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Global Zero and Deterrence: Next Generation Views on the Road to a Post-Nuclear World

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Based in Honolulu, the Pacific Forum CSIS (www.pacforum.org) operates as the autonomous Asia-Pacific arm of the Center for Strategic and International Studies in Washington, DC. The Forum's programs encompass current and emerging political, security, economic, business, and oceans policy issues through analysis and dialogue undertaken with the region's leaders in the academic, government, and corporate arenas. Founded in 1975, it collaborates with a broad network of research institutes from around the Pacific Rim, drawing on Asian perspectives and disseminating project findings and recommendations to opinion leaders, governments, and members of the public throughout the region.

The Young Leaders Program

The Young Leaders Program invites young professionals and graduate students to join Pacific Forum policy dialogues and conferences. The program fosters education in the practical aspects of policy-making, generates an exchange of views between young and seasoned professionals, promotes interaction among younger professionals, and enriches dialogues with generational perspectives for all attendees. Fellows must have a strong background in the area covered by the conference they are attending and an endorsement from respected experts in their field. Supplemental programs in conference host cities and mentoring sessions with senior officials and specialists add to the Young Leader experience. The Young Leaders Program is currently supported by Chevron, the Henry Luce Foundation, and the Yuchengco Group, with a growing number of universities, institutes, and organizations also helping to sponsor individual participants. For more details, see the Pacific Forum CSIS website, www.pacforum.org, or contact Brad Glosserman, director of the Young Leaders Program, at brad@pacforum.org.

Table of Contents

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Introduction

The credibility of the nuclear disarmament movement has been renewed in recent years. Credit the famous "four horsemen" opinion pieces in the Wall Street Journal, the Prague speech in President Barack Obama, or the "rebirth" of arms control negotiations and the New Start Treaty. Whatever the cause, the prospect of "a world without nuclear weapons" is no longer dismissed as mere fantasy. The path to nuclear zero will be difficult; it will remain beyond reach if we don't fully appreciate and understand the real obstacles to its realization.

In this collection of papers, Pacific Forum Young Leaders attending the 10th meeting of the Study Group on Countering the Proliferation of Weapons of Mass Destruction in the Asia Pacific (part of the Council for Security Cooperation in the Asia Pacific) focus on prospects for disarmament. They identify the "real" obstacles to global zero – a Nuclear Nonproliferation Treaty that focuses on nonproliferation rather than disarmament; the belief that nuclear capability enhances security and excessive respect for the deterrent capacity of these awesome weapons; and the failure to devise alternative security strategies that don't rely on nuclear weapons. The third essay argues that a world without nuclear weapons would not be more peaceful or secure. Significantly, each essay provides concrete recommendations on ways to overcome these obstacles.

Readers are likely to challenge the "realism" of these perspectives. Please do. But there is real value in the exercise itself. Since, as President Obama has conceded, disarmament is unlikely in his lifetime, it is critical if we are to move toward that goal that we challenge the assumptions that have pushed nuclear weapons to the forefront of national security policy. Such inquires are at the heart of the Young Leaders program. As always, we are delighted with the results.

Conference Report

By Dean Knox and Kei Koga

The first presentation delivered by a Young Leader at the CSCAP WMD Study Group explored the perspectives of the five officially recognized nuclear weapon states (NWS) on nuclear disarmament, noting the potential implications for the 2010 Nonproliferation Treaty Review Conference (NPT RevCon) and beyond. The YL noted that in the most recent wave of support for disarmament, the initiative had shifted from civil society to the governments of NWS, making their attitudes particularly crucial for movement toward a world free of nuclear weapons.

The presenter observed that US policy aims to create political space for disarmament by addressing tangential issues that currently obstruct progress. The views of the US have been drastically reshaped by Obama's recent speech in Prague, and the US has now officially embraced the long-term goal of a nuclear weapons free world. At the same time, it intends to preserve an effective nuclear arsenal for deterrent purposes in the intervening period. In an attempt to quell concerns that the introduction of ballistic missile defenses (BMD) may prove destabilizing, the Obama administration has cancelled deployment of BMD to Poland and the Czech Republic. In the upcoming Nuclear Posture Review (NPR) being conducted by the Obama administration, the US will reduce the role of nuclear weapons in defense policy. While this process has been underway for some time – for example, with the relegation of the so-called "strategic triad" of intercontinental ballistic missiles, nuclear submarines, and strategic bombers to one leg of a larger "strategic triad" including missile defense and responsive infrastructure – the NPR is expected to significantly accelerate this process. This could potentially include the relegation of nuclear weapons to a "weapon of last resort," although this would be a significant departure from past policy. The US will continue to pursue deep, bilateral, verifiable, and irreversible cuts with Russia through negotiation of the follow-on to the New START treaty. While efforts to build new nuclear warheads through the Reliable Replacement Warhead program will cease, maintenance programs such as the Stockpile Stewardship Program and the warhead Life Extension Program will serve as alternatives.

While less convinced of the utility of nuclear weapons than the US, the U.K. sees its arsenal as an avenue through which it can influence the US and NATO. To preserve this influence, it is pushing ahead with the modernization of its Trident submarine-launched ballistic missiles. At the same time, the U.K. has ratified the Comprehensive Test Ban Treaty (CTBT) and is advocating a Fissile Material Cutoff Treaty (FMCT). The goal of the abolition of nuclear weapons has been embraced, with the U.K reducing its nuclear weapon stockpile by half since the 1990s. At the same time, unilateral disarmament is unlikely; for further reductions, coordination with other NWS will become increasingly critical.

The government of France, on the other hand, views its nuclear arsenal as essential to its security. While it has, along with the U.K., cut its stockpile by half since

the end of the Cold War, ratified the CTBT, and endorsed an FMCT, France is decidedly unenthusiastic about a nuclear weapons free world. French security is not best served by the elimination of its deterrent; nonproliferation, not disarmament, is its goal.

Russia is similarly convinced of the utility of nuclear weapons and is in the process of modernizing its nuclear force. Russian doctrine holds that nuclear weapons "can be used in limited strikes" and does not preclude "preventative" nuclear attack. This reliance on nuclear weapons is temporary; as the modernization of its conventional forces begins to gather steam, the role of nuclear weapons in Russian military doctrine will decline. For the time being, Russia views disarmament as a way to improve its relationship with the US. In current bilateral negotiations, however, Russia's considerable stockpile of tactical nuclear weapons remains unaddressed. It remains to be seen if Russian support for disarmament can be sustained if this arsenal is restricted.

In a departure from the doctrines of other NWS, China espouses three principles for its nuclear weapons: effectiveness, or the development of a lean and powerful nuclear force; counter-deterrence, to free China from what it perceives as hostile deterrence; and sufficiency, or maintenance of the minimum force necessary to achieve its aims. China was one of the earliest advocates of a nuclear-weapon free world, advocating the three-step process of US and Russian leadership in disarmament, decreasing reliance on nuclear weapons in defense policy, and the prohibition and destruction of all nuclear weapons. In recent years, however, China has remained relatively quiet on this front.

The implications of these views for the NPT RevCon are significant. First, enthusiasm for disarmament in the US and the U.K. will contrast with reluctance on the parts of France, Russia, and China. Disarmament will, as a result, prove a longer and more painful process than can be anticipated. In the interim, a balance must be struck between what is practically possible to achieve on the part of the NWS and what will be satisfying to nonnuclear weapon states (NNWS).

On behalf of more optimistic Young Leaders from the last CSCAP WMD Study Group meeting, another YL presented a series of suggestions for turning political capital in disarmament into substantive movement. The presenter noted a conflict between NWS, which are disarming, and NNWS, which demand faster progress. To address this dynamic, an overarching framework must be constructed, allowing NWS to point to the steps toward nuclear disarmament that they are making. By defining a long-term goal and path for its achievement, pressure on NWS to expedite progress will be heightened, but NNWS will be able to see concrete progress toward a nuclear-weapon free world. One method for developing such a framework would be through a critique of the draft Nuclear Weapons Convention.

To recapture the trust of NNWS, the presenter observed that NWS would need to set up a body to discuss disarmament in tangible terms, as well as define goals and develop an understanding of how progress will be manifested. The path to a nuclear-weapon free world will be path-dependent, with actions and good faith at each step strongly affecting the future. By institutionalizing a discussion of disarmament, NWS

can, to an extent, forestall the emergence of future governments or contingencies that may undermine the entire process.

The following proposals were made to expedite progress toward a nuclear-weapons free world:

- ratification of the CTBT
- support for the START follow-on treaty
- writing a draft declaration on nuclear weapons for ASEAN's consideration
- control of nuclear power and the creation of nuclear fuel supply assurances
- negotiation of a FCMT that is verifiable and addresses existing stocks
- an increase in Proliferation Security Initiative participation by Southeast Asian governments
- heightened export controls
- education in disarmament and nonproliferation to develop political will
- use of experienced Cooperative Threat Reduction teams from states seen as less hostile

On behalf of Young Leaders more skeptical of the ultimate desirability of a nuclear-weapon free world, a third YL noted that abolition is unattainable in the short- to medium-term. With this in mind, the presenter delivered a number of proposals to reduce the threat of nuclear weapons without necessarily moving toward total abolition:

- installation of Permissive Action Links on all nuclear weapons
- re-engagement of North Korea through bilateral and Six-Party Talks
- a moratorium on enhancement and modernization of nuclear weapons
- legally binding sanctions on NPT violators
- development of multilateral security mechanisms
- an international fund to financially support disarmament
- embrace of "no first use" policies

Young Leaders Roundtable Discussions

At the Young Leaders roundtable at the end of the CSCAP sessions, participants were asked to identify key takeaways. Responses include:

1) *The Evolution of Multilateral Institutions*: There has been an evolution of multilateral institutional frameworks without the United States, such as ASEAN and ASEAN+3, for the creation of political and legal frameworks to constrain nuclear reprocessing and enrichment. But it isn't clear whether such multilateral institutions have the capacity to lead other states.

2) *Differences in Security Perceptions*: The concepts of security and insecurity are different from each country, as was illustrated in session 2, when North Korea,

South Korea, and China discussed their perspectives on nuclear nonproliferation issues. North Koreans perceived that its insecurity was generated by US extended deterrence for Japan and South Korea, while South Koreans argued its insecurity was generated by North Korea's nuclear development. More generally, to fill these perception gaps, public awareness and education are necessary.

3) *China-North Korea relations*: Although China and North Korea still have the 1961 Sino-North Korean Treaty of Friendship, Cooperation and Mutual Assistances, China does not provide extended deterrence for North Korea, and North Korea does not have a security guarantee from any state.

4) *Global nonproliferation groups*: Legal frameworks are still weak due to a lack of "teeth."

5) *The importance of institutionalization of a "nuclear-free world"*: A fundamental divide among countries with regard to disarmament exists, and there is always a possibility of a reversal of current trends. Since this is a unique window of opportunity, it is necessary to institutionalize and solidify political dialogues for "nuclear zero," "Institutionalization" because current institutional frameworks are incompetent and it is therefore important to create new ones. Even though institutionalization is not a golden key for a nuclear-free world, it would give more opportunities to pursue a nuclear-free world when the security environment changes. Also, as the Proliferation of Security Initiative (PSI) shows, a "coalition of the willing"-type institutionalization, which does not have to include every state, also has potential.

6) *Importance of Institutionalization with "teeth"*: If a new institution is created, it is likely to lack "teeth" and will therefore be redundant.

7) *Dim Prospects for a "Nuclear-Free World"*: Most proposals for nonproliferation and disarmament were based on national political calculations. For example, the US public is realistic about nuclear weapons and is not enthusiastic about disarmament. Obama's enthusiasm reflects his personal interest, but it is disappointing that others do not take advantage of this window of opportunity.

8) *Dim Prospects for a "Nuclear-Free World" – Potential Solutions*: One way to solve this problem would be to begin dialogue with the ultimate objective of discussing nuclear weapons. Younger generations need to be more creative (out-of-box thinking) by utilizing such means as technology. De-emphasizing the role of nuclear weapons may help nurture a nuclear free world.

9) *Ultimate Objective of a "Nuclear Free World"*: It is important to ask whether we are aiming for "stability" or "security" in a nuclear-free world. More broadly, it is necessary to discuss what a world without nuclear weapons looks like.

10) *The Importance of Nonstate Actors*: The CSCAP WMD meeting focused on traditional state-to-state security issues, and did not sufficiently discuss the non-state actor, such as nuclear terrorists.

11) *Generational Divide*: Senior officials seem to distrust ideas from younger participants, which discouraged them and broke up discussions. Some argue that this is because they tend to value status quo over change. Though it is very hard to convince them, it is necessary to keep persuading.

Young Leader Site Visits

1. Vietnam Atomic Energy Commission

Young Leaders visited the Vietnam Atomic Energy Commission, where an official explained Vietnam's nuclear energy program and international cooperation including nonproliferation. Vietnam has considered nuclear energy since the 1980s and the 1989 "Doi Moi" (innovation) policy made Vietnam seriously consider these options. Since the policy fostered a market-oriented economy and increased Vietnam's economic growth, energy consumption also increased. Although an energy diversification policy was implemented, mainly utilizing hydro-energy, it was not enough. Thus, the 2006 "Strategy for Peaceful Utilization of Atomic Energy up to the year 2020," the 2007 "National Strategy for Energy Development up to 2025," and the 2008 "Atomic Energy Law" were created to foster development of nuclear energy. Currently, Vietnam is undertaking preparatory work for its first nuclear power plant and is conducting a pre-feasibility study in two locations near Ho Chi Minh City.

