced after the end of the Cold War, missile proliferation and its link to weapons of mass destruction (WMD) remains an international security concern. Nuclear weapons could potentially be delivered by a number of systems, including aircraft, ballistic missiles, cruise missiles, artillery, and unmanned aerial vehicles (UAVs), as well as a wide range of low-technology options, such as civilian cars, ships, or even suitcases.

Ballistic missile technology has spread to more than 30 countries, many of which have access only to Scud variants of short range (below the "Scud barrier" of 1000 km). Other than the nuclear Non-Proliferation Treaty (NPT)-recognized nuclear weapon states, only North Korea, India, Iran, Israel, and Pakistan have produced or flight-tested intermediate-range ballistic missiles with a range of between 1000 km and 5500 km (the "INF [Intermediate Nuclear Forces Treaty] barrier"). For the time being, only the five nuclear weapon states—the United States, Russia, the United Kingdom, France, and China—have ICBMs. All those states continue to develop and test their missile arsenals. More countries have access to missile technology, such as Germany and Japan, but did not follow that path.

To overcome the Scud and INF barriers is a challenging and costly task, particularly as key components (e.g. accurate guidance, composite materials, thrust vector control, reentry technology) are not easily available on the market. Instead of going ballistic, countries could rely on cruise missiles,

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which cost much less and are easier to acquire and to maintain, require less training and logistical support, and perform with better accuracy and reliability than ballistic missiles. Even more accessible are UAVs, which have a high civil-military dual-use potential, and which are relatively cheap, available, and easy to handle.

The use of artillery rockets and UAVs by Hezbollah against Israel demonstrates that the use of such weapons no longer is the exclusive privilege of technologically advanced state armies; it has become an option for low-tech states and non-state actors. This represents a significant addition to the missile threat.

Prospects will remain dim for reducing, rather than merely slowing the growth, of missile threats so long as those states that already possess sophisticated missile capabilities continue to improve them. And in missiles and other long-range delivery systems, as in most areas of military technology, the United States far outstrips all other states in the scope and ambition of its efforts. Further, the United States remains the preeminent military power in several of the regions where missile proliferation is of greatest concern, capable of targeting adversaries in Northeast Asia and the Middle East with its own unparalleled arsenal of nuclear-capable missiles and long-range bombers, while confronting them directly with superior conventional forces.

It is against this background that we must view the wide-ranging US effort to develop the next generation of long-range delivery systems, from bombers and ICBMs to new kinds of reentry vehicles deliverable by missile or perhaps in the future from versatile re-useable launch vehicles. Although some of these systems currently are envisioned as exploiting advances in accuracy to deliver conventional weapons by missile at heretofore impracticable distances, they will also be capable of being used to deliver nuclear weapons. The development of conventional weapons with global reach, furthermore, will give the United States a capability to inflict devastation from afar that few states if any can match. This will make the elimination of nuclear weapons and other WMD––viewed by many as a relatively cheap equalizer for superior conventional power—yet more difficult.

While explicitly retaining a spectrum of "[n]uclear attack options that vary in scale, scope, and purpose,"[1] US military planners also hope to exploit advances in space technology, missile accuracy, computing, and communications to develop conventional weapons that can strike anywhere on earth

in a matter of hours. To this end, the US is both modernizing existing forces and, with the aim of achieving a capability of "prompt global strike," taking the first steps towards development of next-generation delivery systems.

In 2008, General Chilton, Commander of the United States Strategic Command, said in a briefing before the House Armed Service Committee subcommittee on strategic forces, "While our nuclear capability remains vital, our ability to integrate conventional long-range precision weapons is every bit as important.... We have a prompt global strike delivery capability on alert today, but it is configured only with nuclear weapons, which limits the options available to the President and may in some cases reduce the credibility of our deterrence."[2]

With Strategic Command's full support, the Pentagon and its contractors are poised to begin development of a new generation of long-range delivery systems capable of carrying conventional warheads that would allow the United States to strike any target on earth within 60 minutes or less.

Russian security analysts have raised concerns that these conventional US "alternatives" to nuclear weapons might pose an obstacle to US-Russian nuclear arms control negotiations. According to Alexi Arbatov, a scholar in residence at the Carnegie Moscow Center, "nuclear weapons states like China and Russia are primarily concerned about growing American conventional, precision-guided, long-range capability, [or] Prompt Global Strike systems."[3] Arbatov added that what he termed "threshold states," nations with potential for developing a nuclear weapon, are similarly concerned about US conventional capabilities.

Without adequate arms control strategies broadly supported by the international community, the risks of missile proliferation are likely to increase as long as technical capabilities are spreading and regional conflicts provide incentives to acquire advanced weapons.

Missile "defence" is not the answer

So far, the United States has sought to counter the growing missile threat with improved capabilities for preemptive strikes and for missile defence, both of which are fuelling the missile arms race. The latter, examined here, is not only outrageously expensive and prone to repeated development set-

backs, but also impedes both nuclear and conventional disarmament and arms control efforts on a broader scale.

While the Obama administration cancelled Bush administration plans to build missile defence sites in Poland and the Czech Republic—which were to be ostensibly targeted against a hypothetical Iranian missile threat—President Obama also noted that his new plans for missile defence in Europe "will provide stronger, smarter and swifter defenses of American forces and America's allies." Secretary of State Robert Gates explained that the Bush plan was no longer the best military "architecture" for the current "threat" from Iran, pointing out that the new system would be operational seven years earlier than the Bush plan. He noted, "Those who say we are scrapping missile defense in Europe are either misinformed or misrepresenting the reality of what we are doing."[4]

Several NATO member states and European companies are developing missile defence systems in cooperation with the United States, as are non-NATO states, including the Republic of Korea, Japan, Australia, and Israel. India has tested a system designed to intercept short and medium-range missiles. This activity is underway despite the fact that strategic missile defence still is not a proven technology and has yet to be tested in operationally realistic conditions.

Missile defence has potentially negative impacts on prospects for the reduction and elimination of nuclear forces. In particular, the Russian government has objected strongly to US plans to establish missile defence systems in Europe, arguing that the system could be used against Russia's ICBMs and thus would undermine strategic stability. This controversy contributed to Russia's decision to "suspend" implementation of the Conventional Forces in Europe Treaty and the threat to abandon the 1987 Intermediate Nuclear Forces Treaty and has prompted belligerent statements from the government that Russia would target the missile defence sites. Missile defence is aso proving to be the main obstacle to completing a follow-on to the Strategic Arms Reduction Treaty between Russia and the United States.[5]

Military responses to the missile threat, such as nuclear deterrence, preemption, counter-proliferation, and missile defence, may aggravate the risks and provoke proliferation rather than prevent it. An offense-defence missile race could undermine international stability and disrupt regional balances. Removal of these weapons is an urgent issue on the international agenda.

Towards international missile control

To reduce the emerging missile threat, the time to take political action is now. The NPT preamble emphasizes "the elimination from national arsenals of nuclear weapons and the means of their delivery pursuant to a Treaty on general and complete disarmament under strict and effective international control," but the NPT does not further specify how this ultimate goal could be achieved for delivery systems.

Besides US-Russian agreements, there are no treaty constraints on the acquisition, development, and deployment of missiles. The Missile Technology Control Regime is largely based on export controls among potential missile suppliers and has been able to slow down or even end some missile programmes, but its effectiveness is limited if motivation to acquire missiles persists.

Limited efforts to curb missile proliferation have been undertaken, such as the Hague Code of Conduct, the Proliferation Security Initiative, and UN Security Council Resolution 1540. More far-reaching ideas, like the Russian proposal for a Global Control System and a Global Monitoring System on missile technology, have not been implemented. The UN Panels of Governmental Experts on Missiles have failed to reach agreement on substantive recommendations. It is unlikely that really effective measures to stop missile proliferation will be taken absent progress on limiting, reducing, and eliminating existing holdings, particularly those of the original nuclear weapon states. However, in recent years, arms control and disarmament have not been seriously considered for missiles, and other delivery systems have also been largely neglected.

The key for further progress is to find mechanisms that restrain both capabilities and motivation to acquire missiles. At the 1986 Reykjavik summit, Presidents Reagan and Gorbachev considered proposals for global elimination of ballistic missiles that were revisited after the end of the Cold War, for instance, in the Zero Ballistic Missiles concept put forward in 1993 by the Federation of American Scientists and supported by Paul Nitze and others. In 1996, the Canberra Commission called for a "global treaty controlling longer range ballistic missiles" and, as an interim step, exploration of a missile flight test ban. Test restrictions would effectively prevent new missile designs and limit modification of traditional technology. To address con-

cerns about asymmetries and discrimination, a "missile freeze" could cover offensive and defensive missiles.

The feasibility of missile control has been explained in *Beyond Missile Defence*, a 2002 briefing paper of the International Network of Engineers and Scientists Against Proliferation and the Western States Legal Foundation.[6] The US-Soviet/Russian arms control experience shows that the deployment and storage of missiles can be monitored by satellite, and their destruction per agreement can be verified by on-site inspection. Missile tests can be monitored, and much of the infrastructure for missile development—e.g., production facilities, test ranges, missile containers—is susceptible to monitoring.

In addition to controlling the weapons, building international and regional security regimes, combined with political and economic cooperation, would provide incentives to diminish reliance on missile arsenals. Regional approaches for arms control could include confidence-building measures like launch notification and exchanges of information, establishment of data centres, and conversion programmes. Diplomatic initiatives are required to reduce the role of ballistic missiles in critical regions (Northeast Asia, South Asia, Middle East) and to develop an international norm against ballistic missiles. The importance of regional approaches to disarmament and confidence building was demonstrated in South America (Argentina and Brazil) and South Asia (India and Pakistan).

A control regime on ballistic missiles could be extended to the international control of ballistic missile defences, reversing the US withdrawal from the Anti-Ballistic Missile Treaty in 2002 and fulfilling the 2000 NPT commitment to the preservation and strengthening of that Treaty. The terms of a new treaty could be made more precise and verifiable and/or be universalized. Such limits would relate to the altitude, relative distance, and velocity of interceptor tests, and to limits on laser brightness or to the aperture of sensors and mirrors.

Prevention the weaponization of outer space

There is also a dangerous synergy at work between the development of missile defence and the threat of space weaponization. Missile defences, af-

ter decades of being sold as an "alternative" to the terrible dilemma of nuclear "mutually assured destruction," carry an ideological weight virtually independent of any rational argument. At the same time, the everyday use of satellite-based technologies by military forces at war around the world continues to grow, providing credibility to claims that further development of military space technologies is both essential and practical. The high-tech appeal particularly for the United States of both missile defences and military space generally as "the ultimate high ground" help to sustain budgets for technologies such as space launch and hypersonic flight, contributing to a steady flow of incremental improvements in already highly dangerous and inherently destabilizing strategic weapons, such as highly accurate long-range missiles.

All advanced military powers, and the United States most of all, increasingly rely on satellites for surveillance, communications, navigation, and the targeting of weapons. Even terrestrially-based US ballistic missile defence programmes call for massive upgrades in space-based sensing, and the United States has ambitious plans to expand the advantages it already derives from its global network of satellites and ground stations. A main justification for exploring space weapons in the near term is to defend "space assets" that US ground forces depend on, purportedly requiring technologies with the capability to detect and if need be destroy anti-satellite weapons that might operate in or through space. The second application for space-based weapons that the US appears to be seriously considering is missile defence, employing either kinetic-kill devices or directed energy.

Attack on terrestrial targets from space occasionally is mentioned in long-range planning documents, attracting a disproportionate amount of attention due to its sci-fi glamour. However, other new capabilities for weapons delivery to ground targets are emerging, with greater range and global coverage for nuclear or highly accurate conventional payloads. This implies that attacks on terrestrial targets likely can be accomplished more easily with upgraded ballistic missiles and re-entry vehicles, perhaps supplemented by re-useable launch vehicles that could either place satellites in orbit or deliver several weapons payloads at once from a sub-orbital trajectory.

The combination of increased use of space technologies for surveillance, communication, and navigation by terrestrial military forces, additional sensing and targeting demands from evolving missile defences, and the ex-

tremely profitable nature of high-end military space technologies are likely to drive the continued development of fundamental space technologies—cheaper and more reliable space launch, space-hardened materials, efficient means of generating and storing energy in space, etc. All of this increases the potential for space-based weapons of some kind to become practical at some time in the future.

While challenging, on-site monitoring of space rocket programmes can minimize the risk that they will contribute to ballistic missile development. The case for a regime to control and monitor space launchers is greatly strengthened in the context of preventing an arms race in outer space. Since human-made objects in orbit would enter space through space launchers, a monitoring system at space launch facilities could not only search for indications of ballistic missile use, but also for the space-weapon usability of the payload. This would provide increased transparency concerning space activities in general, and would effectively exclude the deployment and testing of space weapons using ground-based space launchers.

Since both missiles and missile defences have a capability to attack satellites, their control relates directly to the protection of space-based objects. Destruction of satellites using ground or sea-based missiles or anti-missiles was demonstrated by the United States and the Soviet Union in the 1980s, and by China in 2007 and again the United States in 2008.

Outer space has been widely acknowledged as a common heritage of humankind, which should be used for the benefit of all countries. The international community has long been calling for the prevention of an arms race in outer space, seeking to strengthen international space law and arms control in space by introducing provisions against the weaponization of space. Russia and China presented a "draft treaty" in February 2008 at the Conference on Disarmament that was rejected by the United States, which continues to seek space dominance. The draft treaty, the first on outer space to be submitted to the multilateral negotiating body, was far from satisfactory in its approach to a possible ban on space weapons. It did not address ground-based weapons aimed at attacking space assets; space weapon testing or development; the problems of "dual-use technologies"; or the current militarization of outer space. It also avoided discussion altogether of the issue of verification.[7]

Regardless of the merits of this particular text, the draft treaty has prompted much discussion about the possibilities for a space weapon ban.

Consideration of such a ban should not be written off based on the first draft. The US media and Bush administration reacted hysterically to the introduction of the draft treaty, accusing China and Russia of a "diplomatic ploy ... to gain a military advantage."[8] The media reported that the United States is committed to ensuring the use of space for peaceful purposes, but insists that it will pursue programmes to ensure that its satellites and other spacecraft are protected. However, the US delegation stood alone in voting against the annual resolution on space security in the UN General Assembly in 2005–2008, and released a National Space Policy in October 2006 opposing "the development of new legal regimes or other restrictions that seek to prohibit or limit US access to or use of space," arguing it will continue to "dissuade or deter others from impeding [its right to operate in space] . . . and deny, if necessary, adversaries the use of space capabilities hostile to US national interests."[9] In addition, its programmes to "protect" its satellites and other spacecraft include some of the most aggressive technologies yet to be unleashed on the international community.

In October 2009, the US delegation to the UN General Assembly First Committee on Disarmament and International Security indicated that the Obama administration is conducting a comprehensive Space Policy Review to determine its approach to multilateral arms control measures in the context of space security. The US delegation said that this review will include a "blank slate" analysis of the "feasibility and desirability" of transparency- and confidence-building measures (TCBMs) and of "effectively verifiable arms control measures" in outer space that "advance the national security interests of the United States and its allies, as well as of all spacefaring nations." However, the US delegation also continued to stress that the United States "will continue to reject any limitations on the fundamental right of the United States to operate in, and acquire data from, space."[10] The fact that it was able to say this before completing its space policy review is troubling—for the past 30 years, the US government has considered any arms control measure to be a limitation on its right to operate in space. Also troubling is the fact that the US Strategic Command now describes its components and personnel as "Leaders in Strategic Deterrence and Preeminent Global Warfighters in Space and Cyberspace".[11]

The rest of the international community, however, is coming together in its recognition that action is needed to preserve the peaceful use of outer

space. The European Union and Russia, who both support the development of TCBMs for outer space, managed to support each other's initiatives in 2009, with Russia welcoming the EU Code of Conduct on outer space activities and all EU member states joining as co-sponsors of Russia's annual TCBM resolution at the United Nations General Assembly. While the debate between those supporting voluntary TCBMs and those supporting a legally-binding treaty on the prevention of an arms race in outer space or prevention of the placement of weapons in outer space continued throughout 2009, some governments have tried to bridge the gap between these two paths, arguing that these approaches are not mutually exclusive. The Canadian government has suggested the development of an "encompassing approach to space security that includes not only addressing environmental, commercial and civil dimensions of space, but also its military and national security dimensions." These proposals included: a ban on the placement of weapons in space; the prohibition of the testing and use of weapons on satellites so as to damage or destroy them; and the prohibition of the use of satellites themselves as weapons."[12]

Overall, most governments continue to recognize that taking measures to prevent an arms race in outer space is more effective, less complicated, and less expensive than taking measures after an arms race is underway. Many governments and space technicians highlight the changes in aerospace technology and use of space that make the current space legal regime insufficient to preserve the security of space objects. Given the increasingly complex situation in outer space, commercial space operators have begun to develop a data centre for sharing orbital data amongst themselves, without waiting for governments to take the lead.

Vulnerabilities and threats would be considerably increased with advanced space weapons, such as maneuverable space mines, micro-satellites, kinetic kill vehicles, chemical and nuclear explosives, or particle, microwave and laser beams. Transforming space from the "common heritage" of humankind into a "high frontier" for space warfare where weapons are used "to, from, in and through" space, contains considerable risks for all states, including the United States.

To avoid these risks, the transition from the militarization to the weaponization of space needs to be prevented. Comprehensive space arms control would seek to ban weapons against objects in space and from objects

in space against any target, and would prohibit development, testing, and deployment of such systems altogether before more advanced weapons are tested or become operational. A comprehensive approach could integrate risk reduction measures and partial agreements in a phased approach. This would be also attractive to the general public and require an unprecedented degree of international cooperation.

Recommendations

- The United States should abandon the quest to maintain long-term military supremacy through modernization and development of missiles and other strategic delivery systems, anti-missile systems, and possible deployment of space-based weapon systems. As a starting point, the United States should re-join the Anti-Ballistic Missile Treaty.
- All governments should support the establishment of international controls on delivery systems and anti-missile systems as part of a global process of reducing and eliminating nuclear forces, banning weapons in space, limiting strategic weapons generally, and implementing a policy of "non-offensive defence".
- To this end, governments should pursue a global treaty controlling missiles, and, as an interim step, explore a missile flight test ban, which would prevent new missile designs and limit modification of traditional technology.
- Governments should work with commercial and civilian space operators to develop best-practice "rules of the road" for outer space activities. They should also commit to transparency- and confidence-building measures guiding space activities while simultaneously discussing the nuts and bolts of a legally-binding treaty that would prohibit the weaponization of outer space.

PART II: CHOICES

Chapter 9 Dismantling discourses: nuclear weapons and human security

Jacqueline Cabasso and Ray Acheson

When the Cold War abruptly ended with the dissolution of the Soviet Union, anti-nuclear activists and ordinary people everywhere collectively breathed a huge sigh of relief, hoping and believing that they had walked away from a nuclear holocaust and putting nuclear weapons out of their minds. Many activists went on to different issues, while others went back to their day-to-day lives, raising families and working to make a living in an increasingly demanding economy. Meanwhile, deeply embedded in the US military-industrial-academic complex, the nuclear juggernaut rolled on, as militarists in the Pentagon and scientists at the nuclear weapons labs conjured up new justifications to project the nuclear weapons enterprise into the future.

In 1991, following the sudden collapse of the Soviet Union, Colin Powell, then-Chair of the Joint Chiefs of Staff, explained, "You've got to step aside from the context we've been using for the past 40 years, that you base [military planning] against a specific threat. We no longer have the luxury of having a threat to plan for. What we plan for is that we're a superpower. We are the major player on the world stage with responsibilities around the world, with interests around the world."[1] To implement this new strategy, "non-proliferation"—stopping the spread of nuclear weapons—was turned

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on its head. The new buzzword was "counter-proliferation"—including the threat of a nuclear strike to dissuade other countries from developing nuclear, chemical, or biological weapons that could be used to threaten the United States or its allies.

During the 1990s, nuclear weapons—especially US nuclear weapons—disappeared from the public's radar screen. Questions of nuclear arms control, non-proliferation, and disarmament became increasingly isolated from issues of concern to most ordinary people—including issues of war and peace—and increasingly relegated to elite policy circles inside the Washington, DC beltway.

Meanwhile, independent grassroots groups monitoring local nuclear weapons facilities were documenting US plans to replace underground nuclear tests with a new generation of high-tech experimental laboratory facilities and supercomputers, and challenging proposals for new weapons production processes and capabilities. For the most part, that information was kept out of Washington discourse by DC arms control lobbyists who were focused almost exclusively on securing ratification of the Comprehensive Test Ban Treaty—at any price—while protecting their access to policy and decision makers. Apparently, from their point of view, it was an "inconvenient truth" that nuclear weapons research and development was going forward hand in hand with evolving counter-proliferation policies reliant on "credible" US nuclear threats.

To make matters worse, as the decade wore on, funding for non-governmental organizations (NGOs) working for disarmament began to dry up. Those funders still in the field increasingly withdrew support for independent local and regional groups advocating for the abolition of, rather than US control of, nuclear weapons in a broader context. Instead they encouraged an increasingly centralized, narrowly framed, "top down" approach, comprised mainly of legislative initiatives targeting individual budget line items for proposed new nuclear weapons programmes. Those programmes were addressed, for the most part, in isolation, without reference to existing nuclear weapons or any broader military or foreign policy considerations.

Nuclear weapons and security discourses

With nuclear weapon issues effectively removed from grassroots organizing agendas, the connections between nuclear weapons and broader issues of peace, security, and justice were severed. Thus nuclear weapons were not initially brought into the human security discourse as it developed. However, the relationship between nuclear weapons and human security is similar to that of the relationship between economic inequalities and social justice: if you have the first, the second is very difficult to obtain.

Nuclear weapons foremost act as an existential threat to humanity and life on this planet. As recent studies by climate scientists have shown, a nuclear war involving no more than 100 Hiroshima-sized nuclear weapons—about 0.3% of the global nuclear arsenal—could have terrifying, long-lasting effects on the global climate, leading to a drop in average surface temperatures, reduction of the ozone layer, and shortened agricultural growing seasons.[2]

And, as the terrible earthquake in Haiti, which has killed roughly the same number of people as the two primitive atomic bombs dropped by the United States on Hiroshima and Nagasaki has shown us once again, there could be no adequate response to the far larger catastrophe of a nuclear explosion in a city anywhere today. An earthquake is an act of nature. A nuclear weapon use, on the other hand, is a 100% preventable man-made event.

While the *use* of nuclear weapons clearly would not bring anyone security, nuclear weapons nevertheless have become a central feature of the "national security" discourse. This discourse ensures the security of elites who seek to maintain instruments of violent destruction for their own benefit. The "national interest," as it is typically invoked in this sense, does not refer to the well-being of the general population, but of those managing the military-industrial-academic complexes. Nuclear weapons are instrumental for nuclear weapon states in maintaining the structural inequalities between the elite, technologically-proficient classes and the rest of humanity, between those with power and money and those without either.

Whether the military-industrial-academic complex is in the United States, India, France, or any other country, it is in its interest to keep money pumping into its nuclear weapon programmes. For the United States, as Andrew Lichterman of the Western States Legal Foundation points out, "The nuclear weapons establishment constitutes a formidable set of institutions.

And they are part of a far broader constellation of powerful institutions and organizations, never far, if at all, out of power, that see their interests as being well served by a mode of US global military dominance ultimately underwritten by nuclear weapons."[3] This current, highly-militarized order also benefits those who profit from all the other elements of an economically stratified world maintained in large part by force or threat of force.