Vietnam is also eager to cooperate with the international community on nuclear energy and nonproliferation issues. It carefully follows international laws regarding nuclear energy since it is a member of the International Atomic Energy Agency (IAEA), the Regional Cooperative Agreement for Research, Development & Training Related to Nuclear Science and Technology (RCA), and the Forum for Nuclear Cooperation in Asia (FNCA). It cooperates with various states, including the United States, Japan, and France, and nuclear-related NGOs with regard to the establishment of nuclear energy plants and nuclear power plant personnel training for nonproliferation. It signed the NonProliferation Treaty (NPT), the Comprehensive Test Ban Treaty (CTBT), and the IAEA Additional Protocol. Also, Vietnam made efforts to spread information to the public in 1996 and in 2001; it held domestic and international exhibitions of nuclear power plants in 2003 and 2004.

2. Diplomatic Academy of Vietnam

Young Leaders then visited the Diplomatic Academy of Vietnam for a Young Leader panel discussion.

A lecturer at the Diplomatic Academy made a presentation on the evolution of Vietnamese foreign policy since the Vietnam War. Vietnam was internationally isolated during the Cold War. It had diplomatic ties with only three non-communist countries, and China, ASEAN, and the United States were seen as enemies. After the Cold War, Vietnam faced internal economic and social crisis due to the loss of Soviet assistance. Its economy was on the verge of collapse: its inflation rate was around 700 percent in 1986-87 and the Vietnamese suffered from starvation, which forced the Vietnamese government to reconsider its policy. As a result, the government opened up its economy and established diplomatic ties with other countries and international organizations, including the WTO, ASEAN, APEC, ASEAM and ARF. Since then, Vietnam has been enjoying high economic growth (averaging 7 percent over the past 20 years) by attracting FDI and increasing exports and imports.

A student at the Diplomatic Academy of Vietnam made a presentation on the US role in Asia. According to the student, the United States has contributed over $34.5 million for disaster relief, $949 million for combating pandemic disaster, and over 4,000 violence-prevention programs in conflicts areas, such as Afghanistan. In this sense, the United States has sought to develop nontraditional security partnerships in Asia, especially in three fields: 1) counter-terrorism, 2) epidemic diseases, 3) climate change and natural disasters. Given its contributions, the US role in Asia is positive, especially in those three areas, and it is fostering cooperation in such fields in Asia.

A Young Leader from Cambodia provided his view of the US role in Asia. He argued the US role increased after the launch of the Obama administration, and this is a product of Obama's personal attachment to the Asia-Pacific region: he lived in Hawaii and Indonesia in his youth. Consequently, the United States signed the Treaty of Amity and Cooperation in 2009. However, the United States should not come to divide the region, and it needs to play the role of a strategic stabilizer in East Asia since ASEAN is divided internally with regard to issues such as the rise of China and democratization. It is necessary to foster confidence-building measures in the region.

Another student at the Diplomatic Academy of Vietnam presented on regional security issues in East Asia. According to her, there are three important factors to consider: the rise of China, proliferation of weapons of mass destruction, and the East Asian strategic landscape. The South China Sea, which has the potential to trigger conflict, will be a test for China's rise. North Korea's nuclear development poses the largest threat to the region, and Sino-US relations will be the key to solve this situation. US reengagement in the Asia-Pacific region will change the regional strategic landscape as the United States urges China to be a responsible stakeholder, welcomes China's peaceful rise, and is willing to accommodate China's interests. However, since there is still uncertainty about the China-US relationship, the United States needs to hedge the rise of China by shaping Beijing's behavior.

A Young Leader from the Philippines discussed the US role in East Asia, specifically focusing on climate change. As one of the nontraditional security challenges, climate change impacts state security as well as people. In the Philippines, the flood on

Sept, 26, 2007 increased secessionist movements and illegal activities, and local security visibly decreased. The magnitude of the calamity ultimately depends on the local and national governments' ability to respond to such disasters (with foreign government assistance). In this sense, multilateral frameworks, such as ARF, and foreign government assistance from such states as the United States, Japan and South Korea, needs to be strengthened, and broader international cooperation on disaster relief should be made a high priority.

Discussion focused on great power relations among the United States, China, and Japan, in the context of China's rise. A majority of Vietnamese students clearly saw China as a threat, and they did not see Japan and the United States in the same way. They attributed their views to China's historical invasions of Vietnam, territorial disputes in the South China Sea between China and Vietnam, and ideological differences between China on the one hand and Japan and the United States on the other. One Vietnamese student said that in general, while the United States was seen as a benevolent power, it was uncertain how China would act. Yet, they did not consider China to be a "great power" or a "superpower" in East Asia (less than half of participants considered China to be a "great power" and a few saw China as a "superpower").

There were convergences and divergences when discussing how to respond to China's rise. There was agreement that a "containment" policy of China is not an option because the nature of China's rise is different from that of the Soviet Union, and the United States is a key player that needs to remain engaged in the region. On the other hand, one presenter said that nontraditional security issues, such as climate change, were a common concern for regional states, and tackling such agendas could encourage more cooperative behavior from China. Another presenter disagreed, saying that although its agenda is unclear, the US-Japan alliance was a good tool to shape China's behavior. In addition, several presenters argued that ASEAN would have little impact on China's rise because it was internally divided in many issues, and was thus only a "talk-shop." Some participants believe it has the potential to be a forum to manage territorial disputes, such as the South China Sea, by enhancing CBMs.

3. Vietnam's Ethnicity Museum (Museum of Vietnamese History)

Finally, Young Leaders visited the Ethnicity Museum, which showed Vietnam's history including its 54 ethnic cultures, housing, clothing style, rituals, and lifestyles.

Beyond the NPT:
Overcoming the Greatest Obstacle to Global Zero

By Justin Bishop, Catherine Boye, Dean Knox, and Nadezda Larsen

As the 2010 Nonproliferation Treaty Review Conference draws near, its participants prepare to evaluate progress toward the treaty's goals and negotiate a path toward a nuclear-weapon free world. Diplomats and scholars alike will examine failures of the past five years – particularly the abortive campaign to persuade North Korea to abandon its nuclear arsenal and unsuccessful efforts to increase Iranian nuclear transparency – and attempt to adapt the NPT to better face such challenges in the future. Yet by and large, the nonproliferation community has neglected to consider that the NPT itself, rather than flaws within the treaty, may be at the heart of the continued deadlock in global disarmament.

By its very nature, the NPT precludes substantive dialogue with nuclear-armed states other than China, France, Russia, the United Kingdom, and the United States. Since its inception, the NPT has divided the world into two categories: nuclear weapon states and nonnuclear weapon states. Such a simplistic outlook has for the past four decades made even the acknowledgement of Indian, Israeli, North Korean, and Pakistani nuclear arsenals impossible; without this, a serious discussion of global disarmament is. The NPT is a successful treaty that limited the proliferation of nuclear weapons far more than originally anticipated; nevertheless, it has been romanticized as the cornerstone of the entire nonproliferation and disarmament regime. Without recognizing the NPT for what it is – a treaty on the *nonproliferation* of nuclear weapons, and no more – there can be no real progress toward a nuclear-weapon free world. The world needs something more to complete the process: a framework to move toward *disarmament*.

This article sets forth a vision for such a framework – a global institution with voluntary participation that offers a pathway for recognized and unrecognized nuclear weapons possessors alike to initiate, coordinate, and receive recognition for efforts to move toward a world free of nuclear arms. For the unrecognized nuclear powers, the primary appeal of such an organization would be tacit recognition of a scientifically challenging achievement that few other states have matched. India, North Korea, and Pakistan have desperately sought acknowledgement of their technological accomplishment for years, just as the so-called official nuclear weapons states have consistently sought to deny recognizing them as "nuclear weapon states," in an effort to avoid undermining the NPT. While this denial may have reduced the desire of others to pursue their own nuclear ambitions, in the pursuit of prestige, such wishful thinking has not resulted in the surrender of a single nuclear weapon by the four unrecognized nuclear powers.

The past decade has made clear that this feigned ignorance is no longer sustainable and is counterproductive. By refusing to acknowledge their unofficial counterparts, official nuclear weapon states have allowed Israel to continue its dangerous pretense and have been prevented from engaging Pakistan and North Korea with stabilizing measures to enhance nuclear security and reduce the risk of accidental use.

The recent agreement on nuclear cooperation between the US and India, while criticized for breaking nonproliferation precedent, underscored the unsustainable nature of this approach. The effectiveness of the agreement in securing safeguards on India's civilian nuclear facilities demonstrates that a parallel process can complement the nonproliferation process, filling in where the NPT fails without undermining its basic foundation. Despite the inevitable protests, official nuclear weapon states have much to gain from the engagement of others in a global disarmament initiative. By exacting a toll for their recognition, in the form of transparency and confidence-building measures, official nuclear weapon states can convert their leverage into concrete, stabilizing actions on the part of the unofficial nuclear weapon states and simultaneously reduce the danger that nonnuclear weapon states will seek to make the leap.

Freed from the need to seek consensus and universal acceptance, an ad-hoc disarmament initiative will be free to impose requirements for membership that will cause some states to balk. In reality, nuclear disarmament has long been dominated by ad-hoc approaches – the US and Russia have negotiated bilateral numerical reductions, and the U.K. and France have willingly made independent cuts to their nuclear arsenals. The proposed disarmament framework is no exception to this rule; it does not force participants to adopt proposals against their will, but rather presents a vehicle for fragmentary and independently adopted initiatives to coalesce into a cohesive whole.

This initiative will not have to wait for the approval of all nuclear-weapon possessing states before moving ahead; the preliminary stages of transparency and confidence-building do not necessarily need to involve more recalcitrant states such as Pakistan and Israel. The veneer of legitimacy offered by the initiative will almost certainly prove an irresistible draw for India and – depending on the initial demands – could draw North Korea into the fold as well. For Pakistan, the appeal of participation will only build as India solidifies its involvement. Israel, seemingly devoid of any need for external recognition, will continue to pose a challenge – but if the participation of all other unofficial non-nuclear weapon states can be secured, the political tide will have turned against it.

To set the stage for such an initiative, this paper seeks to explore questions that remained unasked. Given that the world must move ahead with disarmament, instead of simply languishing in nonproliferation, what are the options? Who, beyond the official nuclear weapons states, are the key players that must be engaged – is it enough to stop at the unofficial nuclear weapon states? In what sequence must additional states be brought into the fold? Short of immediate surrender of nuclear weapons, what are the waypoints on the road to zero? Perhaps most critically, what are the short-term downsides and dangers of these steps? This paper attempts to answer such crucial questions in two steps – first, by addressing the issue of membership in a global disarmament framework initiative; second, by proposing a mechanism for instituting these measures.

Engagement

Any disarmament initiative must engage a broader forum than the five recognized nuclear weapon states – a failure to do so would simply result in the same deadlock that has plagued disarmament for over a decade. At the same time, a universal initiative

would be as ineffective as the NPT in addressing new and unexpected challenges. Limited by the need for consensus-building with states that have little knowledge of or experience in nuclear disarmament, an open framework would be handicapped from the start. The question is the degree to which a global disarmament institution should be accepting. Three options are feasible – a framework can be open to states with nuclear weapons, the "latent" nuclear weapons states, which is a broader group of states with nuclear power, or even to any state.

A forum open only to states with nuclear weapons would have the benefit of including unrecognized nuclear weapon possessors, while maintaining a streamlined membership. Such an institution would be freed from the need to build broad support, which has stymied efforts to update the NPT, allowing a greater degree of responsiveness in decision-making. With a prospective membership of only nine states, a small forum would have the option of holding more frequent, candid, and high-level discussions. This has the potential to result in an organization more able to reach consensus on contentious issues. The same attributes that contribute to its success could also, however, foster a perception of elitism and increase the incentive for non-nuclear states to develop nuclear weapons in pursuit of prestige.

By broadening prospective membership to states with some combination of enrichment and reprocessing capabilities, stockpiles of nuclear material, or advanced nuclear technology, a global disarmament initiative would be better equipped to deal with these so-called latent nuclear weapon states. For instance, in China's case, the potential that Japan could use its resources to rapidly develop a nuclear weapon is a source of concern that may influence its decisions, particularly as the disarmament process brings nuclear weapon states to ever-smaller arsenals of nuclear weapons. Bringing in the so-called threshold nuclear states may provide some assurance to states contemplating disarmament – Israel would certainly require a demonstration of goodwill by Iran. A broader membership would give some nonnuclear weapon states a voice in the initiative, lending the disarmament effort a measure of legitimacy. Despite these advantages, the expansion of the group beyond states that possess nuclear weapons would carry a cost. Reductions in nuclear arsenals could be held hostage to demands for concessions by non-nuclear weapons states, risking a reduction in the initiative's effectiveness in carrying out its core mission of disarmament; more dangerously, limited membership could risk further establishing enrichment and reprocessing as status symbols and drive non-members to develop latent nuclear weapons capabilities.