US President Obama, while on the one hand committing the United States to "pursuing a world without nuclear weapons," is quick to caveat this goal with the disclaimer that as long as nuclear weapons exist, the United States will maintain a credible deterrent to ensure the security of the US and its allies. The Vice-Admiral of US Strategic Command, the institution responsible for US nuclear war planning, has argued that contrary to the belief that the only "legitimate" role for nuclear weapons is to deter a nuclear weapon attack by others, "the deterrence role of US nuclear forces goes well beyond" this formulation. He explained,

> US nuclear forces continue to play other roles in strategic deterrence. They cast a long shadow over the decision-making of any adversary attempting attacks on US vital interests or contemplating such attacks. They make it clear that the American President always has an option of last resort for which the adversary has no effective counter. They pose what's been called the threat that leaves something to chance, the possibility in the mind of the adversary that their actions could result in unintended or uncontrolled escalation. And these are the deterrence dynamics that only nuclear weapons can provide.[4]

According to its proponents, maintaining this "credible" deterrent will require a massive investment in the nuclear weapons infrastructure. In her address to the US Institute of Peace in October 2009, US Secretary of State Hillary Clinton pledged a "robust nuclear complex budget in 2011" that presumably would include support for the National Nuclear Security Administration's two major construction projects: the multi-billion-dollar Uranium Processing Facility planned for the Y-12 National Security Complex and the Chemistry and Metallurgy Research Replacement-Nuclear Facility planned for Los Alamos National Laboratory. "The United States must maintain a safe, secure, and effective nuclear arsenal to deter any adversary and guarantee the defense of our allies and partners while we pursue our vision" of a world without nuclear weapons, Clinton said.[5]

On 18 February 2010, in what can best be described as an "Orwellian" presentation at the National Defense University, US Vice-President Joseph Biden defended the Obama administration's decision to massively increase spending for maintenance of the US nuclear stockpile and modernization of the nuclear weapons infrastructure as consistent with President Obama's Prague agenda. According to Biden, "Guaranteeing our stockpile, coupled with broader research and development efforts, allows us to pursue deep nuclear reductions without compromising our security." In a stunning series of contradictions he declared, "As I speak, US and Russian negotiators are completing an agreement that will reduce strategic weapons to their lowest levels in decades." This was followed a few paragraphs later with, "our budget proposal reflects some of our key priorities, including increased funding for our nuclear complex, and a commitment to sustain our heavy bombers and land and submarine-based missile capabilities, under the new START agreement." Acknowledging that "Some in [the Democratic] party may have trouble reconciling investments in our nuclear complex with a commitment to arms reduction," he explained, "As both the only nation to have used nuclear weapons, and as a strong proponent of non-proliferation, the United States has long embodied a stark but inevitable contradiction."[6]

Security without nuclear weapons

The 2006 final report of the Weapons of Mass Destruction (WMD) Commission, headed by Hans Blix, recommends, "All states possessing nuclear weapons should commence planning for security without nuclear weapons." But, while advocating for "preparing for the outlawing of nuclear weapons through joint practical and incremental measures,"[7] the Commission did not directly address what "security without nuclear weapons" means, leaving this fundamentally important question open to a wide variety of interpretations.[8]

One disquieting view of security without nuclear weapons has been offered by Robert Einhorn, now Special Advisor for Nonproliferation and Arms Control to Secretary of State Clinton. In 2007, he argued, "We should be putting far more effort into developing more effective conventional weapons. It's hard to imagine a president using nuclear weapons under almost any cir-

cumstance, but no one doubts our willingness to use conventional weapons."[9]

This statement, unfortunately, is all too true. But an even more overpowering conventional US military threat surely is not the desired outcome of the nuclear disarmament process. Moreover, how practical would that approach be? How would countries with fewer economic resources—especially those on the "enemies" list—respond? Wouldn't they have an incentive to maintain or acquire nuclear weapons to counter overwhelming US conventional military superiority? And wouldn't that, in turn, even further entrench US determination to retain and modernize its own nuclear arsenal, thus rendering the goal of nuclear disarmament nearly impossible?

In fact, Russian security analysts have raised concerns that conventional US "alternatives" to nuclear weapons might pose an obstacle to US-Russian nuclear arms control negotiations. According to Alexi Arbatov, a scholar in residence at the Carnegie Moscow Center, "There are very few countries in the world that are afraid of American nuclear weapons. But there are many countries which are afraid of American conventional weapons. In particular, nuclear weapons states like China and Russia are primarily concerned about growing American conventional, precision-guided, long-range capability, [or] Prompt Global Strike systems." Arbatov added that what he termed "threshold states," countries with potential for developing a nuclear weapon, are similarly concerned about US conventional capabilities.[10]

These countries have good reason to be concerned. In his 18 February 2010 speech, Vice-President Biden was clear:

> We have long relied on nuclear weapons to deter potential adversaries. Now, as our technology improves, we are developing non-nuclear ways to accomplish that same objective. The Quadrennial Defense Review and Ballistic Missile Defense Review, which Secretary Gates released two weeks ago, present a plan to further strengthen our preeminent conventional forces to defend our nation and our allies. Capabilities like an adaptive missile defense shield, conventional warheads with worldwide reach, and others that we are developing enable us to reduce the role of nuclear weapons, as other nuclear powers join us in drawing down. *With these modern capabilities, even with deep nuclear reductions, we will remain undeniably strong* [emphasis added].[11]

Former Soviet President Mikhail Gorbachev saw this coming. At a high-

level conference in Rome last year he warned, "The United States spends on military purposes almost as much as the rest of the world put together.… Military superiority would be an insurmountable obstacle to ridding the world of nuclear weapons. *Unless we discuss demilitarization of international politics, the reduction of military budgets, preventing militarization of outer space, talking about a nuclear-free world will be just rhetorical* [emphasis added]."[12]

UN Secretary General Ban Ki-Moon has likewise argued that effective nuclear disarmament will require the elimination and control of other weapons, noting that "the world is over-armed and peace is under-funded."[13] In its 2006 report, the WMD Commission also noted the disparity between nuclear disarmament and development efforts, arguing, "It is time for all governments to revive their cooperation and to breathe new life into the disarmament work of the United Nations. Efforts to eradicate poverty and to protect the global environment must be matched by a dismantling of the world's most destructive capabilities. The gearshift now needs to be moved from reverse to drive."[14]

But, what it will take to "move the gearshift?" Governments of non-nuclear weapon states routinely pay lip service to this subject. Though he didn't mention nuclear weapons by name, Brazilian President Lula da Silva, in his statement commencing the General Debate of the 61st session of the United Nations General Assembly, summed it up this way: "There will only be security in a world where all have the right to economic and social development. The true path to peace is shared development. If we do not want war to go global, justice must go global."[15]

You get what you pay for

In 2008, global military expenditure reached approximately $1464 billion, which represents a 45 percent increase over the last decade. This spending comprises 4.2 percent of the world's gross domestic product, or $217 per person. Fifteen countries—including the five permanent members of the UN Security Council—accounted for over 80 percent of the 2008 expenditure. The United States alone is responsible for 41.5 percent.[16]

Atomic Audit, a study by the Brookings Institution completed in 1998,

found, as a conservative estimate, that the United States spent $5.5 trillion on nuclear weapons from 1940–1996 (in constant 1996 dollars). The Brookings study found that nuclear weapon spending during the 56 year period it examined exceeded the combined total federal spending for education; training, employment, and social services; agriculture; natural resources and the environment; general science, space, and technology; community and regional development, including disaster relief; law enforcement; and energy production and regulation.[17]

While military expenditure increases every year, investment in conflict resolution, peace-building, and development—elements recognized by the United Nations, most governments, and civil society to be necessary for sustainable security—lags far behind. Since the end of the Cold War, militarism has been growing in response to an increasingly unstable world, propelling the world even further into instability and war. Armed conflict—and the constant threat of war or terrorism—has become both the cause of and response to this growing militarism. War and the threat of war destroy lives, infrastructure, and well-being, creating a culture of fear, violence, and instability. This impedes development by upsetting social programmes, education, transportation, business, and tourism, which prevents economic stability, mental well-being, and sustainable livelihoods. The manufacture and use of weapons also prevents sustainable ecological development and preservation, creating unequal access to resources.

Governments that spend excessive financial, technological, and human resources on their militaries divert resources from economic, social, and environmental programmes. The military-industrial-academic complexes absorb vast amounts of funding that could otherwise be spent on human security, including education, health, housing, etc. Furthermore, funds reserved for development initiatives are increasingly spent on emergency relief and rehabilitation operations to clean up after violent conflict.

It is evident through commitments governments have made on paper to the Millennium Development Goals (MDGs) and the Paris Declaration on Aid Effectiveness that the international community recognizes investment in development is necessary to create conditions for sustainable security. Yet in 2008, as noted above, military spending amounted to $1464 billion, while Official Development Assistance (ODA) amounted to about $145 billion—several billions of which went to reconstruction in Iraq and Afghanistan.[18]

In fiscal year 2008, the United States spent an estimated $52.4 billion on nuclear weapons-related programmes alone,[19] more than the entire military budgets of nearly every other country in the world.[20] Yet, according to the 1998 United Nations Development Programme report, an additional $40 billion a year would be enough to achieve and maintain universal access to basic education for *all*, basic health care for *all*, reproductive health care for *all women*, adequate food for *all*, and clean water and safe sewers for *all*.[21]

The United Nations 2005 Human Development Report notes, "On any assessment of threats to human life there is an extraordinary mismatch between military budgets and human need." The report states that for every $1 invested in development assistance, another $10 is spend on military budgets. "No G-7 country has a ratio of military expenditure to aid of less than 4:1. That ratio rises to 13:1 for the United Kingdom and to 25:1 for the United States." Indeed, the United States is at the bottom of the list when it comes ODA.[33] In terms of percentage of its Gross National Product, the United States has almost always given less to ODA than any other industrialized nation in the world. Meanwhile, the United States transfers more weapons and military services than any other country in the world. For example, in 2008, the United States ranked first in arms transfer agreements with developing nations, with $29.6 billion or 70.1% of these agreements. Russia came in a distant second with $3.3 billion or 7.8% of such agreements.[22]

The MDGs, agreed by all of the world's governments, are designed to eradicate extreme poverty and hunger; achieve universal primary education; promote gender equality and empower women; reduce child mortality; improve maternal health; combat HIV/AIDS, malaria, and other diseases; ensure environmental sustainability; and develop a global partnership for development.[23] Fulfilling these commitments will cost far less than war. The best estimates are that a ten year commitment of around $76 billion per year, less than 7% of current military expenditures, would lead to fulfillment of the MDGs.[24]

However, the UN Food and Agriculture Organization (FAO) recently warned that world hunger is worsening and that unless investments are greatly increased the MDG goal of halving the number of those living in hunger and poverty by 2015 will not be met. The FAO projects that global food output will have to increase by 70% to feed a projected population of 9.1 billion in 2050. To achieve that, poor countries will need $44 billion

yearly in aid to agriculture, compared with the current $7.9 billion, to increase access to irrigation systems, modern machinery, as well as to build roads and train farmers.[25]

In his 1999 Olof Palme Memorial Lecture, then-UN Under-Secretary-General Jayantha Dhanapala declared:

> We have all heard quite a bit about the 'military-industrial complex' ... but perhaps not enough about a new player in this game, namely the diverse coalition of individuals and groups who have committed themselves to converting disarmament from a dream into a reality. If we wish to take on the 'nuclear weapons complex' or any other institutional bastion of support for weapons that jeopardize international peace and security, we will need to mobilize what might be called a 'disarmament complex'. We will need to find some enlightened leaders who can operate on the basis of sustained political and institutional support from throughout throughout society, and who recognize that disarmament is both an efficient and an effective means to advance national security interests.[26]

Dhanapala made the case for "sustainable disarmament," which he defined as a "dynamic process—sustained by deliberate action on the part of leaders throughout the world community and from civil society—to address the combined needs of development and security through the reduction and elimination of arms." And, he issued a challenge: "If we have indices of sustainable development, we can surely have indices of sustainable disarmament. If we have results-based budgeting in our public and private institutions, we can also have results-based disarmament."[27]

We are not starting empty-handed. Governments and NGOs have in many cases already established tools that simply need to be put to use, such as the MDGs. Another example, Article 26 of the UN Charter, offers evidence of assumptions made at the founding of the UN about how nations united and working together could actually prevent conflict and deliver peace and security—not just talk about it. Article 26 gives the UN Security Council the responsibility for creating a plan for regulating armaments and reducing military expenditures.[28]

Article 26 directly challenges the concept that international relations and national security can only be determined through the threat of military force, as well as continuous preparation and readiness for armed conflict.

Unfortunately, at the moment of great opportunity that occurred at the end of the Cold War, Article 26 was undermined by the UN Security Council's Presidential Statement of 31 January 1992, memorializing the first meeting of the UN Security Council held at the level of Heads of State. This statement arguably represents an agreement between the nuclear-armed permanent members of the UN Security Council—China, France, Russia, the United Kingdom, and the United States—on the post-Cold War world order, in which proliferation of weapons of mass destruction constitutes a threat to international peace and security. The statement tacitly reaffirms the continuation of unchecked militarism and military spending, with the Council committing itself to take "appropriate action" to prevent the proliferation of nuclear, chemical, and biological weapons. While the statement calls on all UN member states to "fulfil their obligations in relation to arms control and disarmament," it does not mention the UN Security Council's own obligation under Article 26.[29]

The United Nations did establish an Instrument for Reporting Military Expenditures in 1980, to enhance transparency of spending on military personnel, operations, maintenance, procurement, construction, research, and development, and a Register of Conventional Arms in 1991 to enhance transparency of international arms transfers, procurement through national production, holdings, and relevant policies. However, in any given year, less than a third of UN member states contribute to the Instrument for Reporting Military Expenditures. More states participate in the Register of Conventional Arms but it is not nearly universal in use.[30]

Changing the discourse

If the most powerful military force that has ever existed on the face of the earth premises its national security on the threatened first use of nuclear weapons, why shouldn't we expect less powerful countries to follow suit? This model is simply unsustainable. A radically new definition of security, based on profoundly different values, is needed. It is time to throw away the outdated notion of "national" security, and replace it with a new concept of "human" security.

In a 1994 presentation to NGOs, Dr. Mahbub Ul Haq, head of the United

Nations Development Programme, spoke eloquently of the need for a fundamental transformation in the concept of security, which he described as "the security of people, not just of territory; the security of individuals, not just of nations; security through development, not through arms; security of all the people everywhere—in their homes, in their jobs, in their streets, in their communities and in their environment." This new interpretation, he explained, requires us to regard human security as "universal, global and indivisible". In other words, it applies equally to all people everywhere.[31]

That kind of security cannot be brought about through nuclear weapons and military might. It can only be ensured through the equitable distribution of adequate food, shelter, clean water and air, health care, education, and even the arts. And, somewhat paradoxically, if funding was shifted from armaments to fulfilling those basic human needs, some of the root causes of violence—namely poverty and injustice—would at the same time be addressed, thus reducing the "need" or excuse for military action or other expressions of violence.

States' traditional insistence on their nearly exclusive role governing military and security policy is vastly amplified with respect to nuclear weapons. The centrality of secrecy, the quasi-theological and allegedly subtle doctrines of nuclear "deterrence" and "counter-proliferation," the technical complexity and sheer scale of the nuclear enterprise, the unimaginable power and horror of the weapons, all reinforce the nuclear weapon states' extremely strong resistance to any significant role for the public and NGOs in setting or changing entrenched policies. Therefore, the most important task for NGOs is to articulate and promote a programme for the achievement of a nuclear weapon free world and to demand that the programme be implemented. Given the reluctance of even the most progressive governments to assess partial or limited measures within a broader, more holistic framework, NGOs have a special responsibility to identify and make visible the economic, health and environmental, and democratic imperatives for the elimination of nuclear weapons, to mobilize public opinion, and at the same time to begin addressing the root causes of reliance on nuclear arms.

As a starting point, we need to critically analyze the practical security requirements of ordinary people, wherever they live, in order to develop a new commonly shared understanding of security, defined in human and ecological terms. That understanding can help people begin to realize that

their own security is tied more closely to the security of other people around the world than to the security of any national government and its elites. As a next step, hopefully it will move them to action, educating others and pressing their own governments to change their policies. One of the reasons the American public has been so slow to challenge US reliance on nuclear weapons is because the idea that their "national security" is dependent on unbridled military might is repeated on a daily basis by high-ranking government officials—of both political parties—reinforced ad nauseum and unquestioned in the mainstream media.

NGOs by definition are non-governmental organizations, meaning that they do not represent governments. It is not their role to try and cut deals with governments, or to work out the precise sequence of steps or timing on the path to nuclear abolition. Their job is to work with civil society to create the conditions and the will necessary to eliminate nuclear weapons. Among other things, that will require a fundamental reexamination of the military-industrial-academic complex.

To advocate successfully for nuclear disarmament and human security, civil society needs to take apart the traditional national security discourse. It needs to get away from the language and politics of the elites and create our own discourse—one that helps to illuminate the relationship between nuclear weapons and the structures that maintain them. Civil society must take care to identify who benefits from the maintenance of nuclear weapons—what their interests are and what their role is in sustaining high-tech militarism.

Another key element in building a movement toward the abolition of nuclear weapons is including a diverse range of actors. In order for nuclear disarmament to work for human security, disarmament activists have to work with development, environmental, and social justice activists—and they need a common discourse. NGO advocacy for nuclear disarmament must be linked to local, national, and international multi-issue campaigns, coalitions, and social movements promoting social justice, environmental protection, democratization, economic development, respect for human rights, conflict resolution, and comprehensive disarmament.

In linking their campaigns, activists can find common threads between seemingly unlikely issues. For example, those who work on ending impunity for sexual violence against women in conflict can talk about ending

militarism and about nuclear disarmament. Sexual violence is a weapon. Ending impunity is only a step—an important strategic step—toward ending violence against women, toward ending human rights violations, toward establishing norms and measures of human security. This step, and all the others, cannot be worked upon independently from those working to end war, to end militarism, or to end the structures, assumptions, and modes of thinking that enable the continued existence of nuclear weapons.[32]

The Oxford Research Group (ORG) in 2006 issued a briefing paper, "Global Responses to Global Threats: Sustainable Security for the 21st Century". ORG identified four main likely determinants of future conflicts that are likely to lead to substantial global and regional instability and large-scale loss of life: climate change; competition over resources; marginalization of the majority world; and global militarization. And it warned that unless urgent action is taken in the next five years, it will be extremely difficult, if not impossible, to avoid a highly unstable global system by the middle of the century.

The ORG report characterizes current responses to these threats as a "control paradigm"—an attempt to maintain the status quo through military means and control insecurity without addressing the root causes, and it argues that such an approach is self-defeating in the long term. As an alternative, the report offers a new approach to global security—a "sustainable security paradigm"—that does not attempt to unilaterally control threats through use of force, but rather aims to cooperatively resolve the root causes of the threat using the most effective means available. For example, a sustainable security approach prioritizes renewable (not nuclear) energy as a response to climate change; energy efficiency as a response to resource competition; poverty reduction as a means to address marginalization; and the halting and reversal of WMD development and proliferation as a main component of checking global militarization. Those approaches provide the best chance of averting global disaster, as well as addressing some of the root causes of terrorism.

Significantly, the ORG report recognizes the essential role of civil society and NGOs: "Governments will be unwilling to embrace these ideas without pressure from below." And it contends that maximizing the possibilities for creating such pressure "will mean a closer linking of peace, development and environmental issues than has so far been attempted."[33]

New opportunities for concrete action on nuclear disarmament have

been created by the crises we collectively face: climate, energy, economy, food, water, poverty, education, housing, justice. It is up to us to not just connect the dots and link the issues but to push forward an agenda for change. As Greg Mello of the Los Alamos Study Group says, "Nuclear disarmament was always about other things as well as mere survival, even in the depths of the Cold War. Now it strongly appears that the best way to get nuclear disarmament is to demand those other things, which are suddenly critical, not just nice to have. The background in the nuclear disarmament picture is the foreground now."[34]

Recommendations

- Governments and NGOs should make nuclear disarmament the leading edge of a global trend towards demilitarization and redirection of military expenditures to meet human and environmental needs.
- The financial and human resources currently used to develop and maintain nuclear weapons systems should be used instead to meet social and economic needs consistent with the UN MDGs.
- Only a comprehensive view of disarmament based on human security will lead to progress toward an equitable and secure nuclear weapon free world. The concept of security should be reframed at every level of society and government, with a premium on universal human and ecological security, multilateralism, and a commitment to cooperative, nonviolent means of conflict resolution. Civil society should actively seek to create a new discourse for nuclear abolition advocacy that illuminates the relationship between nuclear weapons and the structures that maintain them and that identifies the beneficiaries of nuclear weapons. Governments should reframe their approach to disarmament, employing a humanitarian perspective rather than a military one.
- Nuclear disarmament activists should link their efforts with those of activists working on a broad range of issues to draw a complete picture of security, peace, and justice, forging a stronger, more unified call for human and ecological security.
- NGOs should call on governments, the UN Security Council, and civil society to report on ways and means for implementing Article 26 of the UN Charter.
- All governments should contribute data annually to the UN Instrument for Reporting Military Expenditure and the UN Register for Conventional Arms and constructively participate in efforts to enhance and upgrade both instruments.

Chapter 10 The relevance of gender for eliminating weapons of mass destruction

Carol Cohn with Felicity Hill and Sara Ruddick

When trying to think about how to solve the problems created by the existence of weapons of mass destruction (WMD), ideas about gender matter. Although the linkage between WMD and gender will be unfamiliar for many readers, this paper[1] argues that ideas and expectations about gender are woven through the professional and political discourses that shape all aspects of how weapons of mass destruction are considered, desired, and addressed. To address WMD challenges more effectively, it is essential to take into consideration how armament and disarmament policies and practices are influenced by ideas about masculinity. An understanding of how these limitations occur can play a crucial role in helping break some of the persistent barriers to achieving disarmament and non-proliferation.

It is important to stress that this paper will focus on ideas about gender, rather than on men or women *per se*. A different paper will need to be written that would look at men's and women's relations to WMD. That paper would explore the implications of the fact that women have been largely absent from the scientific and political decision making about WMD,[2] in spite of the long and consistent history of women's organizations advocating for the total disarmament of biological, chemical, and particularly nuclear weapons.[3] It might also look at some of the different ways that men's and women's bodies are affected by the development and testing of these weapons.[4] The

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present article, however, does not focus on women's or men's bodies, nor their political perspectives or activism; instead it will focus on how ideas about gender—what is masculine or feminine, powerful or impotent—affect our efforts towards halting the proliferation of WMD and bringing about effective disarmament.

Defining gender

Before proceeding with the argument, we need to look at the oft misused and misunderstood term "gender" and clarify its multiple meanings and our use of it. "Gender" has increasingly been employed to make a distinction between biology and culture—that is, the biological differences between male and female bodies on the one hand, and the meaning given to those differences on the other. People in every culture have biologically male or female bodies, but what it means to be "masculine" or "feminine" is different for different cultures and changes over time. What kinds of capabilities or personality traits we expect women or men to have, the kinds of activities, jobs, and family roles we think it appropriate for them to take on, what it means to be a "real man" or a "good woman"—all of these are part of the cultural meaning given to biological difference.

Gender is not only about individual identity or what a society teaches us a man or women, boy or girl should be like. Gender is also a way of structuring relations of power—whether that is within families, where the man is often considered the head of the household, or in societies writ large, where men tend to be the ones in whose hands political, economic, religious, and other forms of cultural power are concentrated.

These two phenomena—individual identity and structures of power—are significantly related to each other. Hence it is the meanings and characteristics culturally associated with masculinity that make it appear "natural" and just for men to have the power to govern their families and their societies. That is, if as a society we come to believe that people with biologically male bodies are the ones most likely to be strong, rational, prudent, responsible, objective, and willing to fight if necessary (a.k.a. "masculine"), we will think it right that they are the ones to rule. Conversely, if as a society we come to believe that people with female bodies are weak, emotional, irrational, pas-

sive, nurturing, and in need of protection (a.k.a. "feminine"), we will think it natural and right that most women's lives should be limited to the private sphere of home and family.