A global disarmament initiative open to all states with nuclear power would reduce the dangers associated with creating yet another two-tiered system. By granting states with civilian nuclear technology a seat at the table, the initiative would create an outlet for nonparticipants to join without developing nuclear weapons or relevant technologies. This would have the benefit of dealing with all states that have nuclear weapons, states that could quickly acquire them, and states that might one day acquire or attempt to acquire nuclear weapons. On the other hand, the inclusion of such a large number of states could foster calls for international verification of disarmament measures, a demand that may prove unpalatable to nuclear weapon states. A large membership would result in an unwieldy decision-making process, creating bureaucratic obstacles.

A successful disarmament initiative must take into account the challenges associated with any of these options. The initiative must strike a balance between a focused, streamlined forum and a group that addresses the concerns of nonnuclear weapon states. An ideal compromise would center on a core group of nuclear weapons possessors, setting transparency measures and confidence-building requirements in exchange for membership and recognition, while permitting certain nonnuclear weapon states a more limited role contingent upon their acceptance of steps to enhance nuclear security. In this approach, countries with significant nuclear technology – for instance, Argentina, Australia, Brazil, Canada, Germany, Japan, the Netherlands, South Africa, South Korea, and Sweden – might serve as trusted observers of the disarmament process and as representatives of the broader community of nonnuclear weapon states, simultaneously addressing the fear of inadvertent technology transfer and demands for external verification.

Requirements

A number of potential measures are suggested below, some of which are immediately feasible and some of which will need to wait for sufficient support. The proposed initiative's flexibility and ad-hoc nature will allow requirements to be adapted to bring another state into the fold, as well as prevent the reluctance of individual states from holding back the group as a whole – problems that are endemic in hidebound institutions such as the NPT and the Conference on Disarmament. Just as the initial membership of the institution will be composed of states that voluntarily undertake certain requirements for admission, subgroups within the initiative may elect to move ahead with more progressive steps without the support of the full group.

Statement of commitment to an eventual nuclear weapon free world: In declaring his support for a world free of nuclear weapons, President Obama was careful to avoid specific commitments. Even so, his speech played a crucial role in establishing momentum for a new push toward global disarmament. Such a commitment has little downside, establishing a common language while allowing significant latitude for interpretation. In fact, a number of states – including India and North Korea – have been willing to unilaterally endorse this long-term goal. A declaration could be further broadened to include widely shared concerns over nuclear terrorism, accidental use, or further proliferation.

Transparency in nuclear weapons complexes: Sharing of numbers and locations for warheads, delivery vehicles, and nuclear facilities has long been recognized as having a stabilizing influence by ameliorating perceptions of hostile intent. While transparency measures would ideally be implemented in an open manner (for instance, through publicly issued white papers or IAEA visits), reluctance to do so may necessitate alternative avenues such as private data exchanges, track 1.5 dialogues, and lab-to-lab exchanges. While recent negotiations between the US and Russia provide evidence of the difficulty in securing disclosure of sensitive details, states should be able to agree on basic measures that may form the basis for eventual verification measures.

Drafting of a nuclear policy document: Clear statements of nuclear policy would do much to put warhead and delivery vehicle counts in context, reducing the risk of

misinterpretation. By sharing information on decision-making processes, command chains, and alert statuses, participants could greatly improve crisis stability and build mutual understanding. Furthermore, nuclear policy documents would offer an avenue for authoritative confidence-building measures such as de-targeting and no first use policies. Concerns over the sensitivity of this information can be addressed by limiting the circulation of policy documents to member governments. To create a common basis for comparison, nuclear policies should be drafted according to a standard format, at a minimum, contain details on mutually agreed-upon points.

Declaration that nuclear weapons are for deterrent purposes alone: While some strategists argue that declarations of this nature would be discarded in a confrontation between nuclear-armed states, this policy would be seen by many as a powerful reassurance. If it is truly meaningless, then there is little reason to avoid announcing such a statement. Announcing a curtailed role for nuclear weapons would reduce their strategic value, smoothing the way for their eventual elimination and enhancing the security of all states. This declaration could take several forms, ranging from a relatively weak joint statement to the powerful incorporation of the statement in domestic nuclear policy documents. The internal debate over the US Nuclear Posture Review has highlighted challenges in securing domestic support for explicitly deemphasizing nuclear weapons, a move that could be interpreted as a sign of weakness. Nevertheless, a statement along these lines would not be out of line with policies of most nuclear states – China, for instance, has already gone a step further with the much more explicit declaration of a policy vowing "no first use" of nuclear weapons.

Acceptance of safeguards on civil nuclear facilities: The conclusion of a civilian nuclear accord between India and the US set a promising precedent, with India agreeing to open a broad swath of its civilian nuclear complex – including upstream uranium conversion and fuel fabrication plants, in addition to power reactors – to IAEA safeguards. Pakistan has similarly accepted safeguards on its nuclear reactors, and North Korea has permitted IAEA inspections and safeguards. Several degrees of safeguards are possible, depending on intrusiveness, the number of facilities covered, or even the incorporation of military facilities; this flexibility would allow some latitude in negotiations. While the expansion of safeguards in unofficial nuclear weapon states beyond existing measures would be an ambitious undertaking, the achievement would be a powerful rebuttal to domestic and international criticism for breaking with conventional nonproliferation practices. This condition could, moreover, be applied to observer states by requiring ratification of the Additional Protocol.

Disclosure of past activities: As part of an effort to build confidence that additional fissile materials are not kept hidden, member states might consider compiling and disclosing past records – year-by-year accounts of uranium enrichment, for example, or reactor operating histories and amounts of spent fuel reprocessed – which could then be compared to current material stockpiles. A similar approach is in the Biological and Toxin Weapons Convention, which calls for disclosure of past weapons research and production. This move, though almost certainly too invasive in the near term, would serve as a practical and security-enhancing next step in the disarmament process.

Multilateral verifications of nuclear arsenals: A sensitive and controversial subject for a number of reasons, including concerns of inadvertent proliferation by official nuclear weapon states and fears of compromised secrecy by their unofficial counterparts, multilateral verification would nevertheless be a powerful and stabilizing tool in a global disarmament framework. Apart from bilateral verification between the US and Russia, there is little precedent for such a serious task. At the same time, the central role of verification in Cold War arms control agreements serves to emphasize the usefulness of the task. While it may not be feasible in the near future, any disarmament initiative must move forward with this goal in mind – perhaps initially among possessors of nuclear weapons, but eventually with nonnuclear weapon state representation as well.

Placement of enrichment/reprocessing facilities under international control: As disarmament brings the world toward a future without nuclear weapons, the need to prevent the production of new weapons-grade fissile material will become ever more apparent. Russia has taken a first step by allowing joint ownership of its enrichment facility at Angarsk; Germany has pushed onward, proposing that states cede national territory to create international sanctuaries for uranium enrichment. By surrendering facilities that could be diverted to this use to an international organization such as the IAEA, participants in the initiative would cross a sort of finishing line in disarmament – dissolution of the capacity to regenerate a nuclear weapon program. There is no expectation, or even the need, to seek such drastic measures at present; it may still be productive to consider such proposals in constructing a vision for the future.

Conclusion

Based on this analysis, a number of eminently practical and productive options emerge as immediately feasible. First, the five official nuclear weapon states should act without delay to engage their unofficial counterparts, offering an alternative path to recognition in the form of a global disarmament initiative. This recognition must not come easily, but should be used as leverage to secure the commitment of unofficial nuclear weapon states to key disarmament goals that will be explicitly defined as conditions for participation in the initiative. Initial requirements should include a statement of commitment to a nuclear weapon-free world, heightened transparency in nuclear weapon complexes, the drafting of a nuclear policy document, and a declaration that nuclear weapons are for deterrent purposes alone. Nonnuclear weapon states should be brought into the initiative as observers, but this participation must be limited to advanced nuclear powers to rule out the transfer of nuclear weapons-relevant technology to states that lack such knowledge; their admission to the organization should be contingent upon meeting relevant criteria such as ratification of the Additional Protocol.

Some unofficial nuclear weapon states – particularly Israel – may elect not to participate. By first targeting India, which has expressed an desire to pursue legitimacy, the global disarmament initiative can establish momentum. Decades of rivalry with its neighbor mean that Pakistan is unlikely to be content with second-class status, and will accept a certain level of discomfort to secure an equal footing. Separately, North Korea's pursuit of international recognition will tempt it to venture back onto familiar ground – its past embrace of several measures suggested above indicate that it is not unequivocally opposed to the first, tentative steps towards disarmament. Israel's participation will

require skillful diplomatic maneuvering and behind-the-scenes pressure, but is not impossible.

As participants grow more comfortable with the disarmament process, some may choose to move further. This process should be embraced and institutionalized by permitting a group of pioneers to set new, higher standards, thereby defining a second stage of involvement and participation – the desire to shape the ground rules of this next stage may push some states to forge ahead more rapidly than they would have independently. The acceptance of more stringent safeguards will be one path forward, although this will have to be managed to avoid driving away unofficial nuclear weapon states. Another promising option would be the disclosure of past nuclear activities. New suggestions for intermediate steps will emerge as the progress continues toward the goal of verified disarmament.

Most importantly, the world must recognize that the current approach enshrined in the Nonproliferation Treaty cannot be sustained if disarmament is to become reality. Without recognition of the reality that nuclear weapons have spread beyond the recognized nuclear weapon states, global zero will remain out of reach. However successful the NPT may have been in containing proliferation, it has failed as a mechanism for disarmament. To move forward, a new approach must be adopted: flexible and adaptive engagement of all states in possession of nuclear weapons, regardless of past status, with a clear understanding of the ultimate goal – a world free of nuclear weapons.

The Myth of Security in a Nuclear-Armed World

By Lyndon Burford, Togzhan Kassenova, Kei Koga, and Tong Zhao

The key barrier to progress toward a nuclear-weapon free world (NWFW) is the lack of political will for disarmament among the nuclear weapon states (NWS) and several of their allies. This lack of political will is due to the mistaken belief that their security is enhanced by the possession of nuclear weapons, in particular due to the assumed value of nuclear deterrence.

The core understanding of traditional security thinking is that power is the ultimate guarantor of security. Nuclear weapons have taken assumptions about the utility of military power to their logical extreme. At this extreme, humanity has found that the ultimate destructive force is almost inevitably linked to self-destruction, and thus is counter-productive as a security mechanism. The US is a good example: recorded history has never seen a greater military power than the US today and yet, despite its overwhelming military superiority, it feels deeply insecure. As former New Zealand Prime Minister David Lange pointed out in 1985, "*Europe and the United States are ringed about with nuclear weapons, and your people have never been more at risk."* [1]

If humanity is to achieve its stated goal of eliminating nuclear weapons, the fundamental constructs that support the maintenance of these weapons must be removed. Nuclear deterrence theory must be challenged, and an appropriate system of ensuring international stability and security in its absence must be envisioned and progressively constructed. State-centrism in the assessment of and response to security challenges must be gradually realigned to address the increasingly globalized, transnational nature of threats. Cooperative initiatives to generate mutually beneficial security regimes must be put in place, moving the basis of security calculations steadily from the national to the collective, and ultimately, to the 'planetary interest.'[2] While it is beyond the scope of this paper to outline such a broad agenda for peace-building in the international community, the reflections contained here point toward a set of thought processes, policies, and actions that will lead states in this direction.

Realism, the theory most commonly applied to international relations analysis, has contended that fear-based, self-interested behavior reflects 'human nature.' According to this understanding, such behavior will therefore never change. In fact, this behavior does not reflect human nature, it reflects human *habit*. History has shown that people have the ability to evolve past fear and aggression into modes of thinking and behaving based on humanism, altruism, mutual respect, and trust. As these modes of thinking filter into the political realm, the evolution of social and security policies is facilitated. With the necessary political will, previously unquestioned assumptions about what is achievable can be revised. The abolition of slavery, the development of

[1] David Lange (March 1, 1985). *Nuclear Weapons Are Morally Indefensible* Argument for the Affirmative at the Oxford Union Debate, Oxford University.

[2] For a full discussion of this point, see Kennedy Graham (1999). *The Planetary Interest: A New Concept for the Global Age*. London: UCL Press.

international and humanitarian law and the granting of universal suffrage in many countries around the world are key examples of this point. In each of these cases, the progressive implementation of change required a fundamental rethinking of deep-seated philosophical, economic, and religious beliefs. In seeking the abolition of nuclear weapons, people are not being asked to relinquish such fundamental beliefs, but rather a strategic concept about the best way to ensure security.

Deconstructing the Myth of Nuclear Deterrence

The deterrent value of nuclear weapons is based largely on the assumption that the use of nuclear weapons ended World War II. However, historians increasingly question this claim.[3] Moreover, many analysts have demonstrated that the logic of nuclear deterrence has no basis in real world experience, as no one has ever fought a nuclear war. Throughout the Cold War, states operated on the *assumption* that nuclear weapons were deterring attacks from other states, but without any empirical data to support the claim. Nuclear strategy was based largely on a set of statistical models, themselves based on a set of assumptions with no basis in real world experience.[4] As such, the 'science' of nuclear strategy is largely "imaginary."[5] Furthermore, nuclear deterrence is a non-falsifiable theory, meaning its value as a security paradigm can never be proven, and should therefore never be assumed to be a fact. It is only possible to disprove nuclear deterrence theory, and the devastation of the nuclear war needed to do this would be an enormous price to pay for learning that we were wrong.

Regardless of discussion about the assumed security value of nuclear deterrence, it has become abundantly clear that nuclear weapons are of no use in dealing with most major security threats. Nuclear weapons were developed on the premise of a state-centric international system, in which nuclear weapons are a projection of state power and the most significant threats they are perceived to deter also come from states. Meanwhile, the most pressing security threats today are either of a transnational nature and therefore involve no state actors that could be deterred, or are of such a nature that nuclear weapons cannot be utilized to deal with them.

Among the most significant 21st-century security threats are transnational crime and terrorism, the proliferation of weapons and dangerous materials, inter-ethnic and intra-regional conflicts, global warming and natural disasters, and resource scarcity (at the most fundamental level, water and food). Nuclear weapons can neither deter nor mitigate these threats. In some cases, they exasperate existing threats even further.

Transnational crime and terrorism are perfect examples of threats against which nuclear weapons have no utility. It is not possible to deter terrorists or members of

[3] Ward Wilson (2009). The Myth of Nuclear Deterrence. *Nonproliferation Review, 15* (3), 421-39.
[4] Tanya Ogilvie-White (1996). Is There a Theory of Nuclear Proliferation? An Analysis of the Contemporary Debate. (*Nonproliferation Review*), 4 (1), 43-60.
[5] Emmanuel Adler (1992). The Emergence of Cooperation: National Epistemic Communities and the International Evolution of the Idea of Nuclear Arms Control. *International Organisation, 46* (1), 101-45: 107, quoting Alker.

transnational criminal networks with nuclear weapons. On the contrary, the existence of nuclear weapons merely adds the related threat of nuclear terrorism.

The nature of most post-Cold War conflicts also calls for a rethinking of the alleged utility of nuclear weapons as military tools. The vast majority of conflicts that occur are either inter-ethnic or intra-regional. The physical conditions in which such conflicts occur (close proximity of warring parties, often within the confines of one country) make nuclear weapons obsolete as military tools.

Global warming, natural disasters, and resource scarcity are also threats that transcend state boundaries. To deal with global warming and resource scarcity or with consequences of natural disasters, the international community needs to have a unified agenda that is of a supra-state nature. Nuclear weapons have no role to play in the international response to such threats. In fact, due to the inter-state tension, suspicion and even animosity that they generate and exacerbate, nuclear weapons often stymie attempts to generate cooperative solutions to collective security concerns.

Remedying the Nuclear Deterrent Problem

As demonstrated above, an international system that is reliant on nuclear deterrence to maintain international peace and security is plagued with problems and risks. It is necessary, therefore, to seek alternatives to nuclear deterrence that could serve as the foundation for international peace and stability.

Nuclear weapons are assumed by their possessors to deter not only nuclear aggression, but also chemical, biological, and even conventional attacks. To eliminate nuclear weapons and make a world free of nuclear weapons a sustainable one, an idealistic approach would require a fundamental transformation of norms of international relations. Sovereign states would need to refrain from imposing military threats upon other countries, and military actions between sovereign states would need to be demonized or even made illegal. Contentious concepts such as the "responsibility to protect" and "humanitarian intervention" would need to be reexamined, further developed, and refined. Under this approach, sovereign states would promise not to use force to solve international disputes, and a certain period of time may be required to see if such promises could be kept before any country becomes confident enough to agree to forgo its nuclear weapons or nuclear weapon ambitions. Even though all 192 United Nations (UN) member states have renounced independent military action except in self-defense, such an approach may be unrealistic. Nevertheless, thinking through scenarios in which such a world might be possible would remind us of the damage that major warfare would do to the vision of achieving Global Zero. The 2003 Iraq War, for instance, was intended to end Iraq's assumed nuclear weapons program, but has inadvertently firmed the belief of two other countries (North Korea and Iran) of the necessity of pursuing the development of nuclear weapons. Accordingly, to create a sustainable NWFW, it is essential to make all countries feel safe rather than threatened. Ways to strengthen the legal norm against the use of force in resolving international disputes, and to ensure its universal, nondiscriminatory application and enforcement, deserve serious consideration.

For pessimists skeptical of the possibility of such a fundamental transformation, an alternative approach that could lead toward a world free of nuclear weapons is to replace nuclear deterrence with conventional deterrence in the short term, in parallel with efforts to envision and construct the paradigm described above. However, the shift from nuclear to conventional deterrence will be difficult.

For the current NWS, an effective and reliable conventional deterrent would require a broad range of bilateral and/or multilateral agreements that define and constrain the development of all conventional strategic capabilities. Such conventional strategic capabilities include but are not limited to conventional long-range missiles, strategic bombers, ballistic missile submarines, long-range force projection capabilities (aircraft carriers, for example), missile defense systems, and space warfare capabilities. Many NWS are currently pursuing and strengthening these conventional strategic capabilities in a progressive manner. The United States, for example, is developing a conventional capacity known as Prompt Global Strike, while China is adding conventional ballistic missiles to its strategic arsenal. As a result, successful negotiations among NWS on conventional strategic capabilities would require significant compromises from each of these countries and it would take a considerable amount of time to make progress in each of these areas.

Non-NWS incapable of developing advanced conventional strategic weapons at so many levels would have to rely on alliances and balance-of-power strategies to protect themselves against powerful adversaries in an era of conventional deterrence. Furthermore, under conventional deterrence, the security and survival of highly isolated countries (which have very few, if any, allies) would not be guaranteed, posing the risk of instability and which might lead them to consider nuclear breakout.

Additionally, any deterrent, whether nuclear or conventional, needs to be balanced against other states' deterrents for them to provide sustainable stability and peace. Current nuclear capabilities among NWS, however, are not balanced. The US, for example, does not want to accept the risk of mutual vulnerability, and is thus pursuing the capacity for damage limitation in the case of a failure of nuclear deterrence. The problem with damage limitation capacity is that it is basically indistinguishable from first-strike capacity, and as a result, creates the conditions for a nuclear arms race between the US and its adversaries. It is worth noting that mutual and/or multilateral deterrence only works when all sides willing to take the risk that is associated with deterrence, namely, a degree of vulnerability. Attempts by any party to avoid mutual vulnerability will undermine the stability of the system as a whole. As a result, before we can move toward a NWFW, the international community will need to recognize the undesirability of 'absolute security' for any one state. Otherwise, any international system built on nuclear or conventional deterrence will be unstable and unsustainable.

Economic interdependence serves as another potential means of generating security and peace between countries. To take advantage of the potential for economic interdependence to deter transnational warfare, it is necessary for sovereign governments to reach deals that encourage mutual economic dependence. Such deals could serve as a

means of building confidence and preventing conflict, reducing reliance on nuclear deterrence for security. While this approach has been developed to a significant degree in parts of the world (the European Union being a key example), if such a template were indeed to bolster security, it must not simply be rolled out along the current WTO 'free' trade model. At present, the multilateral 'free' trade agenda pursued by Western democracies is offset by state-driven inequalities in the conditions under which products are produced and sent to market. Several developed states promote free trade, yet continue to heavily subsidize domestic industries, preventing the creation of a truly 'free market.' This undermines the potential for free trade to fulfill the role it can play in bolstering international security and preventing inter-state conflict.

Legal Avenues to Advance Nuclear Disarmament

The NWS often promote respect for a 'rules-based' international order. This means respect for international law, its tenets, and concomitant obligations. The International Court of Justice (ICJ) and the International Criminal Court (ICC) represent the zenith of international efforts to institute and operate such an order. They are the highest bodies mandated to rule on the implementation of international treaties, agreements, and customary law. The NWS could do much good for the creation of a 'rules-based' international order, and for nuclear disarmament, by recognizing the jurisdiction of the ICJ and the ICC.

The decisions of the ICJ and ICC are perceived worldwide as the most legitimate form of arbitration and adjudication applicable in the international community. Without perceived legitimacy, law is powerless to curb undesirable behavior. Even if decisions of the Security Council can be enforced through military means, such outcomes may not serve one of the key purposes of international law – creating and maintaining a stable, secure global environment. Game-theory analyst Roger Meyerson, found that "a *great power's use of its military forces may be rendered ineffective or even counterproductive when there are no clear internationally recognizable limits on this use of force."*[6] The essence of this finding is that, in enforcing decisions, the great powers must be perceived as doing so with legitimate mandate, if they are to engender long-term support and respect for their decisions.

Therefore, international law and its enforcement mechanisms must enjoy broad recognition and legitimacy if they are to regulate behavior along agreed lines. Decisions based on an ad-hoc or discriminatory application of law will be perceived as illegitimate and unjust, and unable to attract or sustain adherence. The current nonproliferation regime is a good example. Key states that possess nuclear weapons, and are central to any effort to advance nuclear disarmament, flatly refuse to sign the NPT. In several cases, this is because they perceive the NPT as a discriminatory document, intended to maintain great power dominance.

[6] Roger B. Meyerson (2007, November). *Force and Restraint in Strategic Deterrence: a Game-Theorist's Perspective*. Carlisle, PA: the Strategic Studies Institute. www.strategicstudiesinstitute.army.mil/pdffiles/pub823.pdf

If such considerations are retarding progress on nuclear disarmament, it is essential that any process or mechanism set up to deal with them does not fall into the same trap. A key example that needs careful consideration is the decision-making process for verification and enforcement of a future regime/process for multilateral nuclear disarmament. As Zia Mian points out,[7] some commentators have suggested that in cases of suspected non-compliance with a future abolition regime, the Security Council may be the only body capable of arbitrating and enforcing decisions. While its various members have the military capability to enforce decisions, action of a military nature is problematic when dealing with a nuclear-armed or nuclear capable state. Moreover, the Security Council's ability to make those decisions is doubtful due to the veto power of the NWS, as in the cases of Iran and North Korea. It is for this reason that the UN Security Council needs to be reformed. It is essential to address the power imbalance created by the veto right of permanent members to resolve the resentment and diplomatic stasis it engenders.

Yet despite these considerations, the most problematic aspect of the issue may be the Security Council's *lack of perceived legitimacy* in arbitrating instances of non-compliance with an abolition regime.[8] The Security Council is already seen by many states as a discriminatory body, serving the interests of a few powerful states. For such states, the veto rights of the P5 are perceived in the same light as the nuclear 'double standard' of the NPT. A situation in which the Security Council assumed the roles of 'judge, jury and executioner,' as in the example above, would nullify any semblance of due legal process. In most countries, these roles have been separated to enhance the independence of each actor, minimize the chances of conflicts of interest and increase the perceived legitimacy of the legal process. Conversely, the enforcement of decisions based on a process that is viewed as inherently discriminatory will lead to resentment and will likely further undermine efforts to contain proliferation or breakout, making such enforcement actions counterproductive in nature.

Therefore, rather than seek to create a disarmament process based on old institutions that have been inefficient and are widely viewed as discriminatory vehicles for great-power interests, matters for legal arbitration in a future disarmament process should be determined by bodies that are viewed as independent and non-discriminatory – the ICC and the ICJ are good examples. Their decisions carry greater legitimacy and enjoy broader support from the international community – an essential ingredient to the successful creation and maintenance of a NWFW.

While the refusal of several NWS to recognize the ICJ and ICC is a critical consideration, steps can be considered to move these states to recognize the two courts and to strengthen the international legal norm against the use or threat of use of nuclear weapons.

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[7] Zia Mian (2009). Beyond the Security Debate: The Moral and Legal Dimensions of Abolition, in George Perkovich and James Acton, Eds., *Abolishing Nuclear Weapons: a Debate*. Washington: Carnegie Endowment for International Peace. 295-306: 301-303.
[8] Ibid.: 301.

No First Use

If nuclear-armed states committed to legally binding NFUs, it would reduce tensions by reducing threat perceptions. It would help to facilitate the possibility of reductions in the operational status of deployed nuclear weapons, particularly in Russia and the US. Opponents of NFU point out that it is declaratory in nature, and thus nonverifiable, nonbinding and unenforceable. These deficiencies could be mitigated through the negotiation of a NFU treaty between the NWS, outlawing the planning, commissioning, ordering, or carrying out of a nuclear first strike, which would then have to be written into domestic law to be ratified. The enforcement capacity lacking at the international level would be institutionalized at the domestic level, ensuring the criminality of citizens of these states, including heads of state, ministers, officials and military personnel, who planned, assisted, or carried out a nuclear first strike.

Negative Security Assurances

Likewise, a key goal should be negotiation of a treaty guaranteeing that the NWS will not attack NNWS with nuclear weapons under any circumstances (negative security assurances – NSAs). The NWS insist that nuclear weapons are essential to deter nuclear attack. As a result, a situation in which NNWS are uncertain whether they may be subject to nuclear attack will lead them to consider nuclear breakout. Conversely, guarantees that NNWS are safe from nuclear attack will lessen their threat perception, and help minimize the impetus for nuclear breakout. As with the case of NFU policies, the ratification of such a treaty would require the enactment of domestic legislation, shifting the burden of enforcement to the national level, creating strong disincentives for national leaders in NWS to consider nuclear strikes on NNWS. While the negotiation of such a treaty may be difficult, a step in this direction would be for the Security Council to give legally binding effect Resolution 984 of April 1995, which recognized a set of NSAs made by the NWS in the run-up to the NPT Review and Extension Conference that year. This could be done by passing a Chapter VII resolution to the effect that any violation of these NSAs would constitute a war crime and a threat to international peace and security.