A next crucial step in thinking about gender is to realize that its effects go beyond the meanings ascribed to male and female bodies, and the concomitant ways that power is (unequally) distributed amongst men and women. Gender also functions as a symbolic system: our ideas about gender permeate and shape our ideas about many other aspects of society beyond male-female relations—including politics, weapons, and warfare.

Male	Female
Thought	Emotion
Active	Passive
Rational	Irrational
Strength	Weakness
Mind	Body
Courage	Fear
Intelligence	Cunning
Self	Other
Primary	Secondary
Serious	Playful
Concrete	Abstract
Doer	Done
Reality	Appearance
Science	Humanities
Philosophy	Myth
Order	Disorder
Permanent	Ephemeral
Dominate	Subordinate
Confident	Fearful
Simplicity	Complexity
Truth	Fiction
Classical	Romantic
Centre	Margin
Master	Slave
Teacher	Student

The easiest way to see this is to look at some of the adjectives associated with masculinity (e.g., strong, rational, prudent, active, objective) and femininity (e.g., weak, irrational, impulsive, passive, subjective). What is immediately apparent is:

- first, they constitute dichotomous pairs of characteristics which are seen as mutually exclusive (e.g., strong/weak, active/passive, etc.);
- second, in each case, the "masculine" side of the pair is valued more highly than the "feminine" one; and
- third, the very meaning of masculinity and femininity is defined through its relation to its "opposite". That is, they are dependent upon each other for their meaning: masculinities do not exist except in contrast to femininities and vice versa. This means that a man could not be seen as insufficiently masculine or "wimpy" unless we have an idea of the "feminine" characteristics "real" men must avoid.

Critically, this creation of gender-dichotomized pairings extends far beyond a list of human characteristics: think, for example, of culture/nature; analysis/intuition; order/disorder; assert/compromise; military/civilian. Here, too, although these pairs have no necessary relation to male or female bodies, in US (the dominant Western) culture, one side of each pair is culturally coded "masculine", the other "feminine", and the "masculine" is the more highly valued. The effect of this symbolic gender-coding is that any human action or endeavour, no matter how unrelated to biological maleness or femaleness, is perceived as more or less masculine or feminine—even if only at a subconscious level—and valued or devalued accordingly. In other words, ideas about gender not only shape how we perceive men and women; they shape how we see the world. And they have political effects.

Gender, national security, and weapons

WMD are not only physical objects, they are political objects; their symbolic importance is key in national and international security debates, as well as in domestic politics. And one aspect of political discourse—so obvious as to be usually taken for granted—is that gendered terms and symbols are an integral part of how political issues are thought about and represented, and an integral part of the image-production associated with political leaders.

There is often, for instance, an anxious preoccupation with affirming manhood on the part of candidates for political office, for whom it is dangerous to be seen as "soft" or "wimpish": recent US politics provides the example of the fevered Republican efforts to undermine presidential candidate John Kerry's image as a leader by undermining his portrayal as a courageous warrior in Viet Nam; or the pre-election spectacle of President George W. Bush striding across the deck of an aircraft carrier in his flight suit, proclaiming victory in Iraq in front of a "mission accomplished" banner.[5]

There are also many instances in which political masculinity is linked with preparedness to use military action and to wield weapons. During the first Bush administration 1988–1992, for example, the US media speculated whether George H. W. Bush had finally "eat the wimp factor" by going to war against Iraq. In these and other cases, we see the link between war and a heroic kind of masculinity, which depends on a feminized and devalued notion of peace as unattainable, unrealistic, passive, and (it might be said) undesirable.

But it is not only the political context within which weapons of mass destruction are situated that is deeply gendered. So are the practical and symbolic dimensions of weapons themselves. This is perhaps most obvious in relation to small arms. Governments and international institutions are increasingly accepting that small arms and light weapons (SALW) are practically associated with masculinity in many cultures, with men as the vast majority of the buyers, owners, or users. After early policy failures, it is also becoming increasingly recognised that the symbolic associations of SALW with masculinity have political effects. Specifically, in relation to disarmament, demobilisation, and reintegration (DDR) programmes, real barriers to effective SALW disarmament are created by the ways in which masculine identities and roles have become conjoined with weapons possession for many (male) combatants.

There is now general recognition that there are significant gender dimensions to the possession of small arms and light weapons. It would be naive to assume that this association suddenly becomes meaningless when we are taking about larger, more massively destructive weapons. And more naïve still to think that it doesn't matter. Given the dubious military value and problematic usability of most WMD, a focus on their symbolic dimensions has to be central to any effort at weapons reduction or disarmament.

Without gender analysis, attempts to untangle and understand the symbolic value and meaning of WMD are incomplete and inadequate.

Some brief examples illustrate this important dimension. When India exploded five nuclear devices in May 1998, Hindu nationalist leader Balasaheb Thackeray explained, "we had to prove that we are not eunuchs." An Indian newspaper cartoon depicted Prime Minister Atal Behari Vajpayee propping up his coalition government with a nuclear bomb. "Made with Viagra," the caption read. Images such as these rely on the widespread metaphoric equation of political and military power with sexual potency and masculinity. Political actors incorporate sexual metaphors in their representations of nuclear weapons as a way to mobilize gendered associations and symbols in creating assent, excitement, support for, and identification with the weapons and their own political regime; in other words, the symbolic gendered dimensions of nuclear weapons are not trivial; they are an integral part of accomplishing domestic and political objectives.

That a nation wishing to stake a claim to being a regional or world power should choose nuclear weapons as its medium for doing so is too frequently characterized as "natural": advanced military destructive capacity identifies a state as powerful. The "fact" that nuclear weapons are being instituted as the currency for establishing a hierarchy of state power is unremarked, unanalyzed, and taken for granted by most analysts. By contrast, feminist theory, using a historical and post-colonial lens, is better able to understand nuclear weapons' enshrinement as the emblem of power not as a natural fact, but as a social one, produced by the actions of states. Thus, when the United States, with the most powerful economy and conventional military in the world, acts as though its power and security are guaranteed only by a large nuclear arsenal, it creates a context in which nuclear weapons become the ultimate necessity for, and symbol of, state security. And when the United States (or any other nuclear power) works hard to ensure that other countries don't obtain nuclear weapons, it is creating a context in which it is perceived as keeping other nations down, to subordinate and emasculate them—to render them eunuchs! Hence, regardless of their military utility nuclear weapons are turned into the ultimate arbiter of political/masculine power. Balasaheb Thackeray did not invent the meaning of India's nuclear tests out of thin air.

Why do ideas about gender matter for dealing with WMD?

The ways in which ideas about gender are embedded in ideas about WMD matter for two central reasons. Firstly, ideas about gender serve to shape, limit, and distort the very discourses—both professional and political—that have been developed to think about WMD, and so have political consequences that have a crucial bearing on our efforts to try to achieve disarmament and non-proliferation. Secondly, ideas about gender also shape, limit, and distort the national and international political processes through which decisions about WMD are made. Ideas about strength, protection, rationality, security, and control have a critical impact on governmental and intergovernmental policy, as well as functioning at a large-scale societal level, where a certain notion of aggressive masculinity is equated with human nature, as in the phrase, "disarmament would be nice but it's against human nature." We must be aware of, and find ways to address, these gendered assumptions if we are to transform the intellectual and political processes that have so long impeded effective WMD disarmament.

Ideas about gender shape, limit, and distort professional and political discourses about WMD

We start with a true story, told to Dr. Cohn by a member of a group of nuclear strategists, a white male physicist:

> Several colleagues and I were working on modelling counterforce nuclear attacks, trying to get realistic estimates of the number of immediate fatalities that would result from different deployments. At one point, we re-modelled a particular attack, using slightly different assumptions, and found that instead of there being 36 million immediate fatalities, there would only be 30 million. And everybody was sitting around nodding, saying, "Oh yeah, that's great, only 30 million," when all of a sudden, I heard what we were saying. And I blurted out, "Wait, I've just heard how we're talking—only 30 million! Only 30 million human beings killed instantly?" Silence fell upon the room. Nobody said a word. They didn't even look at me. It was awful. I felt like a woman.

The physicist added that henceforth he was careful never to blurt out anything like that again.

Why did he feel that way? First, he was transgressing a code of professional conduct. Expressing concern about human bodies is not the way you talk within the terms of the strategic expert discourse, which is, after all, a discourse about weapons and their relation to each other, not to human bodies. But even worse than that, he evinced some of the characteristics on the "female" side of the dichotomies—in his "blurting" he was being impulsive, uncontrolled, emotional, concrete, upset, and attentive to fragile human bodies. Thus, the hegemonic discourse of gender positioned him as feminine, which he found doubly threatening. It was not only a threat to his own sense of self as masculine, his gender identity; it also positioned him in the devalued or subordinate position in the discourse. Thus, both his statement, "I felt like a woman," and his subsequent silence in that and other settings, are completely understandable. To find the strength of character and courage to transgress the strictures of both professional and gender codes and to associate yourself with a lower status is very difficult.

This story is not simply about one individual, his feelings and actions; it illustrates the role and meaning of gender discourse in the defence community. The impact of gender discourse in that room (and countless others like it) is that some things are excluded and get left out from professional deliberations. Certain ideas, concerns, interests, information, feelings, and meanings are marked in national security discourse as feminine, and devalued. They are therefore very difficult to speak, as exemplified by the physicist who blurted them out and wished he hadn't. And if they manage to be said, they are also very difficult to hear, to take in and work with seriously. For the others in the room, the way in which the physicist's comments were marked as feminine and devalued served to delegitimate them; it also made it very unlikely that any of his colleagues would find the courage to agree with him.

This example should not be dismissed as just the product of the idiosyncratic personal composition of that particular room; it is replicated many times and in many places. Women, in professional and military settings, have related experiences of realising that something terribly important is being left out but feeling constrained, as if there is almost a physical barrier preventing them from pushing their transgressive truths out into the open.

What is it that cannot be spoken? First, any expression of an emotional awareness of the desperate human reality behind the sanitised abstractions of death and destruction in strategic deliberations. Similarly, weapons' effects may only be spoken of in the most clinical and abstract terms, and usually only by those deemed to have the appropriate professional qualifications and expertise.

What gets left out, then, is the emotional, the concrete, the particular, human bodies and their vulnerability, human lives and their subjectivity—all of which are marked as feminine in the binary dichotomies of gender discourse. In other words, gender discourse informs and shapes nuclear and national security discourse, and in so doing creates silences and absences. It keeps things out of the room, unsaid, and keeps them ignored if they manage to get in. As such, it degrades our ability to think well and fully about nuclear weapons and national security, and so shapes and limits the possible outcomes of our deliberations.

With this understanding, it becomes obvious that defence intellectuals' standards of what constitutes "good thinking" about weapons and security have not simply evolved out of trial and error; it is not that the history of nuclear discourse has been filled with exploration of other ideas, concerns, interests, information, questions, feelings, meanings, and stances, which were then found to create distorted or poor thought. On the contrary, serious consideration of a whole range of ideas and options has been preempted by their gender coding, and by the feelings evoked by living up to or transgressing normative gender ideals. To borrow a strategists' term, we can say that gender coding serves as a "preemptive deterrent" to certain kinds of thought about the effects and consequences of strategic plans and WMD.[6]

Ideas about gender shape, limit and distort the national and international political processes through which decisions about WMD are made

The impact of ideas about gender extends beyond the realm of the professional discourse of weapons experts; ideas about gender also affect the national and international processes through which decisions are made about the acquisition of weapons, the maintenance of weapons stockpiles, and dis-

armament initiatives. To see this, we need to treat seriously a phenomenon that is so taken for granted that it is usually unremarked—that both war and weapons are currently associated with masculinity. What does it mean to take this seriously? What effects does this have?

One telling example comes from 1990, after Saddam Hussein had invaded Kuwait, during the build-up to the first Gulf War. During a speculative discussion among a group of defence intellectuals and opinion-formers, one declared, "Look, the question is, does George [H.W.] Bush have the stones for war?" That is, does he have the masculine strength and courage, is he man enough, to lead his country into war?[7]

Look at what happens when the question is framed this way. Even though the man who asked this question might not endorse the statement "war is a good thing," he equated a willingness to go to war with having "stones"—a euphemism for balls, generally regarded as a positive attribute (for a man). Hence "going to war" is given the positive valence that masculinity—being a "real man"—is understood to possess. Even more importantly, this equation carries a deeper implication: not only does it give to waging war some of the positive value attached to masculinity; it also makes it much more difficult not to go to war.

By extension, the research, development, production, stockpiling, and deployment of weapons and delivery systems—without which going to war is impossible—are also equated with manliness, using gender-resonant language about the importance of "demonstrating our strength and resolve". As a consequence, it is easier to delegitimize proponents of cutting military spending. Whether their motivations are disarmament or getting rid of expensive weapons programmes that make no military or strategic sense, opponents of military spending are undermined by accusations of being "weak on defence". They are portrayed as feeble, wimpy, or lacking "balls"—the kiss of death in American politics.

Another example, from US public discourse after 9/11, is some variation on the theme, "We should bomb 'em back to the Stone Age, and then make the rubble bounce."[8] Frequently expressed on talk radio shows or internet discussions, this kind of rhetoric hardly represents a rational strategic calculation; rather, it is about the sheer pleasure and thrill of having so much destructive power. While astounding in its amorality and ignorance, such utterances are meant to elicit admiration for the wrathful manliness of the

speaker. The effects of this kind of speech are pernicious. The implication is that to avoid responding to a political crisis by going to war shows a lack of balls. Not to be ready, willing, and able to demolish your opponents by "bombing 'em back to the Stone Age" is to be weak. In such a charged and masculinized context, it becomes extraordinarily difficult to develop and advocate other forms of security policy.

By correlation, although the practice of diplomacy is also ritualized and masculinized in many ways, US culture has never accorded diplomacy the strong, muscular attributes that are heaped on soldiering. US movies are not filled with brawny movie stars playing heroes in the diplomatic corps. Manly action heroes seldom carry briefcases (unless they are undercover James Bonds). Nor do they, in the cultural meanings of masculinity dominant in the United States, make treaties and "depend" on the other parties to honour their obligations under those treaties. This point was acutely represented in a recent political cartoon in a US newspaper that featured the earth as a jigsaw puzzle with one piece missing from the centre. President George W. Bush was depicted walking away with that piece under his harm saying, "treaties are for wimps".

In other words, consulting, negotiating, acknowledging interdependence, and—worst of all—depending on others, are activities that are culturally marked down as weak and lacking in masculinity. In the US cultural and symbolic system, trying to get what you want by talking and persuading, depending, trusting, and compromising is feminine; having the power to enforce your will is much more masculine.

The use of inspections rather than military attack, as the means to ensure that a state does not build and deploy WMD, would be another example of a culturally feminized approach to achieve the political objective of non-proliferation. Living in the United States during the build up to the US invasion of Iraq in 2003, the symbolic gendered overtones of the difference between responding to a "bully" with inspections or military action was enormously significant, especially for mobilizing political support. Despite the actual, and now proven, effectiveness of the United Nations' UNSCOM, UNMOVIC, and International Atomic Energy Agency (IAEA) monitoring and disarmament regimes in Iraq during the 1990s, the route of inspections was belittled as ineffectual, wimpy, and insufficiently active and aggressive; critically, it was portrayed as simply not a powerful enough way to respond

to the perceived threat of a "rogue actor". On the contrary, a massive military campaign in which the United States would "smoke 'em out of their holes and their WMD with them" was presented as a far more powerful and satisfying way to deal with the problem.[9] A decade of inspections was portrayed as having been impotent—the worst form of demasculinization. In contrast, it was taken for granted, at least by agenda setting leaders and most of the US media, that the only real way to deal was to have the enemy at the other end of the barrel of a gun. The way in which gender associations were intertwined with these two different approaches facilitated the selling of war as the right policy—and made it difficult to argue for further inspections.

The fact that the inspections regime worked was lost in this masculinized landscape. That this important recognition is still largely invisible to Americans, if not to the rest of the world, is even greater testament to the power of ideas about gender and the way gendered meanings are attached to all kinds of activities and discourses. In short, the gender-coding of "passive, wimpy" inspections creates a political "reality" in which it doesn't matter that the inspections worked. Despite their success, inspections are identified as weak and ineffectual, an inappropriate tool for the most muscular nation on earth.

That invasion should "self-evidently" seem to be a more potent, effective course of action than inspection is connected to another gendered phenomenon: the efficacy of violence is consistently over-estimated, while its costs are undercounted.[10] The corollary of this is that the efficacy of nonviolent means is consistently underestimated, and its costs exaggerated. This sleight of hand cannot be understood without comprehending the impact of ideas about gender. The context in which the IAEA and its inspections partners in Iraq, UNSCOM and UNMOVIC, had to work was one in which multilateralism and treaties were seen as weak, temporary alternatives to national (militarized) action. This constructed perception of treaties as feeble and effeminate routes to security is an enormous obstacle that advocates of disarmament and human security have to struggle through, no matter how credible or rational their case may be.

Gender and proliferation[11]

"Proliferation" is not a mere description or mirror of a phenomenon that is "out there" but rather a very specific way of identifying and constructing a problem concerning weapons. Proliferation, as used in Western political discourse, does not simply refer to the "multiplication" of WMD on the planet. Rather, it constructs some WMD as a problem, and turns a blind eye to others. With nuclear weapons, for example, it is able to do this by assuming pre-existing, legitimate possessors, implicitly not only entitled to those weapons, but to modernize and develop new generations of them as well. The "problematic" nuclear weapons are only those that "spread" into the arsenals of other, formerly non-possessor states. This is the basis for the "licit/illicit" distinction commonly found in arms control discourse, which does not refer to the nature of the weapons themselves, nor even to the purposes for which they are intended, but on who possesses them. The nuclear non-proliferation regime enshrined "we got there first" as a basis for arms control.

Most people in the world view WMD as intrinsically morally indefensible, no matter who possesses them. In addition to the abhorrence attached to their use, the wide array of social, economic, political and health costs associated with their development and deployment are repugnant. Rejecting proliferation discourse's implicit division of "good" and "bad," "safe" and "unsafe" WMD, (defined as such depending on who possesses them), it is imperative now to understand how some WMD are rendered invisible or benign (ours) and others visible and malignant (theirs).

In drawing a distinction between "the Self" and the (generally non-Western) "Unruly Other," the prevailing arguments against proliferation appear patronizing, ethno-racist, and contemptuous. Not only does non-proliferation discourse draw on Occidentalist portrayals of third world actors; it does so through the medium of gender-laden terminology. For example, the nuclear possessors' Self is responsible, prudent, rational, advanced, mature, restrained, technologically and bureaucratically competent (and thus "hegemonically masculine"). By contrast, the Unruly Others are irrational, unpredictable, emotional, uncontrolled, immature, primitive, undisciplined, incompetent, technologically backward (marks of an inferior or "subordinated" masculinity). Hence the terms of the debate are constructed

to normalize and legitimate the Self/possessor states keeping weapons that the Others must be prevented from acquiring. By drawing on and evoking gendered imagery and resonances, the discourse naturalizes the idea that "We" (the responsible father or sheriff) must protect, control and limit the "uncivilized," out-of control "rogue" states—for their own good, as well as for ours.

This Western proliferation discourse has had a function in the wider context of US national security politics. With the end of the "Evil Empire" of the Soviet Union in the late 1980s, until the attacks of 11 September 2001, the United States appeared to be without an enemy sufficiently threatening to justify maintaining its sprawling military-industrial establishment. This difficulty for the military-industrial complex was forestalled by the construction of the category of "rogue states," with governments portrayed as uncontrollable, irresponsible, irrational, malevolent, and antagonistic to Western values. Their unruliness and hostility is represented as intrinsic to their irrational nature, for to view the antagonism as politically rooted would have necessitated some soul-searching analysis into the role of Western policies and actions in contributing to disorder and breakdown in other states and regions.

The discourse of WMD proliferation has been one of the principal means of portraying certain states as major threats. To say this is neither to back away from our position opposing all weapons of mass destruction, nor to argue about the degree to which WMD in the hands of "Other" states actually do threaten the United States, local populations, regional neighbours, or international security. The point is that the underlying gendered symbolism in the WMD proliferation discourse helps make it feel natural and legitimate to fight wars and spend money on military programmes such as ballistic missile defence, which would otherwise be difficult to justify on rational security grounds.

Resolution 1325: enhancing the role of women in peace and security

What do you get from being aware of the gendered meanings that are woven through WMD discourse and politics? First, ignoring it doesn't make it

go away. Instead, by recognizing that there is a problem, it becomes possible to confront the traditionally constructed meanings and redefine terms such as "strength" and "security" so that they more appropriately reflect the needs of all people. Highlighting the ways in which the notions of militarized security are silently underwritten and supported by an image of hegemonic masculinity enable us to see just how dangerous and illusory an image of security that produces.

Gender awareness also shows that participating in self-censorship, as the physicist in the first example did, is understandable, but very counter-productive. The effect of such self-censorship is to exclude a whole range of relevant inputs as if they did not belong in discussions of "hard" security issues because they are too "soft" (i.e. feminine).

The growing and active community working around gender, peace and security issues can very effectively multiply, amplify, and deepen arguments for disarmament, which is the most effective non-proliferation approach of all, as recognized for biological and chemical weapons. Concurrently, as a consequence of the unanimous adoption of Security Council Resolution 1325 on Women, Peace, and Security, foreign ministries and departments of defence are having to pay more attention to gender issues.[12] This resolution has attracted more interest than many other Security Council resolutions, forging new networks, publications, organizations, initiatives, and budgets, as an active global constituency develops to further the resolution's aims and monitor implementation. By placing gender within the UN's mandate of maintaining international peace and security, UNSCR 1325 provides legitimacy for work on raising gender awareness in all aspects of security and defence.

The debate on that resolution and its follow up have brought into sharper focus the enormous contribution of women as stakeholders in peace, disarmament, and conflict prevention. The role of men and a certain kind of masculinity in dominating the political structures that organize wars and oversee security matters is beginning to be questioned. The result has been a greater awareness of the gender dimensions of security issues in conflict and post-conflict situations throughout the international community. Even NATO is convening workshops on the significance of UNSCR 1325 to its work!

Recommendations

- All government delegates and civil society representatives should consider gender issues in their deliberations and use the tools of gender analysis to reform traditional behaviours and values expressed in negotiations and discussions on nuclear weapons.
- All governments should implement Security Council resolution 1325, including through increasing the participation by women at all decision-making levels, particularly in institutions and bodies dealing with security and disarmament.

Chapter 11 Reaching nuclear disarmament

John Burroughs

Article VI of the nuclear Non-Proliferation Treaty (NPT) obligates states parties to "pursue in good faith negotiations on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament." At the 1995 NPT Review and Extension Conference, in connection with the decision to extend the NPT indefinitely, states parties agreed to Principles and Objectives for Non-Proliferation and Disarmament. The Principles and Objectives record, among others, a commitment to implement Article VI through 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."[1] At the 2000 Review Conference, states parties agreed to 13 "practical steps for the systematic and progressive efforts to implement Article VI."

In its 2006 report *Weapons of Terror*, the Weapons of Mass Destruction (WMD) Commission observed regarding the 1995 promise that "it is easy to see that the nuclear-weapon states parties to the NPT have largely failed to implement this commitment."[2] The Commission additionally pointed to a "loss of confidence in the [NPT] as a result of the failure of nuclear-weapon states to fulfill their disarmament obligations under the treaty and also to honour their additional commitments to disarmament made at the 1995 and 2000 NPT Review Conferences."[3]

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Most of the NPT-nuclear weapon states claim to be in compliance with their disarmament obligations largely based on reductions of the size of their arsenals over time. Given that one bomb can devastate a city, and dozens a society, these reductions are essentially meaningless except insofar as they advance nuclear disarmament. However, under current official plans, all of the NPT-nuclear weapon states intend to rely on large, modernized nuclear forces for decades to come as a central component of their security postures (see "Rhetoric vs reality: the political economy of nuclear weapons and their elimination"). While recent rhetoric of President Obama and others about working for the achievement of a world free of nuclear weapons is encouraging, based on past performance and present plans, reductions in arsenal size appear more a matter of efficiency and rationalization than working towards marginalization and elimination of nuclear weapons.