Statute of the International Criminal Court

The 1996 ICJ Advisory Opinion on the Legality of Nuclear Weapons found that in almost any conceivable situation, the use of nuclear weapons would contravene the tenets of international humanitarian law. These tenets hold that any military action in response to an attack must meet the criteria of proportionality to the attack suffered, discrimination between civilian and military personnel, and restraint from inflicting long-lasting environmental damage.

As such, the commissioning or execution of an attack using nuclear weapons would be a crime under international law. To underline the non-legitimate nature of nuclear weapons, the mandate of the ICC could be revised to include the use of nuclear weapons as a crime under the jurisdiction of the ICC. The government of Mexico proposed that such an amendment be discussed at the first Review Conference of States

parties to the ICC in May-June 2010. Due to the significance of this proposal and the breadth of implications such a move would have, the Assembly of States Parties (ASP) to the ICC decided it needed greater consideration before submitting it to the RevCon. The Assembly placed it on the agenda of the newly formed ASP Working Group on Amendments, which will begin its deliberation at the December 2010 ASP. ICC states parties could contribute to the development of the international legal norm against the use or threat of use of nuclear weapons by supporting this proposal at the December 2010 ASP.

Follow Up to the ICJ Advisory Opinion

In its unanimous conclusion, the 1996 ICJ Advisory Opinion found that "There exists an obligation to pursue in good faith and bring to a conclusion negotiations leading to nuclear disarmament in all its aspects under strict and effective international control." However, this ruling was advisory in nature and is not enforceable. The opinion could be given legally enforceable status through the passing of a Chapter VII UN Security Council resolution, recognizing a failure to fulfill this obligation as a threat to international peace and security.

Additionally, states could clarify the precise nature of obligations arising from the 1996 Advisory Opinion by requesting a further advisory opinion from the ICJ, delineating what would constitute good faith steps toward complete nuclear disarmament. A UN General Assembly resolution could request such an advisory opinion. A clarifying opinion would allow for an unambiguous appraisal of progress toward the desired NWFW, and would assist states in charting a roadmap toward the goal. It would also enable those states in compliance with their obligations to advertise the fact, thus alleviating the immediate concerns of other states looking to move toward a NWFW. As with the 1996 Advisory Opinion, the Security Council could then give the opinion binding legal effect by recognizing it under a Chapter VII Security Council resolution.

Nuclear Weapons Convention

A key legal avenue that would embody the principles and give effect to the aims of these mechanisms is the negotiation of a nuclear weapons convention (NWC). Such a treaty would embody a universal understanding that there is no legitimate reason for any state or non-state entity to possess, use, or threaten to use nuclear weapons. A NWC would outlaw the development, testing, production, stockpiling, transfer, use or threat of use of nuclear weapons. A panel of nongovernmental disarmament experts drafted a Model NWC in 1997 in response to the ICJ Advisory Opinion. This was updated and republished in full, with comments and criticism, in 2007, in the book 'Securing Our Survival: the Case for a Nuclear Weapons Convention'.[9] This Model NWC is an official UN and NPT document. Given the distance still to be travelled before the NWS are willing to begin negotiations on such a convention, it would be most useful for countries

[9] Merav Datan, Felicity Hill, Jürgen Scheffran, & Alyn Ware (2007). Securing our Survival (SOS): the Case for a Nuclear Weapons Convention. Cambridge, MA: International Physicians for the Prevention of Nuclear War. Available from www.icanw.org/securing-our-survival.

interested in further developing the legal norm against nuclear weapons to begin a preparatory process for a NWC. This could be achieved, for instance, by creating a study group or groups to examine the core aspects of a NWC. The group/groups can recommend aspects of an abolition regime that states can implement immediately without waiting for actual disarmament to take place. The implementation of such mechanisms would assist in the creation of an international climate conducive to disarmament through increased certainty about nuclear safety and security and by helping to safeguard a robust nonproliferation regime. Such a preparatory process, already explored by NGO disarmament experts,[10] has started to garner support among influential states such as Norway, a NATO member and leading proponent of nuclear nonproliferation and disarmament. In early 2010, Norway stated at the Conference on Disarmament:

> We are aware that most countries maintain that consensus is vital when it comes to nuclear disarmament. Norway is not fully convinced. We believe it could be possible to develop norms against the use of nuclear weapons, and even to outlaw them, without a consensus decision, and that such norms will eventually be applied globally. [11]

Nuclear Weapon Free Zones

The creation of Nuclear Weapon Free Zones (NWFZs) is a tangible means of demonstrating opposition to nuclear weapons, and a commitment to strengthening the international nonproliferation regime with enforceable legal barriers to proliferation. The states parties to the inhabited regional NWFZ (Latin America & the Caribbean, South Pacific, Southeast Asia, Africa and Central Asia, all of which have now entered into force), have demonstrated such a commitment.

While regional solutions to proliferation risks (such as regional NWFZ) can help foster collaborative efforts to increase nuclear security and safety, certain states, unable to join regional NWFZs, have created single-state NWFZs. Austria and Mongolia are key examples. Other countries may wish to consider more comprehensive bans on nuclear weapons than those embodied in the NWFZ treaties to which they are party. A good example is New Zealand's 1987 Nuclear Free Zone law, which goes well beyond the prohibitions outlined in the South Pacific Nuclear Free Zone treaty to which New Zealand is a party. New Zealand's law criminalizes any involvement with the development, deployment, oversight or use of nuclear weapons by a citizen, or permanent resident, employed by the state, including the armed forces, anywhere in the world.[12] These regional and single-state NWFZ show how individual states can take actions that have a flow-on effect of encouraging nuclear disarmament, *without waiting for*

[10] See for example Alyn Ware (January 2010). *Preparatory Process for a Nuclear Weapons Convention: Practical, Useful, Timely?* Available from www.web.net/~cnanw/PreparatoryProcessConvention.doc

[11] Norway (Feb. 18, 2010). *Statement to the CD*.(Delivered by Deputy Permanent Representative, Ms. Hilde Skorpen). Available from http://www.unog.ch/80256EDD006B8954/%28httpAssets%29/AA60004454D1131FC12576CE004DA6E0/$file/1170_Norway.pdf

[12] New Zealand Nuclear Free, Disarmament and Arms Control Act 1987. Available from http://www.legislation.govt.nz/act/public/1987/0086/latest/096be8ed8009ca69.pdf

international consensus around a specific issue. Such actions strengthen customary international legal norms against nuclear weapons, adding weight to the legal case for their global prohibition. States in Southeast Asia (SEA) could consider such domestic legislation to strengthen the regional norm against WMD acquisition, bolster much-needed nuclear security efforts, and fill the 'gaps' in the existing SEANWFZ. Such action will be critical if the planned nuclear energy expansion in Southeast Asia is to proceed.

Public Outreach and Education

Public outreach has a vital role to play in educating people about the historical, ethical, political, economic, and security ramifications of nuclear weapons, and in encouraging them to consider whether these weapons have any utility. State-supported public outreach efforts would provide opportunities for the international community to deconstruct the social myth of nuclear deterrence and nurture new 'norm-entrepreneurs,' who may play a vital role in developing the social conditions necessary to create and maintain a NWFW.

To this end, the domestic institutionalization of public outreach in supportive states becomes vital. For states that wish to foster public education on disarmament and non-proliferation, a key recommendation is that they institutionalize and streamline efforts in this field by designating a national point of contact for disarmament and non-proliferation education, as suggested in the 2002 UN Study on Disarmament and Non-Proliferation Education (UN document A/57/124).

National governments should strengthen the outreach capacity of domestic research institutions and universities, enabling their research findings to be discussed and debated among a wider audience. This can be done by holding well-publicized seminars at universities and town halls, and broadcasting educational programs. To avoid propagandistic advocacy, such programs and seminars should include a wide range of views on nuclear weapons issues. Governments should promote research programs and create fellowships for undergraduate and graduate students, and young researchers, specifically regarding the feasibility and methods of creating a NWFW.

The international community should support WMD education in the NWS, especially in China, Russia, and the US. Since Russia and the US possess around 95 percent of the world's nuclear weapons, and some analysts are concerned that China may increase its nuclear weapons to reach parity with Russia and the US, these three states are especially important. One way to create such international support is to establish an international NWFW foundation. Such a foundation could begin to develop collaborative scholarship and a sense of fellowship among students in these three states, as well as others.

Civil society action in the area of disarmament and nonproliferation public outreach has been invaluable in disarmament efforts. The global civil society campaigns that led to the outlawing of anti-personnel landmines and cluster munitions are key examples. As the Norwegian ambassador stated in the UN Conference on Disarmament

in February 2010, *"There are valuable lessons to be learned from the Oslo Process and the Ottawa process that are relevant to other areas of disarmament. We learned how powerful alliances can be created when governments and civil society work together."*[13] Regular consultations between designated national points of contact and domestic NGOs involved in public outreach and disarmament education can strengthen NGO-government collaboration.

Conclusion

Nuclear weapons do not create, support, or maintain international security. Their presence increases international tensions, undermines political will for great-power cooperation on pressing security concerns, and diverts attention and money from humanitarian and environmental development and relief efforts. The continued existence of nuclear weapons leaves the international community vulnerable to increasing proliferation risks, the possibility of a devastating nuclear terrorist attack, and worst of all, a miscalculated or accidental nuclear war. Meanwhile, nuclear weapons have no utility in addressing the transnational and nontraditional nature of the vast majority of security threats facing the world today.

Historians, security experts and military strategists are increasingly questioning core assumptions underlying nuclear deterrence. For some, this represents an outright rejection of these assumptions as rational bases on which to develop security strategies. Given the fundamental transformation of the international system over the last two decades, others view nuclear deterrence – a theoretical construct developed during the 'balance of terror' of the Cold War – as no longer furthering the security interests of states.

This paper has suggested alternative means of ensuring security that do not depend on nuclear weapons: economic interdependence, the further development of international legal mechanisms for creating and maintaining a NWFW, and public outreach and education on security issues relating to nuclear weapons. These are not sufficient to bring about the abolition of nuclear weapons, nor do they represent a complete paradigm for maintaining international peace and security. Nonetheless, if pursued in parallel with security and confidence building measures, they will provide a means to reveal the myths and inherent security problems surrounding nuclear weapons in today's security environment, and help the international community move one step closer to a world free of nuclear weapons.

[13] Norway (Feb. 18, 2010). *Statement to the CD*.

Alternatives to Nuclear Deterrence

By Ngan Ha, David Lin, Diana Park, and Telmuun Zorig

Since their use during World War II, the awesome and devastating power of nuclear weapons dictated the strategic balance of power in a state-based system of global politics. The advent of nuclear weapons, weapons that guaranteed game-changing catastrophic consequences and mass destruction, represented the epitome of high-intensity warfare. Since the end of the Cold War, however, after decades of nuclear threats, close calls, and doomsday scenarios, we find that the potential for a state vs. state nuclear war to be at an all-time low. Despite the aspirations of Iran and North Korea and their desire to develop a sustainable nuclear weapons program, the likelihood of nuclear weapons use in a state-based conflict seems miniscule compared to the times of a Soviet-US Cold War. As a result, the political environment seems ideal for a reinvigorated push for a nuclear-free world such as that envisioned by the Obama administration. As analysts, scholars, and politicians debate how to reach "nuclear zero," this paper focuses on the end state: a world without nuclear weapons and a global balance without nuclear deterrence. The fundamental question is this: What, if anything, will replace nuclear weapons after the last bomb has been dismantled? Will a nuclear-free world be a safer, more secure one? After reaching a nuclear-free world, perhaps we will have escaped the prospect of a nuclear winter only to be propelled into an even more volatile international security paradigm. In the words of a Mongolian proverb, perhaps we will escape the wolf only to be captured by the tiger.

This paper examines four alternatives to a post-nuclear deterrence world. When the world eliminates its last nuclear weapon, there may be a temptation to revert to what the world knows best: mass conventional militaries that dominated much of human history. Conventional deterrence through the presence and power projection capabilities of large national armies, navies, and air forces may rise again. A second alternative focuses on the often forgotten "other" weapons of mass destruction – chemical and biological weapons. Though banned by international treaties and conventions, with the absence of nuclear weapons, the utility of chemical and biological weapons may again come to the forefront. As society becomes more technologically interdependent and interconnected, the role of technology and all things cyber plays a dominant role. Be it in the form of real-time stock quotes on Wall Street to cell phone reception on the streets of Somalia, technology has permeated into all aspects of life. As reliance on technology grows, so does society's vulnerabilities to it and as such, the risks and threats posed by cyber- and space warfare are at the forefront of national security priorities. Finally, the last alternative is that nothing will replace nuclear weapons. In a global security stage moving away from a state-centric world, security affairs in the post-nuclear age may begin to revolve around transnational security challenges that involve state and nonstate actors alike.

Conventional Deterrence

A survey of the conventional forces used in World War II is astonishing by modern standards. Over 12,000 US bombers were shot down over the course of the war. Over 2.87 million allied troops and support personnel were involved in D-Day, with an additional 5,500 tanks, 4,800 artillery pieces, and 2,000 other pieces of military equipment and vehicles. The introduction of nuclear weapons fundamentally changed a world that had been built around the brute strength of conventional military power. Through its ability to invoke total destruction upon the enemy, nuclear war not only became a game-changer, but was also perceived as a game-ender, making its military applicability almost infeasible. By the end of the Cold War, the role of nuclear weapons in global security politics evolved into more of a projection of political power than a direct military weapon.

Today, the threat of nuclear war has decreased though the risk of nuclear attack persists. This notion is behind the push by President Obama to take steps toward establishing a nuclear-free world. Nuclear deterrence has long been seen as a stabilizing factor in international security politics. With the total elimination of nuclear weapons nation-states will perhaps turn to conventional forces as a strategic deterrent.

It is first important to examine the difference between conventional and nuclear deterrence. Conventional deterrence, based upon the quality and quantity of a nation's military forces, is based on the ability to punish or deny access for the enemy. Through an array of combined arms, there are varying degrees that conventional forces can be used short of actual warfare, ranging from public shows of force to less subtle military mobilizations, to exercises, weapons tests, or even military sales. Therefore a key benefit of conventional deterrence is that it is applicable in many different stages, from a mere show of force to full-fledged high-intensity combat operation. With regard to nuclear deterrence, there is little or no middle ground beyond nuclear tests. The use of nuclear weapons produces such widespread destruction that, for all practical purposes, it is no longer a viable military tool.

An assessment of the Asia-Pacific region reveals that conventional forces are already a predominant deterring factor and that the introduction of nuclear weapons, militarily speaking, offers no real benefit. The main deterring factor in many of the region's hotspots is not nuclear weapons, but is the presence, maintenance, and deployment of tens of thousands of conventional forces.

Of the 10 militaries in the world, seven are located in the East and South Asian region.[1] The Asia-Pacific region consists of one of the most potentially volatile regions in the world, with several simmering conventional conflicts: North and South Korea, Pakistan-India, and China-Taiwan. China, Russia, and India have all demonstrated an eagerness to develop a more robust power projection capability through more advanced militaries, namely blue-water navies.

[1] China, India, North Korea, Russia, South Korea, Pakistan, Vietnam; http://en.wikipedia.org/wiki/List_of_countries_by_number_of_troops

Nuclear deterrence works most effectively in a state-based world. Pakistan and India demonstrate a classic case of nuclear deterrence. As North Korea continues to develop its nuclear weapon program, a nuclear umbrella over South Korea by the United States offers a similar level of deterrence on the peninsula. In both cases, however, we find that these four countries by no coincidence also are among the 10 largest militaries in the world.

The Korean Peninsula and India-Pakistan rivalry are two specific cases that are directly impacted by the presence of nuclear weapons. Taking nuclear weapons out of the equation paints an interesting picture of what the geopolitical landscape would look like in these two instances. North Korea's pursuit of nuclear weapons appears to demonstrate the classical political and strategic value in a country with nuclear weapons. Using its acquisition of nuclear weapons to extract political concessions, North Korea still maintains a formidable military force, by sheer quantity. Meanwhile, India and Pakistan carry on a fierce and age-old rivalry. Taking nuclear weapons away from both of these scenarios would change little, considering that the conventional deterrence is still present.

Conventional deterrence seems like a viable alternative to nuclear deterrence. However, as the new baseline of deterrence, the risk of conventional deterrence is that there is more room for accidental escalation or more of a willingness to call the other's bluff. Without the threat of mutually assured destruction, mobilizing and using conventional military forces to accomplish political objectives may appear attractive. In some cases, the benefits of military action may outweigh the consequences. In a world based on nuclear deterrence and mutually assured destruction, the consequences certainly outweigh any strategic benefit.

Biological and Chemical Weapons

Biological and chemical (which hereby referred as bio-chemical) warfare is not a recent development. Indeed, chemicals had been used as tools of war for thousands of years, as early as 413 B.C., while bacteria, viruses and fungi were perhaps first used in the 14th century.[2] The large casualty capacity of bio-chemical weapons was initially tested during World War I. Then, both sides had artillery-fired projectiles that released poisonous gases such as chlorine, phosgene, and "mustard" gases. The common use of chemical weapons was triggered by Germany in 1915 at the battle of Ypres in Belgium. Mustard gas-stocked artilleries were reported to have killed 90,000 and wounded over one million during the war.[3] Despite not being as efficient as conventional weapons, the devastating effects of such weapons led to the establishment of the 1925 Geneva Protocol on Gas Warfare. However, the discovery of nerve gases, or anti-cholinesterase agents, by Germany in the 1930s, and the employment of this enzyme – block agent against Jews during the Holocaust and elsewhere by Italy and Japan demanded a stricter regime for the prohibition of the utilization of chemical weapons. Therefore, the Convention on the Prohibition of the Development, Production, Stockpiling and the Use of Chemical

[2] Mark Wheelis, *A short history of biological warfare and weapons*, pp. 15 – 31

[3] OPCW, Publications, "Basic facts on chemical disarmament", http://www.opcw.org/publications/basic-facts-on-chemical-disarmament/

Weapons and on their Destruction (Chemical Weapons Conventions – CWC) was signed in 1993. It is the first multilateral treaty to ban an entire category of weapons of mass destruction and to provide for the international verification of the destruction of these weapons.[4]

Japan inaugurated biological warfare in its attack against the Chinese at the beginning of the World War II. During the Cold War, the United States and the Soviet Union researched and perfected biological weapons. Each developed arsenals capable of destroying all human life and many food crops.[5] The disarmament of biological and toxic weapons started in 1969 when US. President Richard Nixon announced that the US would unilaterally and unconditionally renounce biological weapons. He then successfully negotiated the Biological and Toxin Weapons Convention (BWC), signed in 1975. The treaty prohibits the development, production, stockpiling, acquisition or transfer of biological weapons.[6] It also requires all state parties to destroy all their biological weapons and biological weapon production facilities.[7] However, the treaty has no verification mechanism. Parties to the BWC agreed in 1994 to work through an ad hoc group on binding verification measures.

Bio-chemical weapons do not play a major role in the current deterrence paradigm for various reasons. First, bio-chemical weapons are less reliable, as their effectiveness is dependent on external forces such as wind and heat. Diseases or gases that are intended to cause harm to opposing troops may cause casualties for the users due to the wind. Biological agents can become de-weaponized due to intense heat and other variables. These uncontrollable external factors, combined with the relatively low casualty yield, may cause nations to hesitate before using these weapons of mass destruction.

Still, bio-chemical weapons may still present themselves as a viable alternative deterrent. Chemical weapons are much easier and cheaper to produce. Most chemical agents can be developed in labs while most biological ones occur in nature. Moreover, medical or legal defensive research has many similarities to illegal offensive programs. The revolution in technology has substantially changed the outlook and dramatically increases the utility and lethality of biochemical weapons. For threatening purposes, they also cause great fears and have a traumatic psychological effect on the public. Anthrax in letters in the United States in October 2001 had limited effects but caused mass disruption and cost billions of dollars in decontamination and prevention expenses. The recent flu pandemic, though the product of natural causes, also demonstrates how nations are ill-equipped to deal with epidemics, and epidemics or pandemics can cause panic amongst the general public. More than 80 years after the battle of Ypres, people there continue to die from illness caused by poisons released by German soldiers. Vietnamese victims of DOCs (which are not listed in the CWC) are also proof of the impacts

[4] The Convention on the Prohibition of the Development, Production, Stockpiling and the Use of Chemical Weapons and on their Destruction, April 29, 1997, Art. VI, Annex of Chemicals.
[5] Carnegie Endowment, Publication, *GlobalTtrends: Assessments and Weapons*, http://www.carnegieendowment.org/files/deadlyii.ch01.final.pdf, p. 9
[6] The Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction, March 26, 1975, Art. 1
[7] Ibid. Art. 2

chemicals weapons may cause. Those victims are not Vietnamese veterans but their children and grandchildren. When it comes to destruction capacity, biological weapons are second only to nuclear weapons.[8] Five metric tons of Sarin gas in bombs and dropped by two strike aircraft or the warheads of 36 Scud missiles could kill 50 percent of the people over 4 sq. km.[9] In comparison, a Hiroshima-size nuclear bomb with a 12 kiloton yield would kill 50 percent of the population over 30 sq, km. During the Cold War, the United States and the Soviet Union perfected their biological weapons to kill all human life on earth.

The Obama administration has acknowledged the rising bio-threat with the release of his the *National Strategy for Countering Biological Threats.*[10] In January 2010, the United States Commission on the Prevention of WMD Proliferation and Terrorism Report Card noted that the United States is woefully underprepared to curb biological weapon proliferation or counter biological terrorism. [11] While both the Obama strategy and the Commission Report Card focused on unconventional uses of biological weapons, they indicate a potential vulnerability and opportunity for the rise of biological weapons.

Cyber and Space Warfare

At the dawn of the 21st century, senior security analysts and experts cite the relative absence of conventional warfare and decreased focus on nuclear weapons in security policy as an indication that the world will become more peaceful. The push for a nuclear-free world is gaining momentum and growing economic interdependence is compelling evidence for this type of reasoning. However, there is clear danger to ignoring recent developments in the revolution of military affairs.

Cyber warfare and space warfare have emerged as trends that will further complicate weapons systems, conventional and nuclear, as well as the strategic calculations that accompany them. A shortsighted focus on global improvements in denuclearization and counterpoliferation efforts fails to recognize other military technologies that will replace nuclear weapons as primary weapons of mass destruction. States will be able to hold each other's citizens "hostage" via a credible space and cyber threat. Therefore, it is important to assess the age-old concept of deterrence and its relevance to the space and cyber realms – and show that a nuclear-free world may not mean a safer world.

As the world becomes more networked, cyber attacks will occur more frequently and with greater potency. Information systems blanket the modern world so that even the stoplight down the road can be disrupted by a cyber warrior. Beyond the realm of financial institutions, government espionage, and military conflict, a cyber attack can create an overwhelming number of human casualties through its ability to meddle with a

[8] Carnegie Endowment, p.9
[9] Ibid. p.12
[10] http://www.whitehouse.gov/the-press-office/president-obama-releases-national-strategy-countering-biological-threats
[11] http://www.preventwmd.gov/1_26_101/

country's infrastructure. Imagine the impact of a cyber attack on a nuclear power plant and what that may entail, or an attack on the electric grid of New York City. Cyber warfare is by nature a weapon of mass destruction.

According to Kenneth Geers, the US Representative to the Cyber Center of Excellence from NCIS, there are five tactics commonly employed:[12]

1. Espionage
2. Propaganda
3. Denial-of-service
4. Data Modification
5. Infrastructure Manipulation

In the Asia-Pacific, cyber attacks have been elevated as a real source of concern. By April 2009, the Pentagon had spent $100 million dollars to repair damage from cyber attacks.[13] Both United States and South Korean government and financial websites were attacked in July 2009.[14] Meanwhile, Google and China have battled since December 2009, a drama in which the White House has thrown in its support for the US-based search engine.[15]

Whether this instrument of mass destruction will possess similar characteristics to nuclear weapons is unclear, primarily because there is not an example of a mass attack on a country where human casualties were claimed. But it does not require a stretch of the imagination to see how cyber warfare-based infrastructure manipulation can lead to panic, misinformation, and lawlessness. (power grid shut down, hospitals, military/police/emergency services command and control, etc). It is apparent, however, that the targets of cyber warfare will go beyond a geographical location and will encompass the cyber realm and physical realm, as well as both civilian and military targets. Thus, with the advance of cyber warfare, the absence of nuclear weapons may not mean the end of "mass destruction" warfare.

Space warfare is largely associated with anti-satellite capabilities. Like the Internet, satellites have become integral to information systems, both civilian and military. Although anti-satellite weapons were being developed as early as the 1970s, during the Cold War, space warfare has been revived by the Chinese anti-satellite weapon test in 2007.[16] The Soviet Union and the United States agreed to discontinue their programs due to the debris effects of an explosion in space.

Space warfare also threatens the networked world we live in, as it has a profound impact on conventional warfare capabilities. Questions of deterrence and mutually assured destruction will still be in existence even without nuclear weapons.

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[12] "Cyber Warfare: Strategy & Tactics," Kenneth Geers, *Internet Evolution*, June 19, 2008, http://www.internetevolution.com/author.asp?section_id=628&doc_id=156849.
[13] news.cnet.com/8301-1009_3-10214416-83.html
[14] http://www.washingtonpost.com/wp-dyn/content/article/2009/07/08/AR2009070800066.html.
[15] http://news.asiaone.com/News/Latest%2BNews/Tech/Story/A1Story20100115-191994.html.
[16] www.msnbc.msn.com/id/16689558/.

Because of the nature of cyber warfare, technologically advanced countries will be more vulnerable to attack. Therefore, the possibility of cyber deterrence would more likely be applicable between major powers, where the threat of a large-scale cyber or space attack could be both credible and sufficient. Cyber- and space-warfare tactics could be combined to create a second-strike capability, as long as the threat of a first strike can be countered by an even more destructive attack.

Technologically advanced countries with greater dependency on networks will be more vulnerable to cyber deterrent than lesser networked countries. This means that cyber warfare opens up opportunities for guerilla warfare as well as mutually assured deterrence that stems from the imbalance between networked countries and lesser developed states.