The nuclear weapon states have long viewed the NPT as an asymmetrical bargain, imposing specific, enforceable obligations in the present on non-nuclear weapon states, while requiring of nuclear weapon states only a general and vague commitment to good faith negotiation of nuclear disarmament, as set forth in Article VI, to be brought to fruition in the distant future if ever. The 1995 and 2000 NPT Review Conferences, and a 1996 advisory opinion of the International Court of Justice (ICJ), decisively rejected that view. It is now established that the NPT requires the achievement of symmetry by obligating the nuclear weapon states to eliminate their arsenals.

The most important means of revitalizing the NPT and the non-proliferation regime is good-faith implementation of the disarmament obligation as specified in 1995 and 2000. At some point, this will require an agreement or agreements that complete that obligation, integrate states outside the NPT, and institutionalize the elimination of nuclear weapons globally (see "A nuclear weapons convention"). In the meantime, what is most important is that disarmament—unilateral, bilateral, or multilateral—actually occurs and that investment in the production, design, and research of nuclear weapons ceases.

In the UN and NPT context, much emphasis is placed—consistent with Article VI of the NPT, as will be seen next—on bilateral and multilateral negotiations as the path to accomplishment of disarmament. Legally-binding agreements are necessary to make permanent and institutionalize disarmament measures. They are not, however, necessarily the best means to

set in motion all aspects of the process of marginalization and elimination of nuclear forces. Negotiations can serve as a time-consuming detour, with unnecessary linkages to other issues, and with legislative approval becoming an occasion for forces opposing disarmament to extract a very high price in terms of maintaining design, production, and replacement capabilities for both warheads and delivery systems. It is the result of negotiations—their success—that provide the touchstone for assessment of progress, not negotiations themselves. As discussed later in this chapter, and as the 13 Practical Steps from the 2000 NPT Review Conference envisage, states can take steps unilaterally, or coordinated politically with other states, on matters such as doctrine, reductions, and halting modernization.

Good faith and the pursuit of negotiations

"Good faith is a fundamental principle of international law, without which all international law would collapse," declared Judge Mohammed Bedjaoui, former President of the ICJ, at a conference held in connection with the 2008 NPT Preparatory Committee.[4]

The Vienna Convention on the Law of Treaties provides: "*Pacta sunt servanda*: Every treaty in force is binding upon the parties to it and *must be performed by them in good faith*."[5] The Vienna Convention is relatively young, dating back to 1969, but the concept is not. Thus the Roman jurist Justinian observed: "What is so suitable to the good faith of mankind as to observe those things which the parties have agreed upon."[6]

The ICJ has elucidated the requirement, stating that the "principle of good faith obliges the Parties to apply [a treaty] in a reasonable way and in such a manner that its purpose can be realized." The Court also said that "it is the purpose of the Treaty, and the intentions of the parties in concluding it, which should prevail over its literal application."[7]

In addition to implementation of existing obligations, good faith governs the creation of new ones.[8] Essentially, good faith means keeping promises in a manner true to their purposes and working sincerely and cooperatively to attain agreed objectives.

Article VI of the NPT requires the pursuit of negotiations on effective measures relating to cessation of the nuclear arms race at an early date and

to nuclear disarmament. Has that obligation been performed in good faith?

Judging by the record since Comprehensive Test Ban Treaty (CTBT) negotiations were concluded in 1996, the answer must be a resounding no. Aside from the brief US-Russian talks resulting in the 2002 Strategic Offensive Reductions Treaty (SORT), and negotiations in 2009 and 2010 on a replacement for the Strategic Arms Reduction Treaty (START), there have been no negotiations or efforts—bilateral, plurilateral, or multilateral—on partial disarmament measures.

Likewise, although the annual General Assembly resolution on follow-up to the advisory opinion of the ICJ calls for immediate commencement of multilateral negotiations leading to the early conclusion of a nuclear weapons convention, there have been no such negotiations. Nor have there been official deliberations or discussions of any kind on this subject, though the Practical Steps of 2000 called for the establishment of a subsidiary body at the Conference on Disarmament to "deal with" nuclear disarmament. Since the Conference has not engaged in substantive work since 1999, this body has not yet been established.

Although the 1995 Principles and Objectives called for the immediate commencement of negotiations on a fissile materials treaty, and although the Practical Steps of 2000 called for conclusion of negotiations on such a treaty by 2005, there have been no such negotiations (see "Toward a fissile material (cut-off) treaty"). Disarmament commitments made in 1995 and 2000 have also for the most part been ignored, as the WMD Commission found.[9]

There is a respectable legal argument that as "subsequent agreements" under Vienna Convention Article 31, the Principles and Objectives and the Practical Steps supply criteria for the application and interpretation of Article VI.[10] In this perspective, the failure to substantially implement those commitments constitutes non-compliance with Article VI.

Whether or not this view is accepted, clearly implementation of the commitments would have evidenced good faith in implementing Article VI, and no such good faith has been shown. Good faith now can be demonstrated by reaffirming and implementing the commitments, or where appropriate, agreeing upon and implementing alternative means of fulfilling Article VI.

To summarize regarding the general obligation to perform Article VI in good faith: negotiations must be pursued. The first step is to commence

them. That follows from the ICJ's unanimous conclusion, largely interpreting Article VI, that: "There exists an obligation to pursue in good faith and bring to a conclusion negotiations on nuclear disarmament in all its aspect under strict and effective international control."[11] Negotiations obviously cannot be brought to a conclusion if they are not even commenced!

US-Russian bilateral and unilateral disarmament

The 13 Practical Steps of 2000 called for implementation of the START process and endorsed the principle of irreversibility, and General Assembly resolutions—"Towards a nuclear weapon free world," "Renewed determination," and "Nuclear Disarmament"—call for further US-Russian negotiations on reductions in accordance with the principles of irreversibility, verification, and transparency.

The United States and Russia are currently engaged in negotiation of a replacement for START. Russian and US officials believe it would be desirable to have a signed treaty by the NPT Review Conference or sooner. On 6 July 2009, Presidents Obama and Medvedev signed a Joint Understanding for the START Follow-On Treaty.[12] The Joint Understanding committed both countries to reduce their deployed strategic warheads to a range of 1500–1675 and their strategic delivery vehicles to a range of 500–1100. A ceiling of 1675 warheads would represent a cut of about 20% in US warheads and 33% in Russian warheads. Reportedly, the two sides will agree on a limit of about 700 strategic delivery vehicles, which would be about a 25% cut in US vehicles.

The START replacement agreement would not fundamentally alter the nuclear balance of terror between the United States and Russia. The 2002 Strategic Offensive Reductions Treaty set a ceiling of 2200 strategic deployed warheads; the START replacement lowers the ceiling but not enough to qualitatively change the relationship. Its main virtue is that it can reinvigorate the process of reduction and ensure continued fulfillment of the verification and monitoring functions once met by START. The stakes—and the obstacles—would be much higher with respect to a subsequent agreement the Obama administration has indicated it would seek. Such an agreement following the START replacement could further reduce strategic warheads, reduce

non-strategic warheads, and provide, for the first time, for verification of the dismantlement of withdrawn warheads. The result would be verified limits on the entire nuclear arsenals, not just deployed strategic warheads, of both sides. If low enough numbers of warheads were agreed, the way would be open for participation of other nuclear possessor states in negotiations on reductions and elimination.

The obstacles arise in part from the fact that Russia attaches great importance to its nuclear forces in view of its degraded security and military posture. It is concerned about its security position vis-à-vis the United States and the North Atlantic Treaty Organization (NATO), in light of such factors as US wars waged on its periphery, the colour revolutions in Ukraine and Georgia, and NATO expansion. In military terms, Russia is concerned about reducing its nuclear arsenal while the United States spends huge sums to maintain a highly sophisticated and effective military. In particular, Russia will be reluctant to pursue deep reductions while the United States makes advances in non-nuclear strategic strike systems, engages in research and development regarding strategic anti-missile systems, and holds open the option of deploying space-based strike and interceptor systems. Russia's statement to the First Committee of the General Assembly on 15 October 2009 made clear that in negotiations after a START replacement is agreed, it will want to address all three types of non-nuclear strategic systems.[13] Russia also may prove resistant regarding non-strategic nuclear arms reductions.

Correspondingly, on the US side, the administration is likely to insist on inclusion of non-strategic arms in the process. There will also be opposition from influential elements in the government to limitations on non-nuclear strategic systems. In 2009, the US Congress adopted a provision on military spending for 2010 urging the President that the START replacement treaty under negotiation not include any limitations on US ballistic missile defence systems, space capabilities, or advanced conventional weapons systems.

It is essential to work for changes in security architecture that will make Russia and the United States comfortable with making truly deep reductions and facilitate multilateral negotiations. Additional reductions in both the strategic and non-strategic stockpiles of the United States and Russia will be needed to facilitate action by other nuclear weapon possessors to reduce their own arsenals or join multilateral disarmament negotiations. The two countries should consider establishing a process for Continuous Arms

Reduction Talks (CART), with other states that possess nuclear arsenals brought in for a second phase. US and Russian reductions can be bilateral or unilateral, formally negotiated or politically coordinated. As noted above, negotiations can be derailed by domestic or international developments. It remains the case that the United States and Russia, and other states with nuclear weapons, can and should undertake unilateral reductions, which could be politically coordinated. Accordingly, the 2000 NPT commitment to unilateral reductions should be preserved.

Modernization and investment

In and of themselves, reductions do not suffice to create a path to elimination. As Zia Mian of Princeton University noted in a presentation to the 2008 NPT Preparatory Committee, "The only way that nuclear weapon states can prove that they are serious about the goal of eliminating nuclear weapons is if they stop investing in modernizing and improving their nuclear weapons capabilities."[14] Yet research and development is taking place in all states possessing nuclear weapons for purposes of replacing existing systems, increasing reliability over the long term, and in some cases enhancing military capabilities.[15] A key step toward multilateral nuclear disarmament is for all nuclear weapon states—including those outside of the NPT—to cease all research, development, modernization, and production of nuclear weapons.

In the United States, however, the trend is in the opposite direction. Hoped-for US Senate approval of ratification of both the replacement START and the CTBT is already being conditioned on increased investment in new infrastructure for building nuclear weapon components, including their cores ("pits"), and in modernizing existing weapons to extend their life and add other features, including additional military capabilities. The first of the 13 Practical Steps provides that the CTBT be made legally effective "without conditions". While the phrase could be interpreted as referring to qualifications directly attached to ratifications transmitted to the treaty depository, more broadly it weighs against ratification packages, implicit or explicit, whose domestic effect is to reinforce and enhance capabilities for long-term maintenance and modernization of nuclear arsenals.

However, a Congressional Research Service report from June 2009 explains that when the US Senate ratified the Partial Test Ban Treaty, the Joint Chiefs of Staff conditioned their support for the Treaty on four safeguards: an aggressive nuclear test programme; maintaining nuclear weapon laboratories; maintaining the ability to resume atmospheric tests promptly; and improving intelligence and nuclear explosion monitoring capabilities. The report emphasizes that safeguards were key to securing Senate ratification of the 1963 Treaty. The report goes on to explain that updated safeguards have been part of CTBT ratification negotiations in the Senate. In the 1990s, a high price was paid in the United States for attempted ratification of the CTBT, in the form of commitments to supercomputing and experimental facilities and to "sub-critical" testing known collectively as "Stockpile Stewardship". The report's author notes regarding the present conjuncture: "Safeguards could be updated, such as by adding Safeguards for the nuclear weapon production plants and strategic forces, and could be augmented with implementation measures" that enforce the updated safeguards and prevent any erosion of the anti-disarmament scheme behind ratification.[16]

Indeed, strong efforts are already underway in the United States to tie ratification of the START replacement and the CTBT to commitments to modified or new-design warheads and new weapons production facilities, and also to modernization of delivery systems. The US Congress has appropriated $32.5 million for work in 2010 on design of non-nuclear components of refurbished nuclear bomb, the B-61, currently deployed in Europe. Congress has also appropriated $97 million for design of a new facility to produce the plutonium cores of warheads at Los Alamos Laboratory, the Chemistry and Metallurgy Research Replacement (CMRR) Nuclear Facility, and $94 million for design of the Uranium Processing Facility at Oak Ridge, Tennessee, which would build secondaries for warheads. Construction is slated to begin this spring of a replacement Kansas City Plant in Missouri for production of non-nuclear components of warheads. The new facilities would provide the capability to build-up nuclear forces should that be deemed necessary and to produce modified or new-design warheads.

The push for increased funding for nuclear weapons escalated in early 2010. On 19 January, in a third op-ed in the *Wall Street Journal*, the "four horsemen"—Shultz, Perry, Kissinger, and Nunn—advocated for increased spending on nuclear weapons, arguing that as the US works "to realize the

vision of a world without nuclear weapons," significant investments "are urgently needed to undo the adverse consequences of deep reductions over the past five years in the laboratories' budgets for the science, technology and engineering programs that support and underwrite the nation's nuclear deterrent."[17]

Similarly, in a *Wall Street Journal* op-ed on 29 January, US Vice President Joe Biden called for a boost of $5 billion for the nuclear arsenal and its infrastructure over the next five years, arguing, "Even in a time of tough budget decisions, these are investments we must make for our security."[18] These two pieces were followed by the Obama administration's FY2011 budget request on 1 February, which includes $7.01 billion for the weapons complex, about a 10% increase over FY2010. The request includes a massive increase for the controversial CMRR project, to $225 million for FY2011 alone.[19]

Trading some arms control agreements or arsenal reduction for modernized nuclear weapons

Research and production facilities capable of building the nuclear threat anew is not disarmament. If the danger of nuclear war is to be eliminated, ceasing to plan and build for an eternal nuclear threat must come early, not late, in the process. Building weapons facilities that among other things provide the capability for expanding arsenals runs contrary to the 2000 principle of irreversibility. Modified or new-design warheads, despite denials to the contrary, are likely to add military capabilities to nuclear forces, contrary to the 2000 commitment to a diminishing role of nuclear weapons in security policies. This is already happening with the "life-extension" programme for the W-76, the main US warhead for submarine-launched ballistic missiles. A new anti-disarmament package accompanying CTBT ratification in the United States will surely complicate the already difficult task of obtaining ratifications from other non-ratifiers of the CTBT, especially India and Pakistan.

The role of nuclear weapons

The December 2009 report of the International Commission on Nuclear Non-proliferation and Disarmament (ICNND) argues that in order to eliminate nuclear weapons, perceptions of their role and utility must be changed "to achieve their progressive delegitimation, from a position in which they occupied a central strategic place to one in which their role is seen as quite marginal, and eventually wholly unnecessary as well as undesirable."[20]

The "delegitimation" of nuclear weapons requires shrinking both the weapons' perceived value and their associated roles. Security doctrines that include a prominent role for nuclear weapons signal the alleged security benefits of nuclear weapons derived by major powers and therefore promote proliferation. As former UN Under-Secretary-General for Disarmament Affairs Jayantha Dhanapala says, "nuclear weapons are identified [by many state actors] both as an insurance policy for national security and as a symbol of global power status."[21] The perceived status of nuclear weapons—and thus, the danger of further proliferation—cannot be reduced without also reducing their roles in security doctrines, and vice versa.

The values and roles of nuclear weapons can be outlined as follows:

Value	Role
Deterrence	To threaten retaliation for attack of territory or "interests"
Power	To provide access to elite club of nuclear-armed "major powers"
Prestige	To demonstrate technological prowess
Money	To sustain an economy based in high-tech militarism

These values are grounded in a state-centric, balance-of-power world view that does not comport with the globalized interdependency of the modern world. This world view assumes that only state-level "rational" actors are engaged in an ongoing game wherein theories of deterrence and mutually assured destruction provide the framework for engagement. It also assumes that economic and technological power centered on militarism is a viable long-term trajectory.

US President Obama and his representatives caveat the long-range goal of a nuclear weapon free world with a disclaimer that as long as nuclear weapons exist, the US will maintain a strong nuclear deterrent. The reverse

is more accurate—so long as the US maintains a nuclear "deterrent," nuclear weapons will exist, and other nations will seek to acquire or proliferate these weapons technologies. Until nuclear deterrence theory and associated active roles for nuclear weapons in strategic policies are left behind, nuclear weapons will continue to have perceived value and thus will be difficult to reduce, let alone eliminate (see "Rhetoric vs reality: the political economy of nuclear weapons and their elimination").

In 2000, NPT states parties made a vital commitment to a "diminishing role for nuclear weapons in security policies to minimize the risk that these weapons ever be used and to facilitate the process of their total elimination." However, in ensuing years that commitment has been honoured more in the breach than in the observance, especially by France, Russia, and the United States, each of which enunciated doctrines expanding the role of nuclear weapons. President Obama has promised to reverse this trend, and urged other states to do the same. The US Nuclear Posture Review is now slated for release in March. In assessing it, at the NPT Review Conference, and in relation to revision of the NATO Strategic Concept, the following are some key issues to consider.

Doctrines. The policies of nuclear weapon states, and of NATO, should reflect the operating reality, which is the extremely high threshold—reflected in non-use of nuclear weapons since 1945—for even considering use of nuclear weapons. And they should pave the way for the only lawful stance: that the weapons will not be used in any circumstance whatever. In a 1997 book, the Committee on International Security and Arms Control of the US National Academy of Sciences observed that the ICJ "unanimously agreed that the threat or use of nuclear weapons is strictly limited by generally accepted laws and humanitarian principles that restrict the use of force." In the Committee's assessment, "the inherent destructiveness of nuclear weapons, combined with the unavoidable risk that even the most restricted use of such weapons would escalate to broader attacks, makes it extremely unlikely that any contemplated threat or use of nuclear weapons would meet these criteria."[22]

At a minimum, doctrines imply the retention and development of capabilities, and therefore decisively affect prospects for disarmament. Accordingly, it is important to strongly oppose counterforce doctrine, which requires readiness to carry out a comprehensive nuclear attack against an

enemy's nuclear capabilities. That doctrine is a Cold War recipe for nuclear war fighting. It implies maintaining nuclear forces in a quick-launch status, capable of carrying out a preemptive strike, and increases pressures to resort to nuclear weapons in a crisis. In the US-Russian context, it is also perceived by many to imply maintenance of large and complex arsenals, both to carry out counterforce attacks and to have usable nuclear weapons that would survive such an attack. Any "countervalue" doctrine projecting second strikes against cities should also be firmly opposed.

Extended nuclear deterrence and nuclear sharing. With regard to the geopolitical underpinnings of nuclear postures, it is particularly important that US allies communicate that "extended deterrence" is not a justification for an expansive role of nuclear weapons. Alliances do not have to depend on nuclear weapons for deterring aggression; non-nuclear military power is quite robust. Alternative security approaches, like the North East Asia nuclear weapon free zone long advocated by civil society, have to be developed. Japanese Prime Minister Hatoyama's remarks at the UN Security Council Summit on 24 September 2009 were promising in this regard. He explained the security benefits that would arise from "the creation of a nuclear-weapon-free zone, when coordinated between the five nuclear weapon States—the Permanent Five—and non-nuclear weapon States in the region."[23] It is also encouraging that Egypt reportedly has rejected the notion of installing extended nuclear deterrence in the Middle East, instead reiterating the need for a regional zone free of nuclear weapons.[24] All states now part of nuclear alliances should take steps to reduce and phase-out the role of nuclear weapons in their security doctrines.

An intermediate step in fulfilling the NPT commitment to a diminishing role in alliance arrangements regarding nuclear weapons would be to affirm that the weapons serve only to signal the unacceptability of use of nuclear weapons by other states. The new Japanese government should insist on that position with the United States, as it seems poised to do. The Democratic Party of Japan has said that a policy of no-first-use should be discussed with the United States. The Foreign Minister, Katsuya Okada, has expressed support for such a policy. NATO countries also have the obligation to limit the role of nuclear weapons in the revision of NATO's Strategic Concept, to be adopted at the Lisbon summit in late 2010. In 1998, Germany sought to persuade the United States of the merits of a no-first-use policy, only to be

firmly rebuffed. NATO countries should press the matter again, this time with an administration whose leader has been eloquent on reducing the dangers posed by nuclear weapons and seeking their elimination.

Finally, it is well past time to end the deployment of US nuclear weapons on the territory of several NATO allies (Belgium, Germany, Italy, the Netherlands, and Turkey), including both weapons under sole US control and weapons subject to release to those allies for employment in time of war. That arrangement sends the wrong signal to the world by elevating the political value of nuclear weapons, and serves as a terrible precedent for other states possessing nuclear arsenals to consider "sharing" their own nuclear weapons (see "NATO nuclear sharing" and "US-UK nuclear sharing").

At past NPT review proceedings, non-nuclear weapon states have called for strict adherence to NPT Article I prohibiting nuclear weapons states from transferring nuclear weapons or control over them to "any recipient whatsoever" and from assisting non-nuclear weapon states in their acquisition. Within and without the NPT context, they should continue to adamantly oppose nuclear sharing policies and other policies perpetuating reliance on nuclear weapons. Global opinion, especially emanating from governments, has a larger impact on policy-making in the United States and other powerful states than may be visible on the surface.

Negative security assurances. A foundation for reducing the role of nuclear weapons is the ongoing effectiveness of assurances of non-use of nuclear weapons to non-nuclear weapon NPT states parties made by the NPT nuclear weapon states in 1995. The 1995 NPT Principles and Objectives provide: "[F]urther steps should be considered to assure non-nuclear-weapon States party to the Treaty against the use or threat of use of nuclear weapons. These steps could take the form of an internationally legally binding instrument." The failure to take such steps has been noticed by non-nuclear weapon states; it is one of the reasons some states assert they are not motivated to take on further non-proliferation obligations absent fulfillment of promises by the nuclear weapon states. UN Security Council Resolution 1887 acknowledges the importance of the matter, affirming that the assurances "strengthen the nuclear non-proliferation regime." While important, this acknowledgment falls short of "further steps". A legally-binding instrument on the matter is necessary.

Reducing the operational status of nuclear weapon systems

The United States and Russia each are currently estimated to have about 1000 warheads capable of launch within minutes of an order to do so. The Cold War-style nuclear relationship must be brought to an end, to reduce ongoing risks and to facilitate disarmament.

In 2007 and 2008, a broadly supported UN General Assembly resolution sponsored by Chile, New Zealand, Nigeria, Sweden, and Switzerland (joined by Malaysia in 2008) called for "further practical steps to be taken to decrease the operational readiness of nuclear weapons systems, with a view to ensuring that all nuclear weapons are removed from high alert status." The resolution was not offered in 2009 in deference to consideration of the matter in current reviews of nuclear postures.

De-alerting could be pursued within or in connection with US-Russian nuclear arms reduction negotiations, and also could be a topic for wider consideration by states with nuclear arsenals. Consideration should be given to specifying means of implementation of the 2000 commitment to de-alerting, for example, through formation of an international commission to provide guidance and report on progress.