Transnational Security Issues

The alternatives described above operate under the assumption of a global power structure rooted in a state-based system. Furthermore, these alternatives assume some sort of military-based display of power. However, there are always unknowns, and in an era where the definition of national security is changing, we may find ourselves in a world where deterrence theory, in its conventional military and state-based form, may no longer be applicable. As the global security paradigm evolves, perhaps the future of conflict will not be rooted in any weapons or technological system but instead transcend national identities and political boundaries. Theories believed to have kept a world of nation-states in check may give way to a spectrum of transnational security issues much in the same way the threat of a WMD-based state-to-state war evolved into the threat of WMD terrorism fueled by non-state actors. A world centered on mutually assured destruction might become a world more concerned with internal stability and intrastate conflict. In the words of US Gen. Kevin Chilton, commander of US Strategic Command, "We are looking beyond just pure military might as the solution to every deterrence problem. There are other elements of national power that can be brought to bear."[17] Perhaps the absence of nuclear deterrence will result in a world that is balanced by the threats and risks of amorphous transnational security challenges.

Perhaps the world will need no alternative to nuclear deterrence; instead the global balance of power will be built on a delicate web of alliances centered on a growing range of transnational security issues where nonstate actors are playing an increasing role. From energy security to health security, from economic security to human security, from ensuring access to energy resources to protecting human rights, perhaps the new world war will not be between nation states but between states and nonstate actors centered around the "contested commons" of sea, air, space, and cyberspace.

Conclusion

The world must remain steadfast in its determination to counter nuclear proliferation and prevent WMD terrorism. The world's nuclear powers must bolster their

[17] http://www.nytimes.com/2010/01/26/world/26cyber.html?pagewanted=2&hpw

nuclear safeguards and enhance nuclear security measures. As long as the global security paradigm remains rooted in nation states, nuclear weapons will be needed to maintain international security.

It is premature to assume that the absence of nuclear weapons will yield a more peaceful world; new technologies and dimensions of warfare indicate otherwise. As we learned from experience with biological and chemical weapons, the possibility of war never ended – and reversal of this trend seems unlikely without drastic improvements in verification and enforcement. A return to dependence on conventional weapons systems for strategic deterrence brings with it the increased likelihood of escalation and miscalculation. Even a situation with no alternative deterrent may give way to increased instability through new threats posed by transnational actors and challenges.

In conclusion, this paper seeks to question the underlying assumption that a nuclear-free world is a safer, more secure world. Nuclear weapons are a threat to humanity's existence and the prospect of such weapons falling into the hands of terrorists is a sobering prospect. The delicate power balance achieved in a world with nuclear weapons however, may be better than we give it credit.

Toward a Nuclear-Free World

By Natasha Barnes, Hiep Le Hong, Nadezda Larsen,
David Santoro, and Jennifer Shinn

In a speech delivered at the Groton School on May 24, 1904, US President Theodore Roosevelt told an audience of students, "be practical as well as generous in your ideals…keep your eyes on the stars, but remember to keep your feet on the ground."

Although the threat of nuclear confrontation has receded considerably since the end of the Cold War, nuclear weapons continue to pose a great danger to the international community. Nuclear weapons could be used in a regional conflict, as well as fall into the hands of nonstate actors. Any use of a nuclear weapon would be an environmental and psychological tragedy, and permanently impact the conduct of international affairs.

The elimination of nuclear weapons cannot happen overnight due to complex issues of technical, financial, social, and political nature. The dismantlement of a nuclear weapons arsenal and the supporting infrastructure is no small feat. The required analysis determining the appropriate operational steps toward disarmament, and the physical breakdown of the arsenal would take considerable time and incur heavy costs. The current economic crisis, the worst since the Great Depression, further impedes such an undertaking. More importantly, the role of nuclear weapons is so deeply embedded in the fabric of international politics that nuclear reductions must be a globally cooperative effort at the highest levels of governments. Despite its limitations, nuclear deterrence has been central to international and regional peace and security since World War II.

The implication is that until nuclear weapons are eliminated, nuclear deterrence and extended deterrence will play a central strategic role in the international system. President Barack Obama stressed in his April 2009 Prague speech that "as long as nuclear weapons exist, the United States will maintain a safe, secure, and effective arsenal to deter any adversary, and guarantee that defense to our allies." Therefore, when reflecting on how to progress toward a world free of nuclear weapons, the difficulties lie in the creation of a new defense policy to supersede the role of nuclear weapons within military and defense strategy and begin a global process of dismantlement.

Nuclear disarmament will not be a linear process. Lessons of the feasibility of a nuclear weapons-free world will be tough to implement as the disarmament process yields complex issues. Stockpile infrastructure and stability problems will emerge as nuclear weapon states downsize their arsenals. The threat of the proliferation of nuclear technology will also increase as disarmament operations proceed. Those who think about nuclear disarmament as an ultimate destination are mistaken. Nuclear disarmament is first and foremost a journey that is lengthy, difficult, and needs to be addressed on a step-by-step basis.

Our recommendations provide short-, medium-, and long-term solutions to a world free of nuclear weapons. Our short- and medium-term solutions focus primarily on how to decrease the role of nuclear weapons and the dependence on a nuclear defense strategy. In our long-term solutions, we reflect on how the global community needs to change to eliminate nuclear weapons.

Short-Term Objectives

The following short-term objectives are immediate to five-year changes that should take place to decrease reliance on nuclear weapons in military defense strategy and begin a disarmament process.

The reliance on nuclear weapons since the advent of the Cold War has sustained itself because of the destructive and powerful nature of nuclear weapons. These weapons of mass destruction have no comparable weapon that can meet its catastrophic effect. To dissuade states from continuing to believe in the charisma of nuclear weapons, we need to address how the security environment has changed since the end of the Cold War and the evolving role of nuclear weapons in the current security environment.

Security Environment: Then and Now

While the circumstances of the Cold War were harrowing, the security environment was clearly defined. Enemies and their characteristics were identifiable, capabilities were increasing in an open arms race, and governments were communicating with one another, regardless of differing positions. Nuclear weapons were the be-all and end-all solution that the Soviet Union and the United States leveraged against each other.

Currently, the security environment consists of nonstate actors seeking WMD material and technology, rogue states with weapons program capabilities that are held secret, exaggerated, or under-stated, depending on the desired effect, and governments undermining cooperative negotiation and diplomacy, rather than advancing them.

Treaty Obligations: Following the Rules

In this changing security environment, the United States has an aging nuclear-weapon infrastructure, vulnerabilities in reliability, and weaknesses in performance. A nuclear war today would be different from one fought during the Cold War. While nuclear weapons states have decreased their nuclear arsenals, Russia and the United States still have a considerable portion of their arsenal on high alert.

The United States and Russia have been in Strategic Arms Reduction Talks (START), as their current agreement on arms reductions expired in December 2009. The new START treaty must emphasize the importance of arms reductions for both countries, the agreement of reductions, and the verification and adherence to the rules of reduction. A new treaty by the two nuclear weapon states with the world's largest arsenals, with the

commitment of lower reductions, will reaffirm disarmament strategies and set a precedent for others.

Additionally, the world is waiting for the United States to ratify the Comprehensive Test Ban Treaty (CTBT), as several countries have stated they would follow suit. This commitment from other countries reveals the importance of the US role within the nuclear policy arena and increases the burden on the United States. President Obama has yet to set out a course of CTBT ratification, although Vice President Joe Biden recently reaffirmed the commitment. The Fissile Material Cutoff Treaty (FMCT) also needs to be negotiated, ratified, and implemented. Ultimately, these treaties define the current state of the nuclear world and set the rules of disarmament and non-proliferation. The nuclear weapon states that have yet to ratify and implement these treaties are called to put in place their promise.

Nuclear Power Play

To address the changing role of nuclear weapons, there needs to be a better understanding of the nature of emerging threats from insurgent groups, i.e., the "new enemy," an ongoing assessment of the susceptibility of nuclear proliferation and the persistent gaps in security that allow it, how the threat of terrorism has impacted the security environment and, ultimately, develop better communication between countries to enhance security. Intelligence analysis and reporting should be addressing threats more effectively and efficiently; policy analysis should be coupled with technical and computational analysis through modeling and simulation software and management; policy design should incorporate quantitative tools to better calculate risk and the impact of policy changes; coordinate the efforts behind the "war on terror" and how addressing terrorism threats can be transferred to addressing nuclear threats; promote Track II diplomacy and begin to hold more bilateral and multilateral meetings to fully engage mid- to senior-levels of government. As negotiations are breaking down with Iran and North Korea, and nuclear energy deals progress between the United States and India, the versatility and pervasive use of nuclear material stretches to the far ends of the Earth.

This will lead to a shift in strategic thought and policy. To inject any weight and legitimacy into this shift requires a definitive security mechanism to introduce accountability and verification. As nuclear weapons no longer play the strategic role they did in the Cold War and are currently the "last resort," the role of other weapons of mass destruction (chemical, biological, electro-magnetic pulse) may increase. To contain these emerging threats, a security mechanism should be created within the Middle Eastern and Asian regions. The role of nuclear weapons and deterrence depends on an overarching defensive military strategy with an offensive outcome. To build security and peace within the Middle East and Asia, defensive military strategy should be balanced with offensive measures. Conventional forces with more robust tactics can serve as a standard in defensive and offensive measures.

With the role of nuclear weapons diminishing efforts and new security mechanisms being introduced, there should be higher costs for failing to cooperate with

arms control. The larger nuclear weapon states need to send a message of commitment and dedication through ratification of the CTBT, the conclusion of an FMCT, the resolution of questions regarding pre-existing stocks of fissile material for weapon purposes, and the United States and Russia need to finalize negotiations on a follow-on treaty to replace START. There is no truer step toward disarmament than the promises within these treaties.

Medium-Term Objectives

This section focuses on medium-term (two to eight years) steps toward nuclear disarmament, particularly focusing on declaratory policy, extended deterrence, nuclear security, nuclear energy, and a range of related issues.

Declaratory Policy

As nuclear-armed states are reducing their arsenals, they should all swiftly declare no-first use policies or begin to declare that the sole purpose of nuclear weapons is to deter the use of such weapons or other similar existential threats such as all-out biological attacks. Corresponding changes in force deployment and alert status should reflect these declarations (e.g., the decision-making process for the launch of nuclear weapons should be considerably lengthened).

At the same time, the UN Security Council should pass a new resolution re-asserting that NWS will not use nuclear weapons against NNWS in full compliance with their nonproliferation obligations.

Extended Deterrence

As numerous states benefit from the US nuclear umbrella, the United States should engage its partners and discuss alternatives to a *nuclear* umbrella. Simply put, the quest for nuclear disarmament forces a reflection on how to move from extended nuclear deterrence to extended conventional deterrence. As the nuclear disarmament process proceeds, the US should hold high-level meetings with allies to discuss options.

Similarly, the United States should wield its diplomatic muscle to resolve the entrenched regional conflicts that lead allies to request nuclear protection. That requires addressing the question of non-nuclear strategic forces disparities (missile defense systems, conventional weapons, etc).

Redouble Efforts to Secure Fissile Materials

Although NWS are more directly concerned, all states must commit to the highest standards of nuclear security and work toward swift implementation of existing measures such as the 2005 amendment to the Convention on the Physical Protection of Nuclear Material (CPPNM).

The 2010 Global Nuclear Security Summit will be an opportunity to discuss the way forward on these issues. Momentum should be preserved to convince all states that a world free of nuclear weapons can be a safe world, particularly from nuclear terrorism. Such momentum can be preserved through review conferences specifically focused on nuclear security every five years in the same way as NPT Review Conferences.

Manage the Peaceful Uses of Nuclear Energy

The peaceful uses of nuclear energy, enshrined in Article IV of the NPT, should be promoted for states in compliance with their nonproliferation obligations. Emphasis should be put on the development/export of proliferation-resistant technologies. New technologies for spent-fuel treatment should also be promoted.

Multilateralization of the nuclear fuel cycle (through fuel banks and multilateral management of enrichment, reprocessing, and spent-fuel technologies) should also gain ground to build confidence in the development of the peaceful uses of nuclear energy in a world where nuclear weapons will be pushed into the background and eventually eliminated.

Other Issues

To restore the meaning and legitimacy of the UN Security Council, there is an urgent need to admit nonnuclear weapon states that are regional powers as permanent members; notably Brazil, Germany, and Japan (in addition to India, which is a de facto NWS). It will show that great power status can be achieved by other means than just military might, e.g. nuclear weapons.

Long-Term Objectives

This section looks at long-term recommendations working back from general conditions to actionable steps. These conditions will enable disarmament by reducing or replacing the role of nuclear weapons. While acknowledging that we can't foresee everything necessary to enable zero at this stage, we can "future proof" our policy-making now, so challenges are easier to mitigate as they arise. The international community must address collective security and regional security structures, conflict resolution mechanisms, enforcement and verification mechanisms and how each element fits into a world without nuclear weapons. These ambitious recommendations may appear idealistic, but disarmament will require a fundamental shift in the organization of international security, bringing into question sovereignty and international law.

To this effect, these long-term solutions look at the addition of security structures that will precede reduced reliance on nuclear weapons. These include future capacity-building within the NPT regime, NPT reform, and broader security and dispute resolution mechanisms required to create the conditions that would enable disarmament.