Transparency and standardized reporting

One of the 13 Practical Steps of 2000 provides for "regular reports, within the framework of the NPT strengthened review process, by all States parties on the implementation of Article VI." At NPT review meetings, nuclear weapon states have provided general statements regarding, *e.g.*, reductions of deployed weapons, and some have also declared their arsenal size and fissile material holdings. However, there is nothing even resembling a comprehensive authoritative international accounting of warhead and fissile material stockpiles, nuclear weapons delivery systems, and spending on nuclear forces. Non-governmental researchers make valiant efforts to fill the gap, but their assessments are for the most part estimates based only partly on official information. The need for an authoritative accounting system is obvious: it would provide baselines for evaluating progress in disarmament, and enable the identification of objective benchmarks for progress. Nuclear arms

control and disarmament for too long has depended on commitments and intentions, with the exception of US-Russian/Soviet bilateral arms control agreements, which do set objective limits. It is time for benchmarks to be set, as the WMD Commission recognized, and establishing an accounting system is a first step in that direction.

In his 24 October 2008 five-point proposal for disarmament, Secretary-General Ban Ki-moon stated:

> The nuclear-weapon States often circulate descriptions of what they are doing to pursue these goals, yet these accounts seldom reach the public. I invite the nuclear-weapon States to send such material to the United Nations Secretariat, and to encourage its wider dissemination. The nuclear Powers could also expand the amount of information they publish about the size of their arsenals, stocks of fissile material and specific disarmament achievements. The lack of an authoritative estimate of the total number of nuclear weapons testifies to the need for greater transparency.[25]

States should seek a commitment from nuclear weapon possessors to establishment of a comprehensive, UN-based accounting system covering size of nuclear arsenals, nuclear weapon delivery systems, fissile material stockpiles, and spending on nuclear forces.

Nuclear weapon free zones

The role of regional nuclear weapon free zones (NWFZs) in reinforcing and advancing the denuclearization of much of the planet was highlighted in 2009 with the entry into force of treaties creating NWFZs in Africa (Treaty of Pelindaba) and in Central Asia (Treaty of Semipalatinsk). A conference of NWFZs will be held in New York just prior to the 2010 NPT Review Conference.

Initiating steps toward a NWFZ in the Middle East would contribute greatly to a longer-term solution to the peace and security challenge posed by the Israeli arsenal, the Iranian nuclear programme, and the initiation or intensification of nuclear programmes by other states in the region (see "Nuclear futures for the Middle East").

Prospects for a Middle East zone will likely have a direct bearing on the

outcome of the NPT Review Conference. The 1995 NPT resolution calling for establishment of a Middle Eastern zone free of nuclear, biological, and chemical weapons will again be a focus of attention. The draft recommendations considered at the 2009 NPT Preparatory Committee contain useful elements, among them convening a conference on a Middle East zone and appointing a special coordinator. A top priority is to work for agreement on a provision regarding the Middle East at the Review Conference.

As noted above, the proposal for a North East Asia NWFZ has gained traction with the advent of the new Japanese government. Such a zone, and the process of creating it, could contribute to the sustainable denuclearization of the Korean peninsula. The Democratic Republic of Korea (DPRK) would relinquish its nuclear arsenal and nuclear weapons capabilities, and receive in return binding assurances against use of nuclear weapons—long a top concern of DPRK leadership. By providing Japan and the Republic of Korea binding assurances against use of nuclear weapons, a zone could also facilitate their lessening or ending reliance on US nuclear weapons for defence.

Legal framework for the elimination of nuclear weapons

Fundamentally, only a binding global agreement can firmly establish the obligations not to possess, use, or threaten to use nuclear weapons. Unquestionably, there are major challenges to overcome in developing an institutional system that would reliably provide for verified and enforceable elimination of nuclear warheads and delivery systems and successfully manage nuclear power. It is worth considering reaching agreement, through a framework approach, on the basic norms prior to detailed negotiation of all matters relating to verified elimination and its enforcement.

The challenges can in part be addressed through measures on the standard international agenda—the CTBT, fissile material (cut-off) treaty, regulation of nuclear fuel production and supply, etc.—so long as they are negotiated and implemented with the objective of a nuclear weapon free world in mind. It is also important, however, to squarely address the nature of the overall framework; the challenges will not go away just because they are ignored. Moreover, measures now apparently within reach may in fact remain

unattainable while a nuclear weapon free world is not even on the horizon. In that circumstance, they may be perceived as primarily aimed at preserving the advantage of powerful states and deemed unacceptable. It must be clearly enunciated and intended that the steps are meant to lead to a world free of nuclear weapons, not to maintain an unsustainable two-class nuclear world. That intention is best conveyed by creation of a process expressly devoted to achieving the global elimination of nuclear forces.

Every year since 1997, the UN General Assembly has adopted a resolution calling upon all states immediately to fulfill the disarmament obligation affirmed by the ICJ by commencing multilateral negotiations leading to an early conclusion of a nuclear weapons convention. In 2009, the resolution was adopted the resolution by a vote of 124 to 31, with 21 abstentions. UN Secretary-General Ban Ki-moon has also lent his authority to this approach, beginning with his 24 October 2008 address, and again in a speech outlining his "action plan" for nuclear disarmament and non-proliferation on 8 December 2009. There he urged states "to seriously consider the proposal by Costa Rica and Malaysia for a nuclear weapon convention."[26]

At the UN Security Council Summit on 24 September 2009, several heads of states expressed support for a convention prohibiting and eliminating nuclear weapons globally. While noting that for the time being the NPT "remains the core" of the regime, President Fischer of Austria stated that his country "supports the idea of a nuclear weapons convention equipped with a sophisticated verification mechanism."[27] Hu Jintao, President of China, stated that "the international community should develop, at an appropriate time, a viable long-term plan composed of phased actions, including the conclusion of a convention on the complete prohibition of nuclear weapons."[28] On behalf of Viet Nam, President Nguyen Minh Triet endorsed the Non-Aligned Movement position paper for the Summit, invoked the continuing "urgent demand of mankind [sic]" for "nuclear disarmament leading to the total elimination of nuclear weapons," and called for "early commencement of negotiations on an international nuclear disarmament agreement."[29] India has also raised its voice, most recently on 29 September 2009, when Prime Minister Manmohan Singh reiterated its proposal for negotiation of a nuclear weapons convention.[30] Many other delegations, including those of Cameroon, Morocco, and the Philippines, also called for a convention during the 2009 UNGA First Committee.[31]

Negotiation of a convention is not only the demand of a large vast majority of the world's countries; it is also widely supported by civil society. This was illustrated by the NGO declaration, "Disarming for Peace and Development," adopted at the DPI/NGO Mexico City conference, 9–11 September 2009. Its first two points are: "1. At the 2010 Nuclear Non-Proliferation Treaty (NPT) Review Conference, reaffirm and strengthen commitments to achieve a world free of nuclear weapons and concurrently to prevent their spread. 2. Promptly commence negotiations on a convention prohibiting and eliminating nuclear weapons globally within an agreed, time-bound framework."[31]

The ICNND report reflects and contributes to the mainstreaming of the convention approach. It states: "Work should commence now, supported by interested governments, on further refining and developing the concepts in the model convention now in circulation, with the objective of having a fully-worked through draft available to inform and guide multilateral disarmament negotiations as they gain momentum."[32] The ICNND does not support the near-term commencement of negotiations, positing that it is premature until further steps are taken to reduce and marginalize nuclear arsenals. However, it should be remembered that over the lengthy period of negotiation of the Chemical Weapons Convention, the United States and Russia also bilaterally negotiated concerning their large stockpiles. Negotiation of a convention can proceed in parallel with, and inform and stimulate, negotiation and implementation of other measures.

It is true that achieving the complete elimination of nuclear weapons will likely require complementary arms control and disarmament, notably in relation to space-based systems, anti-missile systems, and non-nuclear strategic strike systems. However, it is established beyond doubt that nuclear disarmament is not to be held hostage to comprehensive demilitarization or like transformation of the global security landscape. The 2000 unequivocal undertaking to eliminate nuclear arsenals is separate from the commitment to the ultimate goal of general and complete disarmament. The ICJ unanimously concluded that Article VI requires negotiations to be completed on "nuclear disarmament in all its aspects," not comprehensive disarmament.

The call for undertaking a systematic approach to nuclear disarmament now reflects a mature understanding of the means to be employed and the challenges to be met. Governments and civil society should press for the

NPT Review Conference to adopt a commitment to commencement of preparatory work, deliberations and negotiations on a universal convention or framework of instruments for the sustainable, verifiable, and enforceable elimination of nuclear weapons.

Recommendations

All states with nuclear weapons should:

- reaffirm the NPT unequivocal undertaking to accomplish the total elimination of nuclear arsenals;
- reaffirm the principle of irreversibility and commit not to increase or modernize their nuclear forces and capabilities;
- reaffirm the principles of transparency, verification, irreversibility, and accountability in fulfilling disarmament obligations and agreements;
- declare that they will not design, develop, or produce new-design nuclear warheads, or modify or modernize existing warheads to add military capabilities;
- halt research, development, testing, and component production while reductions of arsenals are in progress, with production and research facilities subject to an intrusive verification regime at the earliest possible time;
- close and clean up all nuclear test sites;
- commit to regular reporting on nuclear warhead and delivery system arsenals, fissile material stockpiles, spending on nuclear forces, and steps and plans for disarmament;
- reaffirm the NPT commitment to a diminishing role for nuclear weapons in security policies as a step toward non-use in any circumstance and the elimination of the weapons;
- agree to legally-binding security assurances not to attack non-nuclear weapon states with nuclear weapons;
- commit not to use nuclear weapons for pre-emptive strikes;
- reject counterforce and countervalue doctrines;

- phase out "extended nuclear deterrence" and strengthen regional cooperative security mechanisms;
- end deployment of nuclear weapons outside the territory of possessor states; and
- reaffirm the NPT commitment to reduce the operational status of nuclear weapon systems and implement steps to take nuclear forces off quick-launch status.

The US and Russian governments should reduce their arsenals on their own in a transparent and verified manner. To build a more stable bilateral relationship, and to move toward global nuclear disarmament, unilateral and bilateral reductions should achieve the following:

- maintain transparency and predictability;
- mandate steady reductions in all nuclear warheads, deployed and reserve, strategic and non-strategic;
- mandate reductions in strategic delivery systems, whether for nuclear or non-nuclear weapons, and prohibit multiple warhead missiles;
- require verified dismantlement of all excess warheads and delivery mechanisms;
- provide for international monitoring in addition to bilateral verification, to establish accountability to the entire community of states; and
- reach levels of total warheads low enough to allow the next phase to encompass other states possessing nuclear arsenals. All warheads—deployed, spare, reserve, awaiting dismantlement, etc.—must be counted in the total. The total likely will need to be in the hundreds on each side to attract meaningful participation from other possessor states, which should be consulted on this key point.

All governments should:

- negotiate for a fissile material (cut-off) treaty that bans production of fissile materials for nuclear weapons, brings all weapons-usable materials under safeguards, and fosters reduction of existing stocks;
- renounce and/or oppose nuclear sharing arrangements and "extended nuclear deterrence"; and
- commence negotiations on a global treaty on missiles and anti-missile systems.

All governments and civil society actors should:

- support early entry into force of the CTBT;
- oppose conditioning approval of the CTBT on deals for entrenching and expanding weapons complexes, retaining the option of designing and manufacturing modified or new-design warheads, and modernizing delivery systems;
- call for the closure of all nuclear test sites;
- seek an NPT commitment to establishment of a UN-based, comprehensive accounting system covering size of nuclear arsenals, nuclear weapon delivery systems, fissile material stockpiles, and spending on nuclear forces;
- demand a commitment not to modernize nuclear weapon infrastructures;
- support an NPT commitment to initiatives to create a zone free of nuclear, biological, and chemical weapons in the Middle East;
- work for cooperation among existing nuclear weapon free zones and the creation of new zones; and
- support an NPT commitment and a UNGA resolution to commence preparatory work, deliberations, and negotiations on a universal convention or framework of instruments for the sustainable, verifiable, and enforceable global elimination of nuclear weapons.

Chapter 12 A nuclear weapons convention: framework for a nuclear weapon free world

John Loretz, Jürgen Scheffran, Alyn Ware, and Tim Wright

The nuclear Non-Proliferation Treaty (NPT), which has so far prevented the uncontrolled spread of nuclear weapons, is at a crossroads. We know that either the nuclear disarmament obligation contained in Article VI must be fulfilled without further hedging and excuses, or the whole non-proliferation regime will be at risk. The threat of nuclear war itself must be ended by a comprehensive and universal agreement banning nuclear weapons. Those who drafted the NPT in 1968 foresaw the need for complementary agreements both to curb proliferation and to bring about disarmament.

In the final speech of his term, former UN Secretary-General Kofi Annan reminded us that nuclear weapons "pose a unique threat to humanity as a whole."[1] UN Secretary-General Ban Ki-moon has built upon the insights of his predecessor, calling the model Nuclear Weapons Convention drafted by civil society[2] "a good point of departure" for negotiations.[3]

In 1996, the International Court of Justice affirmed a universal obligation to pursue and to conclude negotiations on nuclear disarmament in all its aspects under strict and effective international control.[4] The UN General Assembly has repeatedly called for the fulfillment of that obligation through the commencement of negotiations that would culminate in a nuclear weapons convention (NWC).

A proposal to begin deliberations on a NWC was advanced at the 2000

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NPT Review Conference by Malaysia and Costa Rica.[5] In 2005 this proposal was developed in a follow-up working paper, which explored some of the elements that would be required to achieve and maintain a nuclear-weapon free regime through the NWC, and related these to the 13-step action plan to which member states had agreed in 2000.[6] Then in 2007 Costa Rica and Malaysia submitted the model NWC to the NPT Preparatory Committee, as a framework for the complete abolition of nuclear weapons.[7]

An NWC would overcome the division between the camps that former UN Secretary-General Annan criticized by mandating the comprehensive goal of a world without nuclear weapons and specifying the means of its achievement by concrete measures and steps.

Far from being in competition with the NPT, a NWC would fulfill the promises contained in the Treaty. The model NWC is neither more nor less than a comprehensive draft of the international nuclear disarmament agreement required to achieve the nuclear weapon free world envisioned by the NPT.

An NWC is now a key rallying point of most international NGOs working in the field of nuclear disarmament and should also be a central objective of states, including those with nuclear weapons. Our purpose in this chapter is to advance that objective by addressing the concerns about the NWC commonly expressed by a small number of NPT states parties.

Despite overwhelming support from mayors, parliamentarians, and other sectors of civil society from across the political spectrum, a small number of governments have continued to ignore or resist this blueprint for our survival. The reasons offered for this reluctance tend to be that the idea of a comprehensive agreement to eliminate nuclear weapons is premature; that shifting attention to an NWC now could undermine essential efforts to strengthen the NPT; and that practical results can only be obtained with a step-by-step approach.

We recognize that some countries are not yet prepared to abandon their nuclear weapons and doctrines for use, and that the NPT has been under enormous stress for several years and needs to be strengthened. The NGOs who support a Nuclear Weapons Convention, however, believe that there is a more constructive way to frame the debate about when and how to commence negotiations on an NWC.

There is no reason to delay negotiations on a comprehensive agreement

One point raised by those who argue that negotiation of an NWC is premature is the need to achieve NPT universality before something more comprehensive can be proposed. This claim does not stand up to scrutiny. The nuclear weapon states that have never been parties to the NPT—India, Pakistan, and Israel (with the Democratic People's Republic of Korea as a special case)—refuse to join unconditionally as non-nuclear weapon states. From their perspective, the NPT is a discriminatory treaty that requires less of the five states that tested nuclear weapons prior to 1970 than it does of any others.

The NWC provides a nondiscriminatory approach and opens the door for immediate engagement by the non-NPT nuclear weapon states. The expectation that India, Pakistan, and the DPRK could be persuaded to join (or rejoin) the NPT unconditionally as non-nuclear weapon states is unlikely. The expectation that they would join negotiations on an NWC is not.

The argument that negotiations on an NWC would have little value without the participation of all the nuclear weapon states from the outset is overstated. It goes without saying that negotiations could not be concluded, and a convention implemented, without universal participation. Some nuclear weapon states might be reluctant to join negotiations unless all nuclear weapon states participated and provided assurances of their intent to join the resulting nuclear abolition regime. Obtaining Israel's engagement, in particular, would probably require careful and extended diplomacy.

The NPT itself was concluded without the involvement of two nuclear weapon states, China and France, and there is no reason why negotiations for an NWC could not at least commence without the support of all nuclear-armed states. Indeed, there is no reason that a NWC could not be negotiated amongst the willing nuclear weapon states and non-nuclear weapon states with a provision that it only enter into force once all nuclear weapon states have ratified.

When first advanced in 1996, the idea of an NWC may have seemed part of a distant future. That is no longer the case. Very prominent policy makers, politicians, and diplomats in the United States and the United Kingdom from across the political spectrum have declared themselves abolitionists,

stating that the goal of zero nuclear weapons must inform every incremental arms control and disarmament policy from now on. The US President, Barack Obama, has made the goal of a nuclear weapon free world a priority for his administration, and this goal was reiterated in a joint statement with Russian President Medvedev on 1 April 2009. There is thus a political opening to take a comprehensive approach to nuclear disarmament and to start the process for achieving an NWC.

Such a process could begin with preparatory meetings, which would provide the opportunity for engagement with key nuclear weapon states, even those not prepared to join negotiations. Actual negotiations could start early in the process if the largest nuclear weapon states were prepared to join; or preparatory meetings could continue while efforts were made to build political will and confidence among key nuclear weapon states whose early participation is considered essential. Of course, one should not allow the preparatory process to continue indefinitely. At some stage a decision would need to be made as to whether key nuclear weapon states had made a sufficient commitment to the process to commence negotiations, or whether the preparatory process should be suspended in favor of some alternative approach. The very fact of starting a preparatory process for negotiations, however, would contribute to building the political momentum for actual negotiations.

The NWC and the NPT are mutually reinforcing

In resubmitting the model NWC to the NPT Preparatory Committee in 2007, Costa Rica and Malaysia stated, "The Model Nuclear Weapons Convention expands on the 2000 NPT agreement in order to explore the additional elements that would be required to achieve and maintain a nuclear-weapon-free world."[8] Full compliance with Article VI will require the adoption of clear prohibitions on the use, threat to use, and acquisition of nuclear weapons, as well as negotiations on the phased reduction and elimination of stockpiles, and the establishment of mechanisms to verify and ensure compliance. On the non-proliferation side, the verification measures in the model NWC are built upon the verification measures required by the NPT and implemented by the International Atomic Energy Agency, as well

as those established by UN Security Council Resolution 1540, the International Convention on the Suppression of Acts of Nuclear Terrorism, and the Comprehensive Test Ban Treaty (CTBT).

The aim of NWC negotiations, therefore, is not to provide an alternative to the NPT, rather to develop an additional instrument that would build upon the NPT and other nuclear non-proliferation and disarmament measures. It would thus be sensible to connect NWC negotiations closely with the ongoing efforts to implement and strengthen the NPT.

Some have suggested that concentrating political attention on a new process would relieve the nuclear weapon states from the pressure to fulfill Article VI of the NPT. The opposite is far more likely to be the case. Negotiations for an NWC would focus political attention squarely on the requirements for implementation of the Article VI obligation.

The aforementioned treaties, along with those requiring bilateral arms reductions by the United States and Russia, have complemented the NPT by bringing us closer to realizing its object. Indeed, it might be said that, if the NPT is the "cornerstone" of the nuclear non-proliferation and disarmament regime, every treaty subsequently concluded has provided the mortar with which we can now secure the regime's "capstone," a nuclear weapons convention.

The NPT does not have to be set aside in order to pursue the NWC. Rather, the disarmament and non-proliferation provisions of the NPT are the foundation of the convention, and every measure taken to strengthen compliance with the NPT is a building block of the convention.

Steps within a framework

Adopting a more comprehensive framework does not mean abandoning the step-by-step approach. Incremental steps are undoubtedly needed in order to build the confidence required for complete abolition. Near-term steps such as the CTBT or a fissile material (cut-off) treaty, which, looked at in isolation, can place some states at an apparent disadvantage, become more palatable in the context of a framework for the complete abolition and elimination of nuclear weapons.

The model NWC has been designed to overcome the divide between in-

cremental and comprehensive approaches to a nuclear weapon free world. Negotiating individual step goes hand in with negotiating the overall legal framework of a NWC, which balances the deficiencies of these steps. NWC negotiations can serve as an umbrella for negotiations on the individual steps, and need to adapt to changing circumstances. The relevant issues and concerns could be addressed in different negotiation fora, each having a different rate of progress. NGOs can support the negotiation process by simulating it and by discussing the best concepts and proposals.

With a vision for a global treaty and a commitment to reaching that goal, the obstacles can be overcome and the goal reached. The NWC approach contains that vision and allows for concrete steps along the way. Such an approach would necessarily build on the achievements of the NPT, and provide a way to overcome the problems that have prevented the full implementation of the Treaty.

Embracing the NWC approach would demonstrate a good faith commitment to fulfilling the obligation to achieve complete nuclear disarmament set down in the first resolution of the United Nations and given concrete expression in the NPT itself.

Recommendations

- Citizens should encourage their governments to work towards an NWC and educate each other about the benefits of abolishing nuclear weapons globally. Civil society groups should push the goal of a NWC into the mainstream and onto the negotiating agenda, where they can engage with governments on the legal, technical, and political aspects of such a Convention. Before the Review Conference, civil society groups should push governments to identify the need for some sort of nuclear prohibition treaty in their statements and working papers. After the Review Conference, civil society groups should participate in the Nuclear Abolition Action Day on 5 June 2010 to inspire and keep up the momentum for a NWC.
- After the Review Conference, a group of like-minded states should initiate a series of preparatory conferences to examine the political, legal, technical, and institutional requirements for an NWC.
- The NWC and the elimination of nuclear weapons must be grounded in a broader movement toward political, economic, and social justice and equity in which the majority of the world's people are empowered to live a healthy, dignified, and productive life. As called for in *Nuclear Disorder or Cooperative Security*, "The elimination of nuclear weapons must serve as the leading edge of a global trend towards demilitarization and redirection of military expenditures to meet human needs and restore the environment."

Chapter 13 Toward a fissile material (cut-off) treaty

Zia Mian

Fissile materials are the key elements for nuclear weapons. The simple fission weapons that destroyed Hiroshima and Nagasaki 60 years ago used highly enriched uranium (HEU) and plutonium respectively. The far more powerful thermonuclear (hydrogen bomb) weapons in the arsenals of most nuclear-armed states today typically contain both these fissile materials. Controlling these materials has long been seen as central to both nuclear disarmament and halting proliferation and, more recently, to reducing the risk of nuclear terrorism.

For those seeking nuclear weapons, the production of fissile materials is the main technical challenge. Natural uranium must be highly enriched in the chain-reacting isotope U-235 to be suitable to make a nuclear weapon.[1] Plutonium of almost any isotopic composition can be used to make a nuclear weapon. It is produced in the uranium fuel in nuclear reactors and recovered through chemical reprocessing of the spent fuel. Making a nuclear weapon does not require large quantities of fissile material. The International Atomic Energy Agency (IAEA) defines a "significant quantity" of fissile material as the amount required to make a first-generation bomb of the Nagasaki-type. The significant quantities are 25 kilograms of U-235 contained in highly enriched uranium and eight kilograms of plutonium. Advanced fission weapons may contain perhaps half as much material. A typical two-stage thermonuclear warhead may contain about 25 kilograms of HEU and four kilograms of plutonium.

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Fissile material stockpiles

During their Cold War arms race, the Soviet Union and the United States produced most of the current global stockpile of HEU and about half the global stockpile of plutonium.[2] The other half of the plutonium stockpile derives from the other nuclear-armed states and civilian reprocessing of spent nuclear power reactor fuel. The nuclear weapon states that are party to the nuclear Non-Proliferation Treaty (NPT)—the United States, Russia, the United Kingdom, France, and China—have stopped HEU and plutonium production for weapons. All of them except China have made explicit public statements to this effect. China has indicated only informally that it has ended production of fissile material for weapons. Israel, India, and Pakistan continue to produce, and North Korea resumed production in 2009 after a brief suspension. India and Pakistan are currently expanding their capacity to produce fissile materials for weapons.

There is no civilian production of HEU, but the civilian stockpile of plutonium is growing at a significant rate because of large-scale reprocessing of spent fuel from nuclear power plants in France, India, Russia, and the United Kingdom. Japan has yet to start commercial operation at its much delayed large reprocessing plant at Rokkasho.

The United States has declared how much HEU and plutonium it has produced, Russia has not. This leads to a great uncertainty in estimates of HEU and plutonium held by Russia and, as result, in estimates of global stocks. Among the other seven nuclear-armed states, only the UK has declared its production.

Highly Enriched Uranium. The current global stockpile of HEU is very roughly 1600 metric tons, more than 99% of which is in the possession of the nuclear-armed states. This includes about 200 tons of excess HEU that the US and Russia together have agreed to blend down to low enriched uranium (LEU, containing 3-5% uranium-235) that can be used for reactor fuel. Almost 500 metric tons of HEU declared excess has already been down-blended. Most of this material was HEU from Russian weapons.

In addition to weapons, HEU is used by France, Russia, the US, and UK to fuel military naval propulsion reactors. Russia also has some HEU-fueled ice-breaker ships. The US has reserved 120 metric tons of HEU for its nuclear navy and Russia may have set aside perhaps as much. These are huge

amounts. For comparison, if the US and Russia reduced their arsenals to 1000 nuclear warheads each, they would require less than about 30 metric tons of HEU each for all these weapons.

HEU is not necessary to fuel naval reactors; France is moving to LEU fuel for its nuclear-powered submarines. HEU also fuels many military and civilian research reactors, and there are international efforts to help reduce and end such use, especially in civilian reactors.

Plutonium. The global stockpile of separated plutonium is about 500 metric tons. It is divided almost equally between weapon and civilian stocks, but it is all weapon-usable. For comparison, an arsenal of 1000 nuclear weapons would require only about five tons of weapon-grade plutonium.

Russia and the United States own virtually all of the world's stock of military plutonium. Only Israel, India, Pakistan, and North Korea are still producing plutonium for weapons.

The civilian stocks of plutonium are growing much faster, with France, India, Japan, Russia, and the UK all engaged in large-scale reprocessing of power reactor spent fuel. The United States chose to stop reprocessing in the late 1970s for both economic and non-proliferation reasons. India has declared its reprocessing programme and related plutonium-fueled breeder reactor programme to be of national security significance. Breeder reactors fueled with plutonium from power reactors can produce weapon-grade plutonium in a blanket around the core.

Controlling fissile materials

The effort to control access to nuclear-weapon materials is as old as the effort to make nuclear weapons. During the "Manhattan Project" to build the atomic bomb, it was proposed that the United States try to acquire control of the world's uranium supplies to stop any other state from having access to the raw material from which fissile materials can be produced.

In January 1946, in its first General Assembly resolution, the United Nations established an Atomic Energy Commission "to deal with the problems raised by the discovery of atomic energy." The Atomic Energy Commission's first annual report, issued in December 1946, argued that "effective control of atomic energy depends upon effective control of the production and use

of uranium, thorium, and their nuclear fuel derivatives." However, there was little progress at the time, largely because of the Cold War.

The UN General Assembly took the initiative again in November 1957, proposing a treaty that would include:

a) "the cessation of the production of fissionable materials for weapons purposes,"
b) "the complete devotion of future production of fissionable materials to non-weapons purposes under effective international control," and
c) "the reduction of stocks of nuclear weapons through a programme of transfer, on an equitable and reciprocal basis and under international supervision, of stocks of fissionable materials from weapons uses to non-weapons uses."

Once again, little progress resulted.

With the end of the Cold War, the UN was able to return to this agenda. In December 1993, the General Assembly adopted a resolution calling for negotiation of a "non-discriminatory, multilateral, and internationally and effectively verifiable treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices."

In March 1995, the Geneva-based Conference on Disarmament (CD), the permanent multilateral body for negotiating arms treaties, agreed to these terms as the basis for negotiations on a fissile material cut-off treaty (FMCT). But many states made clear their concerns about the scope of a possible treaty, including whether and how the treaty would deal with large existing fissile material stockpiles. Put simply, the nuclear-armed states sought to keep their existing stocks of fissile materials outside the scope of the treaty, while many non-nuclear states wanted the treaty to include a mechanism to account for and reduce these stocks. This led some non-nuclear weapon states to talk of a fissile material treaty (FMT) rather than a fissile material cut-off treaty. To reflect this disagreement, it shall be referred to here as an FM(C)T.

This dispute was settled by an agreement that even though the status and future of existing stockpiles was not explicitly mentioned as part of the mandate for the talks, states could raise the issue during the negotiations. But in the CD, work on all issues, including fissile materials, stalled.

The commitment to a treaty banning the production of fissile materials for weapons was reaffirmed by NPT states at the 2000 NPT Review Confer-

ence. The CD was urged to agree on a programme of work that included an FM(C)T that would take into consideration "both nuclear disarmament and nuclear non-proliferation objectives" and to adopt a schedule that involved "the immediate commencement of negotiations on such a treaty with a view to their conclusion within five years."

As of February 2010, talks still have not started. Originally, a key obstacle was a dispute between the US and some other countries, notably China, over whether to have talks on both nuclear disarmament and prevention of an arms race in space alongside FM(C)T negotiations. The US opposed talks on anything other than an FM(C)T. In 2003, five CD Ambassadors proposed that work on an FM(C)T proceed in parallel with work on three other issues: 1) a treaty to ban on nuclear threats directed at non-nuclear weapon states ("negative security assurances" or NSA); 2) discussions on nuclear disarmament; and, 3) discussions on preventing an arms race in outer space (PAROS). This failed to break the logjam.

In March 2007, it was proposed to appoint four coordinators who would preside over parallel talks on NSA, nuclear disarmament, PAROS, and FM(C)T. However, only the FM(C)T talks would aim at producing a legally-binding treaty. There would only be "substantive discussions," i.e. talks about talks, on the other issues. In May 2009, the CD finally reached consensus on a similar formulation and adopted its first programme of work in a decade. It was unable to reach agreement on implementing the programme of work, because of objections by Pakistan, and could not begin negotiations before the end of its 2009 session. The effort to organize and start talks began again in January 2010 and was frustrated again by Pakistan, which cites India's larger fissile material stockpile and insists that any talks include reductions in existing stockpiles.[3]

Faced with the impasse at the Conference on Disarmament, some states and civil society groups have proposed changing the rules of procedure of the CD, including easing the consensus process, and others have suggested looking for an alternative venue, perhaps direct talks among nuclear-armed states. The advantages of the CD are that it is the only forum in which all nine nuclear-armed states are members and have chosen to participate and have agreed on the rules. Going outside it may permit states that are reluctant to begin talks or reach agreement on an FM(C)T, like Pakistan and Israel, the opportunity simply not to participate.[4]

The minimum goals of an FM(C)T

Given the intense disputes between states over starting talks, it is difficult to predict the structure of a final FM(C)T. It is easier to consider what could be the minimal requirements for an FM(C)T, one that did no more than formalize existing policies and practices. This of course falls short of a comprehensive FM(C)T that most states and civil society groups wish to see, but would be better than nothing.

A minimal FM(C)T could aim to prohibit production of fissile material for nuclear weapons or nuclear-explosive purposes by all parties. This would serve to formalize the existing production moratoria among the NPT nuclear weapons states and, if they became parties, the non-NPT nuclear-armed states. This would place all states in the same position as the non-nuclear weapons states in the NPT as regards production of fissile materials for weapons.

How an FM(C)T could include existing stocks

Some states and many in civil society are concerned that a limited FM(C)T focused only on ending future production for weapons may serve to stabilize the existing situation of nuclear armed states holding large stocks of fissile materials. They also seek to ensure that nuclear arsenals could not grow by tapping into existing stocks of fissile materials that currently are not in weapons.

The NPT nuclear weapon states have already recognized this concern. As part of the Thirteen Steps agreed at the 2000 NPT Review Conference, they committed to "arrangements by all nuclear-weapon States to place, as soon as practicable, fissile material designated by each of them as no longer required for military purposes under IAEA or other relevant international verification and arrangements for the disposition of such material for peaceful purposes, to ensure that such material remains permanently outside of military programmes."[5] This can be read as covering civilian stocks as well as fissile material declared as excess for military purposes. There is no reason why this should exclude HEU assigned for naval fuel.

The International Panel on Fissile Materials (IPFM), an independent

group of arms-control and non-proliferation experts from both nuclear-weapon and non-nuclear weapon states, has proposed a draft treaty that seeks to address some of these concerns. The draft treaty has as its basic undertakings:[6]

1. Each State Party undertakes not to produce, acquire, or transfer fissile material for nuclear weapons or other nuclear explosive devices.
2. Each State Party undertakes either to promptly disable and decommission and, when feasible, dismantle its fissile-material production facilities, or to reconfigure and use these facilities only for peaceful or military non-explosive purposes.
3. Each State Party undertakes not to use for nuclear weapons or other nuclear-explosive devices fissile materials:
   i. In its civilian nuclear sector
   ii. Declared as excess for all military purposes
   iii. Declared for use in military reactors.
4. Each State Party undertakes that any reduction in its stockpile of nuclear weapons will result in a declaration of the fissile material recovered from those weapons as excess for weapon purposes.
5. Each State Party undertakes to accept IAEA safeguards to verify these obligations.

This approach would not compel reduction of nuclear weapons or weapons-usable stocks, but it provides a mechanism for bringing under safeguards material that becomes excess due to reductions in warheads and stocks dedicated for weapons use. In this way, it furthers the irreversibility of the disarmament process. As progress on disarmament proceeds, the nuclear weapon and nuclear naval complexes would shrink, and the FM(C)T monitoring system would converge with the NPT monitoring system and lead in time to a non-discriminatory set of safeguards that would apply equally to all states in a nuclear weapon free world.

A fissile material treaty that imposed a requirement of reduction and elimination of materials in warheads and dedicated stocks would directly entail disarmament, and indeed would constitute the core of an abolition regime.

Could an FM(C)T be verifiable?

In the 1990s, states agreed to negotiate a verifiable FM(C)T. From 2004 to 2008, the Bush administration argued that "effective verification" of an FM(C)T could not be achieved. A draft FM(C)T provided by the US to the CD in 2006 contained no provision for verification. The Obama administration has returned to supporting a verifiable FM(C)T.

IPFM has argued that an FM(C)T could be verifiable, and at reasonable cost. All the civilian activities in the nuclear weapon states would be subject to the IAEA safeguards already used in non-nuclear weapon states. These safeguards would address the problems of ensuring that fissile materials were not diverted from peaceful purposes to nuclear weapons programmes and that there were no undeclared fissile material production activities.

The additional verification challenges would be to determine:

1. that legacy fissile material production facilities were shut down and decommissioned or converted to peaceful purposes;
2. that fissile material declared excess, but still in weapon-components, was not diverted to weapons purposes; and
3. that material was not diverted from naval fuel to nuclear weapon purposes. These could be achieved using techniques developed from 1996-2002 as part of the Trilateral Initiative, an arrangement between the US, Russia and the IAEA, that sought to establish the principles for IAEA safeguarding of fissile material from weapons. There would also need to be a system of managed access for inspectors to nuclear weapon sites and military reactor fuel facilities, to ensure that there was no covert fissile material production. Similar practices were successfully developed as part of the Chemical Weapons Convention.

The verification system for the FM(C)T could be negotiated as part of the talks on the treaty, as happened with the Comprehensive Test Ban Treaty, or developed separately in discussions between the IAEA and concerned states, as was the case with the safeguards under the NPT.

Conclusion

A verified treaty that banned future production of fissile materials for weapons and brought under safeguarded all existing stocks not in weapons programmes would be a major contribution to achieving non-proliferation and disarmament objectives. In addition to restraining arms racing, especially in South Asia, such a treaty would help build a stable framework for reduction and elimination of warheads and fissile material stocks; meet a key NPT commitment; institutionalize one of the basic pillars of a nuclear weapon free world; and help secure fissile materials worldwide.

Recommendations

- States should commit at the Conference on Disarmament to implement the NPT 2000 Review Conference decision to begin negotiations on a FM(C)T with a broad scope—taking into account both disarmament and non-proliferation objectives—and complete them within five years. To this end, states need to adopt a programme of work that includes negotiation of an FM(C)T.
- In parallel with an FM(C)T, states should declare a moratorium on all further separation of plutonium and all production of highly enriched uranium (HEU) and agree to phase out all such production for military and civilian use. This will prevent the stockpiling of weapons-usable fissile material as part of naval propulsion and civilian nuclear energy programmes after an FM(C)T comes into force.
- To assist the process of FM(C)T verification and to lay a basis for the future verification of nuclear disarmament, states should make complete and comprehensive public declarations of their HEU and plutonium stockpiles and production histories.

Chapter 14 Learn, adapt, succeed: potential lessons from the Ottawa and Oslo processes for other disarmament and arms control challenges

John Borrie, Maya Brehm, Silvia Cattaneo, and David Atwood

The Convention on Cluster Munitions (CCM) is a stunning achievement. It sets a new international legal norm and enshrines a comprehensive package of weapon-specific measures to ban cluster munitions that endanger civilians, clear contaminated land, and help victims. By adopting a humanitarian disarmament approach, the Oslo process also sends a powerful signal that progress is still possible on arms control-related priorities of international concern despite considerable difficulties in recent years. Yet is the Oslo process really of specific relevance to other arms control work? If so, what does it, along with the Ottawa process that achieved the Mine Ban Treaty in 1997 (to which it is often compared), have to offer multilateral disarmament practitioners in terms of lessons?

The Oslo process on cluster munitions, launched at an international conference hosted by the Government of Norway in Oslo in February 2007, resulted in the CCM's adoption on 30 May 2008. Ninety-four states signed this ground-breaking treaty banning cluster munitions on 3 and 4 December 2008. In many respects, the Oslo process was reminiscent of the Ottawa process that, over a decade earlier, had led to the successful conclusion of the 1997 Convention on the Prohibition of the Use, Stockpiling, Produc-

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tion and Transfer of Anti-Personnel Mines and on their Destruction (Mine Ban Treaty). In the aftermath of the Mine Ban Treaty's adoption, some had argued that the Ottawa process was an approach—and a humanitarian disarmament outcome—that would not be repeated, in particular, because of the unusual and highly productive partnership that developed between a "core group" of states in favour of the ban and civil society organizations, a partnership hailed from many sides as the birth of a "new multilateralism". Yet, a decade later, the Oslo process led to another weapons ban through a process that was, once again, characterized by a strong cooperation between proactive governments and non-governmental organizations (NGOs) with a humanitarian disarmament goal.

From 19 to 20 November 2008, the Disarmament Insight initiative of the Disarmament as Humanitarian Action project of the United Nations Institute for Disarmament Research (UNIDIR) and the Geneva Forum convened an informal symposium with representatives from governments, intergovernmental and civil society organizations, and academic institutions in Glion, Switzerland.[1] The objectives of the symposium were: to identify and elaborate key lessons that could be drawn from the Ottawa and Oslo processes; to explore how any such lessons might be adapted and applied to multilateral action in other areas of disarmament and arms control; and to reflect on how human security thinking could benefit disarmament policy-making generally and suggest possible next steps toward common disarmament and arms control objectives.

Some key points identified about the Ottawa and Oslo processes

From Ottawa to Oslo. The Oslo process benefited from the Ottawa process experience in several ways, including the following:

- initiators of the Oslo process made use of informal trust networks established among those involved in the Ottawa process and adapted and expanded these to build a new transnational network, which included representatives of both civil society and states;
- the Ottawa process provided those involved in cluster munitions work with a "roadmap" for campaigning; and

- in terms of the outcome, the CCM text adopted many structural elements of the Mine Ban Treaty.

Focus on the human impact. Anti-personnel mines and cluster munitions were each initially treated at the international level as questions of arms regulation. But both the Ottawa and Oslo processes that subsequently emerged were framed in humanitarian terms using concepts and terminology that fit a humanitarian discourse. Such a discourse drew attention to the impact of these weapons rather than their military utility. In the two processes, supporters focused on the effects of landmines and cluster munitions on civilians during and after an armed conflict and on the human cost of the weapons' past and future use. A direct and strong link was thus established between the weapons and their impact on human beings.

Credibility through research and practice. Both the Ottawa and Oslo processes were described as data-driven, even though at the start of the Oslo process there were less systematically gathered data available on the humanitarian impact of cluster munitions than there had been about the impact of anti-personnel landmines a decade earlier when the Ottawa process began. Nevertheless, some proponents of weapon bans in each process based their arguments on practical knowledge from the field and evidence gained through data collection: research, data, and evidence improved over the course of these international initiatives and provided them with greater credibility. The experience and expertise of humanitarian field workers, clearance personnel, and survivors were also heavily drawn on and helped to focus the debate on the humanitarian effects of weapons. As for the United Nations, the organization was able to draw on its field expertise and play a significant role in the Oslo process, in contrast to the limited contribution of most parts of the UN to the Ottawa process.

Shifting the burden of proof. The stigmatization of anti-personnel mines and cluster munitions respectively began before treaty norms were agreed. The prominence of a humanitarian discourse in the Ottawa and Oslo processes contributed to this stigmatization. The presumption that anti-personnel mines and cluster munitions were acceptable weapons was increasingly challenged. Eventually the burden of proof concerning each weapon was reversed: those who wanted to continue to use them had to make a convincing case for their acceptability in humanitarian terms, regardless of their purported military advantage. In this respect, the International Committee

of the Red Cross Expert Meeting on the Humanitarian, Military, Technical and Legal Challenges of Cluster Munitions held in Montreux, Switzerland, in April 2007 was seen by some participants as a key event on cluster munitions. The Montreux meeting brought military personnel from possessor states into contact with clearance personnel for systematic discussions, in which the latter made a stronger case. The subsequent development of the definition of a cluster munition in the CCM illustrates the shifting burden of proof: negotiations on defining what was to be prohibited in the CCM proceeded from the assumption that all cluster munitions would be banned because of the unacceptable harm they cause to civilians. To exempt certain weapons from the definition, it had to be shown that they did not produce the same effects on civilians. The Convention on Certain Conventional Weapons (CCW), in contrast, adopts an approach where, based on technical criteria, weapons to be potentially restricted have to be "ruled in".

Building partnerships and trust. Similar to the Ottawa process, the Oslo process was characterized by a broad partnership between civil society organizations, governments, and intergovernmental organizations. Although not free of inherent tensions, these partnerships served overall to advance a common goal using the various tools at the disposal of the different actors. The role of individuals was also highlighted as particularly important among both government and non-government stakeholders. People willing to take risks and foster a common sense of purpose, commitment, and opportunity changed their institutions' positions, which contributed to collective reframing of the issues in humanitarian terms in the broader Ottawa and Oslo processes respectively. This extended to politicians who in some countries overruled entrenched bureaucratic positions, for instance in their defence departments. Moreover, potent networks of trust had been created among people representing diverse institutions in the Ottawa process; these relationships provided a basis for campaigning and diplomatic networks built on in the Oslo process.

The crucial role of civil society. In both the Ottawa and the Oslo processes, civil society campaigns framed the issues as humanitarian problems; helped set the international agenda; sustained the process by educating state representatives, the media and the public about the problem; maintained pressure on governments to participate in the process; and scrutinized the positions of governments.

Legitimacy through inclusiveness. The legitimacy of both the diplomatic process and the civil society campaign in the Ottawa and Oslo initiatives depended heavily on the involvement of actors from all regions of the world, in particular, actors from affected countries and survivors. Geographical balance, regional involvement, and inclusiveness promoted ownership in the process among all participants and ensured that the process was (and was perceived as being) representative, transparent, and credible. But this was not easily achieved. Polarization and regional divides also had to be dealt with. The capacity to reach out, build bridges, and encourage convergence was important.

Urgent action, clear objectives. There was considerable discussion at the Glion symposium about how the Ottawa and Oslo processes managed to create a sense of urgency to deal with landmines and cluster munitions, respectively. Events such as the 2006 war in Southern Lebanon helped to create this sense of urgency on cluster munitions. The perceived failure of other forums to address the issue adequately and urgently enough, such as the CCW's work on landmines and cluster munitions, was also a factor in the emergence of both the Ottawa and Oslo initiatives. But, on its own, awareness of a crisis is not enough: potential solutions simple enough to communicate publicly must also be in the offing. Throughout each process, both core groups of governments and civil society campaigns had to be able to respond quickly to such events and communicate effectively. Moreover, strong leadership and strategic direction were considered vital, alongside clear messages based on sound data and arguments. Even before the 2006 Southern Lebanon conflict and the CCW's review conference late the same year, Belgium's national legislation outlawing cluster munitions in early 2006 was utilized by the Cluster Munition Coalition and others to convey a sense of momentum in the stigmatization of the weapon, as the International Campaign to Ban Landmines had done a decade before with anti-personnel mines following Belgium's March 1995 mine ban law.

Lessons from Ottawa and Oslo in the context of other initiatives

Same, but different? Progress in the field of multilateral disarmament and arms control has been difficult to achieve over the last decade. By providing

examples that "we can make it happen," the Ottawa and Oslo processes have already provided inspiration to other initiatives such as efforts to regulate the trade in conventional arms, reduce the global burden of armed violence and challenge the acceptability of using explosive force in populated areas. But symposium participants also acknowledged that these issues are different from landmines and cluster munitions in important ways. Such differences could make it difficult and perhaps even undesirable to emulate some of the characteristics of the Ottawa and Oslo processes. Moreover, which aspects can or should be reproduced in other contexts is not easy to determine.

Regulating the global trade in conventional arms—refocusing the debate on the human cost. Like the Ottawa and Oslo processes, the campaign for an Arms Trade Treaty (ATT) is driven by a "core group" of like-minded governments in partnership with civil society organizations. Many of the actors involved have already worked together on landmines and cluster munitions. Inclusiveness and the involvement of actors at many levels are important and more could be done to involve governments as well as non-governmental actors and intergovernmental organizations from diverse sectors at the regional and national levels. This is particularly important bearing in mind that not all states are similarly well-informed about the issues the ATT process is intended to tackle, and each may have national concerns—something that hopefully the open-ended working group (OEWG) charged with considering elements for inclusion in an ATT could help, although many other efforts would be needed.

Among the major challenges confronting those seeking to regulate the global trade in conventional arms, including small arms and light weapons (SALW), is the difficulty of framing the issues at stake in humanitarian terms and focusing the debate on the human cost. Several participants in Glion argued that, without detracting from the importance of the issues or the ATT initiative, it was currently questionable whether available data and research powerfully support a humanitarian discourse. As regards SALW, because they are considered necessary to fulfil a state's core functions, such as upholding public order and ensuring external defence, and because in many countries private possession of arms is considered legitimate, reversing the presumed legitimacy of arms availability and their trade (as we have seen with landmines and cluster munitions) would be very challenging.

In order to achieve a meaningful result in humanitarian terms, some

participants argued there needs to be a sense that the humanitarian crisis caused by the weapon must be addressed in an urgent, time-bound manner. The availability of data about the humanitarian impact of weapons plays a significant role in convincing others of the existence of a crisis. One view expressed was that efforts to curb the global trade in conventional arms currently lacks a sense of urgency or crisis and some of the more contentious and complex issues have not yet been tackled adequately. In addition, and unlike the Ottawa and Oslo processes, work on small arms proliferation and on the trade in conventional arms does not (yet) reflect a widely perceived inability to deal with these issues adequately in traditional disarmament forums: an OEWG has been established to carry forward consideration of an ATT and, despite the procedural failure of its 2006 review meeting, work continues in the UN to implement and monitor the 2001 UN Programme of Action on Small Arms and Light Weapons. But constraints on these respective processes raise questions as to whether and how meaningful results can be achieved in a timely manner, and how actors both within and currently outside such processes can be usefully mobilized.

Current work on SALW spans multiple issue areas, defying the formulation of a clear, unifying objective. For this reason, advocacy for a single legal instrument to address the problems of armed violence caused by SALW does not seem realistic or appropriate. Which lessons from the Ottawa and Oslo processes should be transposed into this area was vigorously debated, although many participants stressed that effective communication of clear objectives is key to building political momentum, and a number of "lessons" from Ottawa were cited such as use of solid data, civil society "monitoring" of state behaviour, and drawing on field expertise of different kinds.

Reducing the global burden of armed violence—legitimacy through the involvement of the affected and of practitioners. Efforts to reduce the global burden of armed violence do not aim at singling out a particular weapon. By focusing on actors ("victims" of violence and their perpetrators), instruments, contexts, and institutions, they try to address various aspects of armed violence in a multifaceted, cross-sectoral manner. This makes them different from the Ottawa and Oslo processes, which were both focused on the prohibition of a specific weapon based on its deleterious humanitarian effects. For instance, gender aspects and the problem of sexual violence were not at the centre of the debate on landmines and cluster munitions.

Parallels with the Ottawa and Oslo processes could be drawn, however. The 2006 Geneva Declaration on Armed Violence and Development resulted from a perceived failure in disarmament forums to frame SALW as a public health, development and humanitarian problem; hence, the Geneva Declaration's objective to shift the focus of the debate to the human consequences of armed violence. For this, accurate data and in-depth research are important, but it is not certain whether they have contributed to informing a human-centred debate and effective development programming so far. To mobilize people, concrete, tangible, and achievable goals and benchmarks would need to be communicated clearly, and partnerships built among a wide range of actors, in order to better involve different practitioner communities. Gaps between those communities, like those between practitioners active in disarmament and those working in development, should be bridged. Greater informal dialogue and a common vocabulary would help.

A science of human security. An emerging conceptual approach to thinking about issues of armed violence considers prevention in a holistic way using a public health perspective. Enormous challenges to capturing adequate data about weapons use exist. However, if one accepts that acts of armed violence have public health outcomes, it is possible to begin to examine risk factors. By analysing such risk factors—particularly the relationship between victims and perpetrators of armed violence—it is possible to construct tools for dialogue and data gathering that could be described as potential elements of a "science of human security". Such tools could help to identify risk reduction measures as well as show that these can have synergistic effects. For example, in analysis and media coverage of acts of armed violence using explosives, the issues are usually framed with emphasis on seeking the causes for these acts. Another question worth asking and then proceeding from in the sense of risk reduction is: where do the explosives used in the attacks come from?

Stigmatizing the use of explosive force in populated areas. In a related approach, NGO data collection and analysis on the use of explosive force in populated areas suggests that some common concepts and assumptions about armed violence should be questioned. Although states conceptualize them as such, explosive weapons (such as bombs that project explosive force and fragment in an area at a certain time from a central point and so have some area effect—i.e. not bullets) are not recognized as a coherent category

within existing international legal frameworks. Moreover, states seem to accept that explosive weapons are unacceptable in normal circumstances, but that in "special circumstances," like in conflict, the use of such weapons is acceptable against foreign civilians (governments do not usually use such weapons in proximity to their own populations). This raises questions about government accountability, and about whether such a distinction in circumstances (and thus acceptability) should be made, especially as a recent exercise in data collection showed the majority of casualties from incidents involving explosive force were non-combatants. Lessons can be drawn from the Ottawa and Oslo processes with regard to research and data production and in order to decide what precisely should be stigmatized and what role legally binding instruments could play in this context.

Dealing flexibly with weapons contamination. The scale and difficulty of their tasks are increasingly compelling operational organizations dealing with landmines or unexploded submunitions posing hazard to civilians post-conflict to reconceptualize what they do (or should do) in broader terms. In particular, while mine action terminology and doctrine have become dominant, flexible operational approaches need to be maintained; that is, anything that has indiscriminate effect or long-term post-conflict impact is of concern, not just certain weapons and their consequences. Some lateral thinking is also required: for instance, in Cambodia, many people had been killed because economic need led them to interact with unexploded ordnance; perhaps this phenomenon could be alleviated by measures such as microfinance schemes as much as conventional battle area clearance. It was observed that thinking about explosive force in broader terms and analysing armed violence in terms of risk reduction (as summarized in the preceding points) was useful, not least because it showed the complexity of the challenges facing practitioners dealing with problems of armed violence on the ground. And, it suggested ways to approach the exercise of identifying means of improvement in delivering effective humanitarian response.

Room for greater synergy

Despite differing viewpoints about specific aspects and lessons to be adopted, adapted, or avoided between the Ottawa process, the Oslo process, and other initiatives, the general opinion emerged that ongoing and future work in multilateral disarmament and arms control needs to proceed from an awareness of these recent cases. Some practical reasons identified were:

- In order to frame issues in a manner that ties into existing discourses and allows urgent and effective humanitarian action.
- So as to avoid "reinventing the wheel". For instance, conceptual work on issues around explosive force, although still in its early days, has built on how the effects of weapons on civilians were dealt with in the Oslo process. Moreover, work on victim assistance in one field could benefit survivors more generally as the Mine Ban Treaty experience did in the negotiation of the CCM.
- In order to optimize resources, so as not to overstretch governments and campaigners involved in more than one initiative.
- To offer examples to traditional disarmament forums, such as the CCW and the Conference on Disarmament (CD), which are not impervious to outside influence—although they may sometimes seem so. Humanitarian disarmament initiatives show that productive work is possible even in difficult security environments, and that focus on clearly defined goals pursued within definite time frames and flexible processes yields results. The CCW and CD are not like-minded processes, and they are consensus-based: many participants felt that consensus should not be sought at all costs.

Final thoughts and future directions

Although the Oslo process is certainly not a replica of the Ottawa process, the two are similar in some significant ways. The achievement of the CCM seems to suggest that the Ottawa process was not a one-off fluke, and that the Mine Ban Treaty's achievement was not mainly or solely due to circumstantial factors, such as the end of the Cold War.

Although other initiatives differ from the Ottawa and Oslo processes,

most participants thought that some key elements of the anti-personnel mine and cluster munition ban campaigns could be adopted and adapted to other contexts. It would appear from the Glion symposium's discussions that important lessons have already been drawn and adopted in the other initiatives discussed in order to try to reframe how issues are dealt with in arms control forums, improve campaigning and build alliances—although the applicability of such lessons would clearly vary. Some participants, with a view to the future, suggested that whether and which lessons from the Ottawa and Oslo experiences are transferable to the nuclear disarmament field was an important question, since these efforts appear to be approaching a critical juncture.

Discussions at the Glion symposium also suggested that singling out one weapon category after another may not be sustainable in the long run, considering the continual emergence and evolution of new weapons technologies as well as concerns about weapons proliferation and availability generally. A fundamental shift in thinking about armed violence, along with more preventive approaches, is called for. The armed violence "umbrella" may provide a means to group different initiatives together, around which common vocabulary can be developed—thus also drawing attention to some areas, such as socio-economic "drivers", which have not been to the fore in the Ottawa and Oslo processes to date. It was suggested by some participants that a possible vision for the future might be a "Framework Convention on Human Security" under which a range of initiatives, from those strictly focusing on particular weapons to those attempting to deal directly with the "drivers" of armed violence might be included.

The scarce results achieved in traditional disarmament and arms control forums over the last decade signal serious problems with "business as usual" in multilateral disarmament. Although, as the Ottawa and Oslo processes suggest, like-minded initiatives emerging from the failure of traditional disarmament processes can be successful, such ad hoc initiatives are not in themselves a comprehensive prescription for strengthening disarmament or humanitarian law, or alleviating human insecurity, in the face of all forms of armed violence.

Root and branch reform of multilateral disarmament and arms control mechanisms is needed to foster creative problem-solving and better ensure that processes are aligned to security goals rather than simply shaped by

the dictates of established process, which as a decade of CD deadlock has shown, can obstruct meaningful progress. Hopefully, the examples set by recent initiatives like the Mine Ban Treaty and the CCM will inspire greater reflection and prompt more creativity and flexibility—to learn, adapt, and eventually succeed.

Recommendations

- When thinking about their work, government representatives working on nuclear disarmament issues should consider what might be learned from recent international initiatives to address the human impacts of other weapons. These include the Ottawa and Oslo processes on anti-personnel mines and cluster munitions respectively, which each "re-framed" the discourse and acceptability of these weapons in broader terms than before. Although these are, of course, very different from the nuclear disarmament context, focusing on evidence of the human impacts of weapons alongside their purported military advantages or technical characteristics, engaging civil society, shifting the burden of proof for the continued acceptability of a weapon onto users and producers, and building legitimacy through inclusion of a diverse range of actors were all important to success on these issues. These factors also helped in overcoming the obstacles in traditional multilateral forums preventing effective progress in addressing the problems the existence and use of such weapons create.
- Civil society actors should also consider lessons from other international initiatives to deal with armed violence, with attention to those related to campaigning and building alliances. Gaps between various communities, like those between practitioners active in disarmament and those working in areas such as development, public health, and the environment should be bridged. Greater informal dialogue and a common vocabulary would help.
- Both governments and civil society should develop a discourse that draws attention to the impact of the development, production, deployment, and use of nuclear weapons rather than accepting untested claims or assumptions favouring intertia.

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Chapter 3: US-UK nuclear sharing: deterring disarmament

1 Linton F. Brooks, "The Future of the 1958 Mutual Defence Agreement," in *U.S.-UK Nuclear Cooperation After 50 Years*, Jenifer Mackby and Paul Cornish (eds.), Washington, DC: Center for Strategic International Studies, 2008, p. 153.

2 Project on Nuclear Issues (PONI) interview with John Harvey, Policy Director National Nuclear Security Administration, Center for Strategic International Studies, 2008, at <http://csis.org/program/us-uk-nuclear-cooperation-after-50-years>.

3 There are three armed Vanguard class submarines. Although they have 16 launch tubes they normally each carry around 14 Trident D5 missiles and 48 nuclear warheads. A fourth submarine is normally in refit.

4 One small difference between Red Snow and Mk-28 was that Red Snow used British high explosive. Red Snow had many components purchased off-the-shelf from the United States.

5 Unpublished research on documents in The National Archive.

6 Mackby and Cornish, supra note 1.

7 PONI interview with Richard Wagner, CSIS, 2008, supra note 2.

8 PONI interview with Siegfried Hecker, CSIS, 2008, supra note 2.

9 PONI interview with Glen Mara, CSIS, 2008, supra note 2.

10 Ibid.

11 Mackby and Cornish, supra note 1, p. 284.

12 PONI interviews with Frank Miller and John Harvey, CSIS, 2008, supra note 2.

13 US nuclear targeting data is supplied to the UK Liaison Office at USSTRATCOM in Omaha Nebraska who then pass it on to Corsham Computer Centre in Wiltshire and the Nuclear Operations and Targeting Centre in London. CJCSI 3231 obtained under the Freedom of Information Act.

14 Contracts refer to General Dynamics Advanced Information System providing Trident software to the UK Shore Facility.

15 Hansard, Commons, 3 December 2009, Col 911W, Reply by Bob Ainsworth to question from Angus Robertson. This was only disclosed after Sandia Laboratory revealed that they had sent 14 NGs to the UK in 2008.

16 Components are procured from the US because this is "cost effective". *The Future of the United Kingdom's Nuclear Deterrent*, MOD/FCO, Cm 6994, December 2006, p. 30.

17 *Plutonium and Aldermaston: an historical account*, Ministry of Defence, 2000, at <http://www.fas.org/news/uk/000414-uk2.htm>.

18 Hansard, Commons, 18 January 2010, Col 17W, Reply by Bob Ainsworth to question from Dai Davies.

19 Aldermaston in Berkshire is the main site of the AWE. There is a second site nearby at Burghfield, where the final assembly of weapons and the manufacture of some non-nuclear components is carried out.

20 Quargel Test, 18 November 1978, 47 kiloton. The National Archives, DEFE 25-335 E37.

21 PONI interview with Frank Miller, CSIS, 2008, supra note 2.

22 The Department of Energy name for the warhead, W76, and the Department of Defence name for the re-entry vehicle, Mk4, are often used interchangeably.

23 Hansard, Commons, 28 March 2007, Col 1542W, Reply by Des Browne to question from Nick Harvey. Replies to earlier questions had been evasive. The admission only came after a story had been published in the *Guardian* newspaper based on information released in error by AWE.

24 Joint DoD/DoE Trident Mk4/Mk5 Reentry Body Alternate Warhead Phase 2 Feasibility Study, January 1994.

25 Military Characteristics of the Mk4A warhead, DoD/DoE Trident Mk4/Mk5 Phase 2 Study, January 1994.

26 Vacancy for Deputy Team Leader for Weapons Integration on careers.awe.co.uk in 2006.

27 Hansard, Commons, 8 December 2009, Col 214W, Reply by Quentin Davies to question from Angus Robertson. The expenditure of an average of £1 billion per year over the next three years on AWE was in a written statement by Quentin Davies—see Hansard, Commons, 9 September 2009, Col 136W.

28 Audio recording of PONI interview with John Harvey; The Defence Minister denied that the scope of the MDA had not been extended in 2004—Hansard, Commons, 2 March 2009, Col 1370W, Reply to question from Nick Harvey.

29 PONI interview with Frank Miller, CSIS, 2008, supra note 2.

30 Jeffrey Lewis, "High Surety Warhead," ArmsControlWonk.com, 23 August 2007, at <http://www.armscontrolwonk.com/1619/high-surety-warhead>.

31 Hansard, Commons, 19 November 2007, Col 482W, Reply by Des Browne to question from Nick Harvey.

32 Hansard, Commons, 2 March 2009, Col 1370W & 23 March 2009, Col 18W, Replies by John Hutton to questions from Nick Harvey.

33 PONI interview with Glen Mara, CSIS, 2008, supra note 2.

34 NNSA budget for FY2011, Weapons Activities/Engineering/Enhanced Surety.

35 Joint Services Publication 538: Regulation of the Nuclear Weapons Programme, Ministry of Defence, 2008.

36 "You have to have something to trade to get the Americans interested." Kate

Pyne, AWE archivist, speaking at Cabinets and the Bomb, at <http://www.britac.ac.uk/pubs/review/perspectives/0703cabinetsandbomb-2.cfm>.

37 Don Cook was appointed Deputy Administrator for Defence Programs, NNSA in December 2009.

38 Mackby and Cornish, supra note 1, p. 155.

39 Mackby and Cornish, supra note 1, p. 183.

40 PONI interview with Stanley Orman, ex AWE, CSIS, 2008, supra note 2. When asked about this, Defence Minister John Hutton confirmed that joint UK/US hydrodynamic experiments have been carried out. See Hansard, Commons, 27 February 2009, Col 1151W, Reply to question from Nick Harvey.

41 "The two facilities ... have similar missions in their respective countries." Report of information exchange visit by AWE to Y12. See BWXTymes (Y12 newsletter), February 2006.

42 There are contracts to modernize the Fire Control System to Mk98 Mod5(US)/Mod6(UK) in 2010 and then to Mod7(US)/Mod8(UK). US and UK navigation systems will be upgraded in the middle of this decade. The Mk6 Guidance system is currently being modernized as part of the Trident D5 Life Extension Project, which the UK has bought into. Contracts published on www.fbodaily.com.

43 US Navy Budget for FY2011.

44 Evidence to the Seapower Subcommittee of the House Armed Services Committee, 20 January 2010.

45 *The Future of the United Kingdom's Nuclear Deterrent*, MOD/FCO, Cm 6994, December 2006.

46 Evidence by Loren Thompson, Lexington Institute, to the Seapower Subcommittee of the House Armed Services Committee, 20 January 2010.

47 The Liberal Democrats now have a policy of opposition to a like-for-like replacement for Trident. Both the Labour and Conservative parties support the replacement of Trident but many MPs in both parties are calling for consideration of a cheaper option.

48 The Scottish National Party is opposed to nuclear weapons as are many elected representatives in other political parties along with Scotland's churches and trade unions.

49 David Ormand, former MOD official, Cabinets and the Bomb seminar, at <http://www.britac.ac.uk/pubs/review/perspectives/0703cabinetsandbomb-2.cfm>.

50 PONI interview with Tim Hare, CSIS, 2008, supra note 2.

51 Ibid.

52 Obituary for Charles Martin, *Independent*, 8 April 1999, at <http://www.independent.co.uk/arts-entertainment/obituary-charlie-martin-1085802.html>.

53 PONI interview with Stanley Orman, ex AWE scientist,, CSIS, 2008, supra note 2.

54 PONI interview with John Harvey, CSIS, 2008, supra note 2.

55 PONI interview with Frank Miller, CSIS, 2008, supra note 2.

56 Berhanykun Andemicael, Merle Opelz, and Jan Priest, "Measure for measure: The NPT and the road ahead," *IAEA Bulletin*, Volume 37, No. 3, 1995.

57 John Burroughs, "Two Legal Issues Confronting NATO and the Non-Proliferation Regime," Lawyers Committee on Nuclear Policy, 3 May 1999, at <http://lcnp.org/disarmament/npt/nato.htm>.

58 "Mutual Defence Agreement and the Nuclear Non Proliferation Treaty," Joint Advice by Rabinder Singh QC and Professor Christine Chinkin to BASIC, the Acronym Institute for Disarmament Diplomacy, and Peacerights, 20 July 2004, at <http://www.basicint.org/nuclear/MDAlegal.htm>.

59 Mutual Defence Agreement 1958, as amended 1994, article 3.

60 "Mutual Defence Agreement and the Nuclear Non Proliferation Treaty," supra note 58.

Chapter 4: Nuclear energy and the fuel chain: shackling progress toward a nuclear weapon free world

1 The Model NWC was published in 2007 in *Securing Our Survival: The Case for a Nuclear Weapons Convention*, Cambridge, MA: International Physicians for the Prevention of Nuclear War, International Association of Lawyers Against Nuclear Arms, International Network of Engineers and Scientists Against Proliferation, 2007. It was submitted to the NPT Preparatory Committee in 2007 by the governments of Costa Rica and Malaysia.

2 *The Future of Nuclear Power: An Interdisciplinary MIT Study*, Cambridge, MA: Massachusetts Institute of Technology, 2003, at <http://web.mit.edu/nuclearpower/>. MIT published an update to this report in 2009.

Chapter 5: The US-India nuclear deal: violating norms, terminating futures

1 "Bush Enacts Civil Nuclear Agreement with India," *Environmental News Service*, 18 December 2006.

2 Zia Mian, A.H. Nayyar, R. Rajaraman, and M.V. Ramana, "Fissile Materials in South Asia: The Implications of the U.S.-India Nuclear Deal," *International Panel on Fissile Materials Research Report #1*, September 2006.

3 Ashley Tellis, "India as a New Global Power: An Action Agenda for the United States," Carnegie Endowment for International Peace, Washington, DC, 2005.

4 "A Gaping Hole in the Non-Proliferation Treaty: Disarmament network deplores decision of the Nuclear Suppliers Group," IPPNW-Europe, at <http://www.ippnw-europe.org/?expand=359&cHash=317853fe50>.

5 Just a few weeks earlier, the two countries had agreed to a "New Framework for the US-India Defense Relationship. The "New Framework" called for increased military cooperation across a wide range of activities, from joint exercises and intelligence exchanges to increased weapons trade to collaboration in missile defence development. See "New Framework for the U.S.-India Defense Relationship," Embassy of India Press Release, Washington, DC, 28 June 2005, at <http://www.indianembassy.org/press_release/2005/June/31.htm>.

6 The US private sector members of the Agricultural Knowledge Initiative governing board represent Archer Daniels Midland, Monsanto, and Walmart. See http://www.fas.usda.gov/icd/india_knowl_init/board.asp. India provides a complementary set of business representatives: ITC, Venkateshwara Hatcheries, and Firoze Masani (a leading cut flower exporter).

7 "US-India Strategic Economic Partnership," US India CEO Forum March 2006, pp. 20–22, at <http://www.usindiaceoforum.com/pdf/USIndia.pdf>.

8 "U.S.-India Economic Dialogue: U.S.-India Financial and Economic Forum," Fact Sheet, Department of Treasury Washington, DC, 2 March 2006.

9 The meltdown in the US financial markets should raise the question of whether a global development path driven by private finance capital is sustainable even for the general run of capitalists. As Willem Buiter, former chief economist of the European Bank for Reconstruction and Development, put it,

> The argument that financial intermediation cannot be entrusted to the private sector can now be extended to include the new, transactions-oriented, capital-markets-based forms of financial capitalism. The risk of a sudden vanishing of both market liquidity for systemically important classes of financial assets and funding liquidity for systemically important firms may well be too

serious to allow private enterprises to play. No doubt the socialisation of most financial intermediation would be costly as regards dynamism and innovation, but if the risk of instability is too great and the cost of instability too high, then that may be a cost worth paying." Willem Buiter, "The end of American capitalism (as we knew it)," openDemocracy, 20 September 2008.

10 "U.S. India Joint Statement," US Department of State Bureau of Public Affairs, 20 July 2009.

11 Mark Landler, "Seeking Business Allies, Clinton Connects With India's Billionaires," *New York Times* (internet edition), 19 July 2009.

12 Praful Bidwai and Achin Vanaik, *New Nukes: India, Pakistan, and Global Nuclear Disarmament,* New York: Interlink Books, 2000, p.136.

13 William J. Burns, Statement to the Senate Foreign Relations Committee hearing on "The U.S.-India Civil Nuclear Cooperation Initiative," 18 September 2008.

14 Amulya K N Reddy, "Goals, Strategies and Policies for Rural Energy," *Economic and Political Weekly*, 4 December 1999.

15 M. V. Ramana and J. Y. Suchitra, "Slow and Stunted: Plutonium Accounting and the Growth of Fast Breeder Reactors," *Energy Policy*, Forthcoming, doi:10.1016/j.enpol.2009.06.063.

Chapter 6: Nuclear futures for the Middle East: impact on the goal of a weapons of mass destruction-free zone

1 Shimon Yiftah, *The Nuclear Age in the Middle East* [in Hebrew], Tel Aviv: Am Oved Publishers, 1976.

2 Ibid., p. 8.

3 For the purposes of this article, the Middle East is considered as including Iran, Israel, and the members of the League of Arab States, i.e. Algeria, Bahrain, Comoros, Djibouti, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Palestine (representatives of the Palestine Liberation Organization were recognized in 1976), Qatar, Saudi Arabia, Somalia, Sudan, Syria, Tunisia, United Arab Emirates, and Yemen (Comoros, Somalia and Sudan are not generally considered to be within the Middle East for the purposes of NWFZ discussions).

4 UN General Assembly resolution 3263 (XXIX), 9 December 1974.

5 Alan Dowty, "Making 'No First Use' Work: Bring All WMD Inside the Tent," *The Nonproliferation Review*, vol. 8, no. 1, Spring 2001, pp. 79–85.

6 Ahmed Esmat Abdel Meguid, Deputy Prime Minister and Minister of Foreign Affairs of Egypt, Letter dated 19 April 1990, CD/989, 20 April 1990.

7 See, for example, UN Security Council resolution 687 (1991), 3 April 1991.

8 Resolution on the Middle East, in 1995 Review and Extension Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, *Final Document: Part I*, NPT/CONF.1995/32 (Part I), Annex; 2000 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, *Final Document: Volume I, Part I*, UN document NPT/CONF.2000/28 (Parts I and II).

9 This is the most recent statement of Israel's position: "Israel remains committed to a vision of the Middle East developing into a zone free of Chemical, Biological and Nuclear weapons as well as ballistic missiles. Yet we are also realistic enough to know that in the current realities of the Middle East, this noble vision is not going to materialize any time soon." Mr. Meir Itzchaki, Representative of Israel to the Conference on Disarmament, "The Establishment of a NWFZ in the Middle East: Explanation of Vote", New York, 9 October 2007.

10 Michael Barletta and Erik Jorgensen, "Weapons of Mass Destruction Capabilities in the Middle East," Center for Nonproliferation Studies, 1998, at <http://cns.miis.edu/wmdme/capable.htm>.

11 Ibid.

12 "Sarkozy Pushes for Nuclear Energy in MidEast", *Washington Post*, 20 January 2008.

13 Ibid.

14 "BAE Confirms £5bn Eurofighter Sale to Saudi Arabia", *The Times*, 19 August 2006.

15 The United States' seemingly conflicted position on Arab states' acquisition of civil nuclear technology also deserves mention, though further analysis is beyond the scope of this article.

16 Chairman's Working Paper, Preparatory Committee for the 2010 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, UN document NPT/CONF.2010/PC.I/WP.78, 11 May 2007, paragraph 40. See also Statement by HE Ambassador Norma Golcochea Estenoz (Cuba) on behalf of the Group of Non-Aligned States Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, Preparatory Committee for the 2010 Review Conference, 30 April 2007.

17 William J. Broad and David E. Sanger, "Fearing Iran, Arab States Seek Nuclear Power," *International Herald Tribune*, 15 April 2007.

18 "Israel Special Weapons Guide: Nuclear Weapons Stockpile," GlobalSecurity.org, at <http://www.globalsecurity.org/wmd/world/israel/nuke-stockpile.htm>.

19 This view is reflected in NPT documents and the annual General Assembly resolution "The risk of nuclear proliferation in the Middle East" (sponsored by a number of Arab States), as well as annual requests for inclusion of an item on "Israeli Nuclear Capabilities and Threat" in the IAEA's General Conference agenda. See, for example, UN General Assembly resolution 62/56, 5 December 2007, A/RES/62/56, 15 January 2008; GC(51)/1/Add.1, 16 July 2007, and responses (documents GC(51)/25, 14 September 2007; GC(51)/32, 20 September 2007.

20 The Arab Peace Initiative is a proposal endorsed by the Arab League, which offers peace and normalization of relations with Israel through a process of negotiation that addresses core outstanding issues such as Palestinian refugees' right of return and the status of Jerusalem. Israel has not accepted the offer to negotiate regional peace through this initiative because of disagreement over these core issues, although they are points of negotiation, not preconditions.

21 Strategic depth refers to the availability of territorial space to wage offensive and defensive operations.

22 Rebecca Johnson, "Rethinking Security Interests for a Nuclear-Weapon-Free Zone in the Middle East," *Disarmament Diplomacy* 86, Autumn 2007.

23 The terms "hard security" and "soft security" are used to distinguish between military security and underlying human needs that lead to insecurity, such as development, education and health. The terminology is problematic because the separation of these concepts, with the resulting separation of expertise and tendency to prioritize hard over soft security, undermines efforts and capacities to address root causes of all instability and conflict. The concept of "human security" seeks to address this link between defence and human needs.

24 "Energy [R]evolution—A Pathway to a Sustainable Clean Energy Future for the Middle East," Greenpeace, 2007, at <http://greenpeace.org/raw/content/mediterranean/reports/energy-r-evolution-a-pathwa.pdf>. See also "Egypt and the Great Energy Debate," Greenpeace, 2007, at <http://greenpeace.org/raw/content/mediterranean/reports/egypt-and-thegreat-energy-deb.pdf>.

25 Felicity Hill, *Time for a Comprehensive Fissile Material Treaty*, Greenpeace International, 2006, at <http://greenpeace.org/raw/content/international/press/reports/comprehensive-fissile-material.pdf>.

26 *Weapons of Terror: Freeing the World of Nuclear, Biological and Chemical Arms*, Stockholm: Weapons of Mass Destruction Commission, 2006, recommendation 12.

27 Minister Plenipotentiary Amr Aboul, Deputy Permanent Representative of

Egypt to the United Nations, Statement by Egypt at the Conference on Facilitating the Entry into Force of the CTBT, New York, 23 September 2005.

28 Dr Itshak Lederman, Senior Director for CTBT Affairs and Special Projects, Statement at the Conference on Facilitating the Entry into Force of the Comprehensive Nuclear Test Ban Treaty, Vienna, 18 September 2007.

29 This proposal and the analysis that follows draw on Eitan Barak, "Regional No First Use Treaty: First Step in the Right Direction?" presented at a Greenpeace seminar, Tel Aviv, Israel, 15 February 2007, and on a forthcoming paper by Eitan Barak and Merav Datan.

30 Jez Littlewood, "Strengthening the Role of the BTWC and CWC," in *Building a Weapons of Mass Destruction Free Zone in the Middle East: Global Non-Proliferation Regimes and Regional Experiences*, Geneva: UNIDIR and League of Arab States, 2004, p. 26.

31 Note Verbale dated 19 June 1995 from the Embassy of the lslamic Republic of Iran, together with Written Statement of the Government of the Islamic Republic of Iran, International Court of Justice, Legality of the Threat or Use of Nuclear Weapons, at <www.icj-cij.org/docket/files/95/8678.pdf>.

32 "Arab League Reiterates Rejection of Chemical Arms Ban Treaty," *Xinhua General Overseas News Service*, 8 March 1993, cited in Nuclear Threat Initiative, 2007, "Israel Chemical Chronology," 1948–2003, at <http://www.nti.org/e_research/profiles/Israel/Chemical/3664.html>.

Chapter 7: Iran's challenge to the nuclear order

1 Summarized in Anthony H. Cordesman and Abdullah Toukan, "Study of a possible Israeli strike on Iran's nuclear development facilities," Center for International and Strategic Studies, 19 March 2009.

2 For example, see "Ronald Reagan CSG Operating in 5th Fleet," Milcom Monitoring Project, 18 September 2009, at <http://mt-milcom.blogspot.com/2009/09/ronald-reagan-csg-operating-in-5th.html>.

3 The street demonstrations of June and July 2009 have been displaced by subtler forms of protest, including "virtual" gatherings on the Internet. See Max Burns, "The Iranian opposition's second life," *Foreign Policy in Focus*, 27 August 2009.

4 In this context, the Iranian government is not doing itself any favours by insisting upon reverting to implementing a pre-2003 safeguards procedure that required it to disclose new nuclear facilities only 180 days before it introduced nuclear material for the first time. See *Implementation of the NPT safeguards*

agreement and relevant provisions of Security Council resolutions 1737 (2006), 1747 (2007), 1803 (2008) and 1835 (2008) in the Islamic Republic of Iran, Resolution adopted by the IAEA Board of Governors, GOV/2009/82, 27 November 2009.

5 *Implementation of the NPT Safeguards Agreement and relevant provisions of Security Council resolution 1737 (2006), 1747 (2007) and 1803 (2008) in the Islamic Republic of Iran*, Report by the IAEA Director General, GOV/2010/110, 18 February 2010.

6 Alan J. Kuperman, "There's only one way to stop Iran", *New York Times*, 23 December 2009.

7 The use of the term "reification" here is admittedly somewhat approximate, since it has complex and precise meanings in the realm of political theory. See, for example, Kevin Gotham and Daniel Krier, "From Culture Industry to the Society of the Spectacle: Theoretical Affinities of the Frankfurt School and the Situationist International," Paper presented at the annual meeting of the American Sociological Association, San Francisco, CA, 14 August 2004; see generally Georg Lukács, *History and Class Consciousness*, London: Merlin Press, 1967.

8 It is with Iran that the problem of nuclear reification achieves its clearest expression. For Iran, the nuclear fuel programme has acquired attributes far beyond its economic or social value. It is like an expensive colony that produces little, but bestows status, shows the flag, and bespeaks of Iran's considerable technical capabilities. The negative attraction garnered by the nuclear programme has justified the growth and centralization of power among state and semi-state actors in Iran's complex government, particularly in the defense establishment. As many governments have learned throughout modern history (starting with 1792 France or 1918 Russia), nothing sustains the survival of a revolutionary government like the threat of external interventionism, particularly from an historic adversary such as the United States.

9 Described in Michael Veiluva and Jacqueline Cabasso, "Up for sale: bidding for management of the nuclear weapons laboratories," Western States Legal Foundation Special Report, Fall 2004, at <http://wslfweb.org/docs/upforsale.pdf>.

10 For example, see "Complex 2030: A Preferred Infrastructure Planning Scenario for a Nuclear Weapons Complex Able to Meet theThreats of the 21st Century," National Nuclear Security Administration, May 2006; *Complex Transformation1 Supplemental Programmatic Environmental Impact Statement*, Summary, National Nuclear Security Administration, December 2007.

11 For example, see Carl Conetta, "An undisciplined defense: understanding the the $2 trillion surge in US defense spending," Briefing Report #20, Project on Defense Alternatives, Commonwealth Institute, 18 January 2010. The article

addresses the economic costs of the post-9/11 military budgets, including increased reliance on expensive weapons systems and contract labour.

12 As Iran's negotiations with the West collapsed in 2009, India emerged as a significant participant in the diplomatic tug-of-war over Iran's nuclear future. It appears that a portion of India's elites are angling to exploit Iran's discomfiture to "go legit" by signing the NPT and becoming the sixth declared nuclear weapon state on a par with France and China.

India is, of course, a première example of the weaknesses inherent to the NPT, since it never signed the Treaty and became the first post-Treaty nation to openly acquire nuclear weapons through an indigenous programme. The US explicitly legitimized India's nuclear arsenal by completing the "123 Agreement" whereby India would agree to restricted monitoring of its civilian programme in exchange for trade concessions and technology transfers. The Bush II administration rationalized that the 123 Agreement recognized the de facto status of India as part of the established nuclear order and the close affinity between the industrial captains in the two nations.

As a historic leader of the NAM with not only nuclear technology but an overt nuclear weapon programme of its own, India had been sympathetic to Iran's arguments that the intrusive examinations following the 2002 disclosure were an affront to national sovereignty. India remains a reluctant observer to UN Security Council sanctions against Iran over the latter's nuclear programme, given India's own resistance to outside monitoring and India's expanded trade relations with the Islamic Republic. India's official position is that it will not sign the NPT which it contends is a "discriminatory" treaty that allows some countries to retain nuclear weapons while others cannot. (See "India will not adhere to discriminatory treaty," *Indian Express*, 25 September 2009; "India will not sign NPT in its present form," *The Hindu,* 6 April 2009.) Unless the NPT is amended to recognize India's status, which would exempt it from IAEA monitoring of civilian programmes under Article III, there is no possibility of India's consideration of the treaty.

India's example thus displays the corrosive dual nature of nuclear weapons, both domestically and internationally. As long as nuclear weapons are universally considered by friends and foes as a measure of national virility, elites in developing nations will find it increasingly difficult to resist the siren song of weaponization. Nuclear weapons programmes are further anti-democratic and elitist; they require secretiveness and a highly sophisticated and centralized national security apparatus. They also share attributes with other grand-scale technology projects by funneling wealth and status to a select cadre within the economy. These same factors doubtless hold Iran's elites bound to its own nuclear programme even in the face of international sanctions.

Iran's elites may have India's path to status well in mind. The two nations bear striking resemblances as highly educated, cosmopolitan regional states with

a history of non-aligned leadership. But unlike India, the US is determined to bar Iran's admittance to the nuclear club at virtually any price, due to a half century of military, diplomatic, and cultural conflict benefiting the upper sectors of both states, much as the historic cold war reinforced the stranglehold of military-industrial elites in the US and USSR.

For a far more comprehensive and insightful analysis, see Andrew Lichterman and MV Ramana, "The US-India nuclear deal: violating norms, terminating futures," chapter 5 in this book.

13 Shannon N. Kile, Vitaly Fedchenko and Hans M. Kristensen, "World nuclear forces," *SIPRI Yearbook 2009*, Stockholm: Stockholm International Peace Research Institute, 2009, pp. 375–377. As noted in the report, Israel is one of the most difficult to assess given its official policy, unlike India or Pakistan, of neither confirming nor denying that it is a nuclear weapons state.

14 Robert S. Norris and Hans Kristensen, "Nuclear Notebook: Pakistani nuclear forces, 2009," *Bulletin of the Atomic Scientists*, Vol. 65, No. 5, September/October 2009, p. 82. These are not necessarily all deployed.

15 Robert S. Norris and Hans Kristensen, "Nuclear Notebook: Indian nuclear forces, 2008," *Bulletin of the Atomic Scientists*, Vol. 64, No. 5, November/December 2008, p. 38. These are not necessarily all deployed.

16 Kile et al, supra note 34. Moreover, unlike the Soviet/North Korean design Iranian missiles, Israel's *Jericho* series missiles are solid-fueled, capable of "launch on warning".

17 Norris and Kristensen, supra note 14.

18 Norris and Kristensen, supra note 15.

19 Given this environment, Iran's leaders face a complex and challenging array of perceived threats beyond the existential "maybe" of a one or two possible weapons. This is the reason that every proposal from Iran addressing negotiation includes regional arms issues.

20 See, e.g. "Notice of the continuation of the national emergency with respect to Iran", US White House, 9 November 2006.

21 Iran's unique security posture stems from its post-revolutionary status as "neither East nor West," untethered to any particular superpower, yet in a critical resource-dominant part of the world. Iran presently faces asymmetrical Western-fuelled arms build-ups to the west (Israel) and south (Saudi Arabia and the UAE). To this situation must be added US occupation forces in next-door Iraq and NATO forces in Afghanistan. Bahrain, Qatar, and Oman have or continue to provide basing or ports-of-call for American ships and planes. Given the

extensive militarization of this immediate region, Iran's understandable concerns for its security cannot be simply wished away, especially since memories of US intervention toward the end of the Iran-Iraq war have not faded. See Nader Entessar, "Iran's Security Challenges," in Abbas Maleki and Kaveh Afrasiabi, *Reading in Iran Foreign Policy After September 11,* BookSurge Publishing, 2008.

22 "Iran: 20% uranium enrichment not against NPT, *Press TV*, 8 February 2010.

23 David Albright and Jacqueline Shire, "Iran's recent statements about production of fuel for the Tehran Research Reactor," Institute for Science and International Security, 8 February 2010.

24 "On Iran, Obama plans talk and some toughness," *New York Times*, 13 February 2010.

25 These sanctions may have less ultimate impact that widely believed. Iran's need to import gasoline is based upon a lack of historic refining capacity, which the Islamic Republic is addressing to the point where imports are expected to drop below 15%, and by 2012, Iran will become a net exporter. See Gal Luft, "The new Iran sanctions: worse than the old ones," *Foreign Policy*, 11 August 2009. See also Hossein Askari and Trita Parsi, "Throwing Ahmadinajad a lifeline," *New York Times*, 15 August 2009, in which they note that since Iran subsidizes both domestic and foreign produced gasoline to end consumers, the forced cutback of foreign-produced gasoline may actually free up government revenue for use elsewhere.

26 Article IV of the NPT recognizes the "inalienable right" of states parties to pursue peaceful atomic energy and to participate in technology exchange for such purposes. Article IV provides in pertinent part:

1. Nothing in this Treaty shall be interpreted as affecting the inalienable right of all the Parties to the Treaty to develop research, production and use of nuclear energy for peaceful purposes without discrimination and in conformity with articles I and II of this Treaty.

2. All the Parties to the Treaty undertake to facilitate, and have the right to participate in, the fullest possible exchange of equipment, materials, and scientific and technological information for the peaceful uses of nuclear energy. Parties to the Treaty in a position to do so shall also cooperate in contributing alone or together with other States or international organizations to the further development of the applications of nuclear energy for peaceful purposes, especially in the territories of non-nuclear-weapon States Party to the Treaty, with due consideration for the needs of the developing areas of the world.

See generally Wilke, "Nuclear Electric Power and the Proliferation of Nuclear Weapons States," *International Security* No. 3, Winter 1977, pp. 94-106.

27 NPT Article III provides additional provisions to implement compliance with the non-proliferation promises extracted from the non-nuclear weapons states

(non-NWS) under NPT Article II. It commits non-nuclear weapons states parties to a framework of inspection and transparency for their nuclear energy and fuel cycle research programmes. Such inspections are conducted by the IAEA. The nuclear weapon states parties further agree under the NPT to institute safeguards and controls to prevent the diversion of technology or materials into a nuclear weapons programme and to conclude agreements with the IAEA for this purpose. The text of Article III reads:

1. Each non-nuclear-weapon State Party to the Treaty undertakes to accept safeguards, as set forth in an agreement to be negotiated and concluded with the International Atomic Energy Agency in accordance with the Statute of the International Atomic Energy Agency and the Agency's safeguards system, for the exclusive purpose of verification of the fulfillment of its obligations assumed under this Treaty with a view to preventing diversion of nuclear energy from peaceful uses to nuclear weapons or other nuclear explosive devices. Procedures for the safeguards required by this article shall be followed with respect to source or special fissionable material whether it is being produced, processed or used in any principal nuclear facility or is outside any such facility. The safeguards required by this article shall be applied to all source or special fissionable material in all peaceful nuclear activities within the territory of such State, under its jurisdiction, or carried out under its control anywhere.

2. Each State Party to the Treaty undertakes not to provide: (a) source or special fissionable material, or (b) equipment or material especially designed or prepared for the processing, use or production of special fissionable material, to any non-nuclear-weapon State for peaceful purposes, unless the source or special fissionable material shall be subject to the safeguards required by this article.

3. The safeguards required by this article shall be implemented in a manner designed to comply with article IV of this Treaty, and to avoid hampering the economic or technological development of the Parties or international cooperation in the field of peaceful nuclear activities, including the international exchange of nuclear material and equipment for the processing, use or production of nuclear material for peaceful purposes in accordance with the provisions of this article and the principle of safeguarding set forth in the Preamble of the Treaty.

4. Non-nuclear-weapon States Party to the Treaty shall conclude agreements with the International Atomic Energy Agency to meet the requirements of this article either individually or together with other States in accordance with the Statute of the International Atomic Energy Agency. Negotiation of such agreements shall commence within 180 days from the original entry into force of this Treaty. For States depositing their instruments of ratification or accession after the 180-day period, negotiation of such agreements shall commence not later than the date of such deposit. Such agreements shall enter into force not later than eighteen months after the date of initiation of negotiations.

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The military capabilities of Iran provide copious opportunities for discussion among Western experts. A recent report by the think-tank Center for Strategic and International Studies concluded that Iran had no capability to launch an airstrike capable of reaching Israel (except, perhaps, if the option of returning to base is eliminated). Regarding ballistic missiles, the *Shahab-3* of North Korean lineage is understood to presently be capable of delivering a conventional warhead to Israel, but not Eastern Europe, where the Bush-era missile shield was to be located. See Anthony H. Cordesman and Abdullah Toukan, "GCC-Iran, Operational Analysis of Air, SAM, and TBM Forces," Center for Strategic and International Studies, 19 August 2009. The report notes that many of the military "assets" of Iran date from the Shah's expensive weapons buying spree during the Carter years. In an earlier report, Toukan and Cordesman (the latter frequently testifies before Congressional panels) found that a possible Israeli strike on Iran's nuclear facilities would be complex, uncertain of success, and would, *inter alia*, likely drive Iran into acquiring nuclear weapons. Abdullah Toukan and Anthony H. Cordesman, "Study on a Possible Israeli Strike on Iran's Nuclear Development Facilities," Center for Strategic and International Studies, 14 March 2009.

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Chapter 10: The relevance of gender for eliminating weapons of mass destruction

1 This paper is based on a presentation made by Carol Cohn and Felicity Hill to the WMD Commission in Stockholm, June 2005.

2 The ratio of women to men is extremely imbalanced in security and disarmament negotiations, which is increasingly considered relevant. In the ten years between 1992 and 2002, 33 women headed delegations to the review meetings of the NPT, compared to 660 men in that role. During the same period at the General Assembly First Committee on Security and Disarmament, women headed only 7% of country delegations. Out of 88 ambassadors in the Security Council between 1992 and 2005, only 4 have been women.

3 Women's organizations have protested nuclear weapons since the bombing of Hiroshima and Nagasaki and have campaigned for cessation of nuclear testing. When women activists collected baby teeth and had them tested for levels of strontium 90, it had a strong impact on public debate on nuclear issues in the USA. Women anti-nuclear activists have successfully closed nuclear weapons bases, such as the Greenham Common Women's Peace Camp in the United Kingdom, and engaged in concerted efforts that forced governments to change policies or create nuclear-weapon-free zones at the municipal level throughout the world. They have also monitored and lobbied international meetings on disarmament, such as the General Assembly's three Special Sessions on Disarmament, the Chemical Weapons Convention, the Comprehensive Nuclear-Test-Ban Treaty, and the First Committee of the General Assembly on Disarmament and International Security. The World Conferences on Women in 1975, 1980, 1985, and 1995 all mentioned disarmament and macro security issues because of strong advocacy on the part of women's organizations making linkages between gender issues and weapons issues, with the Beijing Declaration recognizing "the leading role that women have played in the peace movement, work[ing] actively towards general and complete disarmament under strict and effective international control, and support[ing] negotiations on the conclusion, without delay, of a universal and multilaterally and effectively verifiable comprehensive nuclear-test-ban treaty which contributes to nuclear disarmament and the prevention of the proliferation of nuclear weapons in all its aspects."

4 Scientists and researchers have found that women are more at risk of developing fatal cancer than men when exposed to the same ionising radiation exposure. Women's reproductive health is especially susceptible to the effects of radiation released from nuclear testing, as a National Cancer Institute study has documented, radioactive isotopes from nuclear testing have been found in every single county of the US. Pacific Island women who lived "downwind" from nuclear testing had high rates of still births and some babies born without bones or with other severe deformities such as transparent skin or displaced organs.

5 Though this rugged masculine image was convincing for many voters, its obvious construction for PR purposes laid it open to being lampooned, as illustrated by a cartoonist who portrayed Bush on that occasion as suffering from "premature ejaculation".

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in Miriam Cooke and Angela Woollacott, (eds.), *Gendering War Talk*, New Jersey: Princeton University Press, 1993 (from which this example is drawn).

7 This example comes from a meeting of civilian defence intellectuals, at which Carol Cohn was present as a participant observer.

8 "Bomb 'em back to the Stone Age" is a phrase from Air Force Chief of Staff General Curtis LeMay, whose idea of how the US should employ its nuclear weapons in the height of the Cold War did not exactly conform to the subtleties and complexities of the nuclear strategists of his time. The phrase is now commonly used, along with "make the rubble bounce," by a wide range of commentators on warfare, as a Google search will quickly reveal.

9 "We will find those who did it, we will smoke 'em out of their holes, we will get them running, and we will bring them to justice," was President George W. Bush's response to the bombing of the World Trade Centers in New York on 11 September 2001, at <http://www.npr.org/news/specials/tradecenter/tradecenter.html>

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Chapter 13: Towards a fissile material (cut-off) treaty

1 Natural uranium contains about 0.7% of the isotope uranium-235, and has to be enriched to more than 20% U-235 (defined as HEU) to be suitable to make a nuclear weapon. The Hiroshima bomb used HEU that had an average enrichment of 80% U-235, but the HEU in modern nuclear weapons is typically enriched to over 90% U-235, thus reducing the amount of material required.

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Chapter 14: Learn, adapt, succeed: potential lessons from the Ottawa and Oslo processes for other disarmament and arms control challenges

1 Participants came from diverse backgrounds and areas of work including armed violence, the arms trade, cluster munitions, conflict prevention, human security, humanitarian action, landmines, and small arms. Many participant had been involved in the Oslo process—as well as other disarmament-related multilateral work—and a few had also participated in the Ottawa process. This article provides a very brief synopsis of the Glion symposium's discussions. The full summary of the symposium, as well as information concerning Disarmament Insight and UNIDIR's Disarmament as Humanitarian Action project is available at <http://www.disarmamentinsight.blogspot.com>.

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