International dispute resolution

Nuclear weapons remain the weapons of last resort for the resolution of international disputes because the states that possess nuclear weapons (or those that rely on their deterrence value), do not have a more effective alternative. Current methods of resolving international disputes remain underdeveloped, perpetuating the insecurity and instability of an international system based on force postures. We maintain a high nuclear threshold developed by a 60-year tradition of non-use. In that time, while deterrence has prevented the escalation to nuclear warfare, dispute resolution mechanisms have been developed to settle territorial, civil conflict, trade, and international disputes within institutions such as the UN Security Council, the International Criminal Court (ICC), International Court of Justice (ICJ), and the World Trade Organization (WTO). The use of international legal dispute resolution mechanisms should provide a precedent, model, or alternative to the use or threat of use of nuclear weapons as a deterrent to conflict escalation. States should increase their investment in the international legal system to strengthen means for the peaceful resolution of disputes without resorting to nuclear force. This would progressively reinforce the nuclear threshold and facilitate a decreased reliance on these weapons in dispute resolution (progressively decreasing their utility).

To increase the use and reliance on international legal dispute resolution mechanisms, nuclear weapon-possessing states should accede to the jurisdiction of the ICC and the ICJ, reassess the structure of the Security Council and its role arbitrating disputes international security. Other efforts include the use of nuclear weapons as a war crime in the ICC Rome Statue, and recognize the illegality of the use of these weapons in a new agreement or new opinion at the ICJ. These steps would enable the evolution of international dispute resolution mechanisms to a level that could protect the interests of all states and enable the cessation control of nuclear weapons, (or the capacity to use/deploy them), to an international (legal) body.

NPT arbitration mechanism

A strengthened arbitration mechanism is required to enforce the obligations undertaken by NPT state parties. This will reduce the insecurity felt by states within the regime, and reduce their reliance on nuclear weapons as final arbitrator of disputes. The NPT's dispute resolution mechanism is designed to manage conflict over the use of nuclear technology and alleged violations of the NPT and IAEA safeguards agreements. However, the regime has no monopoly on coercion and enforcement. States can and do act outside the regime to influence actors within it,[18] resulting in the uneven application of rights, responsibilities, and enforcement. International confidence in the capacity of the regime to respond to violations has been undermined by the handling of Iran, Iraq, and North Korea.

The arbitration mechanism, which currently involves IAEA inspections, reporting by the IAEA Board of Governors, and referral to the UN Security Council, could be strengthened by increasing independence and impartiality, and through the uniform

[18] http://www.boalt.org/bjil/docs/BJIL26.1_Suleman.pdf

application of enforcement provisions. First and foremost, states need to agree on definitions of noncompliance, identify the exact scope of the right to peaceful uses (enrichment, reprocessing), and set clear standards for the resolution of noncompliance issues. Weaknesses can also be addressed at the IAEA level through strengthened safeguards and the Additional Protocol, to allow greater verification and monitoring powers. At the level of the Board of Governors, impartiality needs to be enforced, particularly when a country is in violation of its obligations and reports on its own violations, or lack thereof. At the level of the UN Security Council, the application and universal enforcement of sanctions needs to be taken seriously. Another option for NPT reform would include a new arbitration mechanism that is independent of current structures.

Universality of the Nuclear Non-Proliferation Regime

The legal, political and normative strength of the NPT is undermined by the lack of universally enforceable commitments, reducing the effectiveness of efforts to dissuade proliferation and enable disarmament. Actors outside the regime (India, Iran, Israel, North Korea,[19] and Pakistan) and their unregulated possession of nuclear weapons negatively impact the risk assessment of states party to the treaty. Universality of the NPT is highly improbable given the impasse on the acceptance of NNWS status by these states, or their acceptance as NWS within the NPT. However, their participation can be encouraged through gradual inclusion in the nuclear non proliferation regime. This would require the application and acceptance of rules outside the NPT without legitimizing proliferation and weapons acquisition. This would normalize the behavior of these states through the wider body of international agreements and norms, while enhancing monitoring and accountability.[20]

While states outside the NPT cannot be forced to join it, they can be persuaded through punishment or incentives. This would require the development of rules and procedures within existing institutions – IAEA, PSI, 1540 – in addition to the development of new relationships between states outside the NPT and the regime. This would be most effective if the specific interests of each state that prevented it from joining the system were addressed. The international community should make a more proactive effort to remove the obstacles to universality. This might entail providing negative and positive security assurances and addressing regional conflicts. This would facilitate creation of regional nuclear weapons free zones or negotiating a separate treaty on disarmament among the nine states currently possessing nuclear weapons.[21]

[19] North Korea's exact relationship to the NPT is a subject of dispute. It withdrew from the Treaty in January 2003, however this was never made explicit. Other declarations suggest that North Korea is still a member. Nonetheless, the North Korean nuclear weapons program remains largely unregulated. Given that it now possesses nuclear weapons, it makes sense to include them in this category.
[20] http://www.boalt.org/bjil/docs/BJIL26.1_Suleman.pdf
[21] http://www.boalt.org/bjil/docs/BJIL26.1_Suleman.pdf

Enhanced Collective Security

The primary condition that will enable disarmament is the creation of a global collective security that would render reliance on nuclear weapons obsolete. The international community needs to address global and regional causes of insecurity and the drivers of weapons of acquisition (here only security concerns will be dealt with, not social drivers, such as prestige). The international community must also look beyond nuclear weapons to how it would be possible to balance security without them. However, given the path-dependent nature of security calculations and functional nature of the development of international cooperation, it is not possible to envision a world that would allow this. However, we can create an international environment that facilitates robust dialogue on these issues.

Issues to be addressed:

- conventional security and conventional weapons asymmetry
- regional collective security structure
- global collective security
- conflict resolution
- preventative diplomacy

Conclusion

This paper draws together short, medium and long term recommendations into a framework that challenges policymakers to be pragmatic in their timing, but also ambitious to address the biggest obstacle to disarmament – the perception that the reliance on nuclear weapons maintains international peace and security. Our recommendations aim to create an international political, legal and security environment that will enable the disarmament of nuclear weapons.

By "keeping our feet on the ground" as President Roosevelt advised us to do, we presented some "practical" yet "generous" ideas of next generation thinking on a global security architecture.

Appendix A

Pacific Forum CSIS
YOUNG LEADERS

Tenth Meeting of the CSCAP Study Group on
Countering the Proliferation of Weapons of Mass Destruction in the Asia Pacific
Hanoi, Vietnam ◆ 6-8 December 2009

Assignment Paragraphs

"What is the biggest obstacle to progress toward a nuclear-free world?"

Ms. Natasha BARNES

The rhetoric of a nuclear weapon-free world fails to address the reality of increasing nuclear insecurity. The biggest obstacle to progress on this issue is the absence of a comprehensive security architecture that can assume the role nuclear weapons play as the final arbitrator in international relations. This framework would render the reliance on nuclear deterrence obsolete, while strengthening and expanding the concept of collective security. The most fundamental obstacle to progress on disarmament is the inability of international law to enforce punitive measures on states that default on their obligations. This is compounded by an international legal and security framework that is unable to provide security guarantees that would enable and persuade states to cease their reliance on nuclear weapons and disarm.

The absence of a comprehensive security model is an obstacle to progress, as disarmament is viewed by states reliant on deterrence as both an absolute and relative weakening of their security positions. For there to be progress on disarmament, all states must be convinced that the elimination of nuclear weapons will enhance, not undermine, their individual and collective security. The incremental steps proposed, including the Comprehensive Test Ban Treaty, the fissile materials cut-off or existing stocks treaty, will be limited in effectiveness if they are not a part of a comprehensive framework as states can manipulate these positions to their advantage. Steps that reduce the perceived value of nuclear weapons or the potential for their use, such as de-alerting, de-mating, or decreasing extended deterrence, will not be possible to implement because of the perception of increased vulnerability. Moreover, a strengthened and extended framework for security is needed because the current dynamics of the nuclear nonproliferation regime are not sustainable. Favoritism, non-compliance and proliferation threaten to incapacitate the regime, and the current institutional architecture does not have the capacity to respond to these challenges. Enhanced security cooperation between all states will reduce the incentive for a few to remain outside this framework.

The introduction of this security architecture requires more than a replacement of deterrence by a similar structure; rather, increased verification, transparency, and irreversible measures are necessary for a long-term solution. While progress on disarmament requires the creation of an 'enabling environment' that supports the integration of the incremental steps into an action plan, this action plan must be more ambitious. The current policy environment must look *beyond nuclear weapons* and address the critical question: 'What will collective security and regional security structures, conflict resolution mechanisms, enforcement and verification look like in a world without nuclear weapons?' Policy makers must then work back through the phased introduction of this strategy, rendering the role of nuclear weapons obsolete.

Progress toward a nuclear weapon-free world will only be possible when disarmament advocates have articulated and demonstrated the feasibility of the phased reduction of nuclear weapons to 'global zero' within this new, comprehensive security framework. This is no small task; it is one that effectively requires an ambitious overhaul of the international system.

Mr. Justin BISHOP

The greatest obstacle to global nuclear disarmament is the inherent misperception and distrust between ("legal and illegal") Nuclear Weapon States (NWS). There continues to be an overriding belief that possessing nuclear weapons is in each NWS' national interest, and that these weapons are necessary for security. This fundamental belief curtails any successful disarmament effort.

While the likelihood of a nuclear exchange between NWS is at an all-time low, the mistrust between nuclear-armed states and countries that rely on the United States' extended nuclear deterrent continues to stall disarmament efforts. Many countries see the promise of US extended deterrence and the US nuclear arsenal as essential to their security. If the US abolishes its nuclear arsenal, countries that rely on the US for extended deterrence will likely develop their own nuclear capability. It is impossible for the US to completely eradicate or significantly reduce its own arsenal without a significant change in its allies' thinking about how nuclear weapons fall into their own defense strategy. It is this lack of trust, not only between the US and its allies, but between countries that receive US extended deterrence and the countries they perceive as a threat that is harmful to global nuclear disarmament.

The Russian Federation and the United States have the world's biggest nuclear arsenals and have made headway in reducing their stockpiles. However, other nations, specifically North Korea and Iran, are increasing or developing their own nuclear capabilities, and proliferating technology and technical know-how. This is in stark violation of the Non-Proliferation Treaty (NPT). Other countries feel threatened and may respond by increasing their own nuclear/conventional military capabilities to respond to this perceived or misperceived threat from North Korea and Iran. North Korea and Iran are countries that find it necessary, stemming from their own misperceptions and distrust, to operate outside the established international legal framework and "norms" of

nonproliferation and global disarmament. Once again, misperceptions and distrust push proliferation and "rogue regimes" to seek nuclear weapons.

Other issues are pertinent to why states pursue nuclear weapons and why global disarmament efforts have failed. However, they all derive from fundamental misperceptions and distrust. Enhancing the global community's ability to successfully perceive and manage every country's threats is the only way to reach global zero.

Ms. Catherine BOYE

The greatest obstacle to complete nuclear disarmament is the fact that when the number of nuclear weapons each state possesses decreases to low numbers, the system will become dangerous and unstable, preventing further reductions.

The US and Russia each have several thousand warheads and delivery vehicles. If the number of warheads fell below 1,000, there is a chance that countries with fewer nuclear weapons would decide to sprint to parity. The first candidate would be China; as numbers fall, it might become an appealing option for India and Pakistan as well as North Korea. A buildup of this sort would destabilize the nuclear relationships and complicate arms reduction negotiations.

As the number of nuclear weapons decreases, their comparative power increases, which might contribute to a decision by non-nuclear weapon states to acquire them. When the largest arsenal approaches 100, an upstart could believe that it has the ability to rise dramatically in the international order. When North Korea proved it had nuclear weapons in 2006, it caused a stir internationally but was not seen as a threat to the international order. If numbers dropped all the way to zero, then the gain from developing even five nuclear weapons would be enormous. Other states armed with nuclear weapons, by their very existence, dissuade other states from developing them.

Another problem that may exist when numbers get low (<100) is that verification will become difficult if not impossible. When the number of nuclear weapons becomes low, verification measures will become highly intrusive because at this level, five to ten extra warheads or delivery vehicles are a serious security risk; with the current number so high, five or ten hidden weapons are not a large problem (outside of trust). Facing this complex issue it is likely that nuclear weapon states will remain at this stable level.

These are only three of the many issues that nuclear weapon states will face on the road to zero. These issues are complex and probably insurmountable. Without great changes in the international social, cultural, and security environment, a world without nuclear weapons is impossible.

Mr. Lyndon BURFORD

The biggest obstacle to progress toward a nuclear-weapon free world is the mistaken belief that nuclear deterrence provides a 'unique' security guarantee that prevents nuclear and conventional attacks. The result of this belief is that nuclear weapon states (NWS) are failing in their obligation to work progressively toward nuclear weapons abolition.

Conversely, due to constant reinforcement of this belief by the world's most influential countries, some non-nuclear weapon states (NNWS) are stimulated to seek nuclear weapons, regardless of their obligation not to do so.

A key assumption of nuclear deterrence theory is that the bombings of Hiroshima and Nagasaki ended World War II. Historians have come to question this assertion. Increasingly, they point to the Soviet declaration of war and invasion of Japanese-held territory on Aug. 9, 1945 (the same day Nagasaki was bombed) as the likely cause of Japanese surrender. A close examination of Japanese diaries, correspondence and official documents indicates the Soviet invasion radically altered the strategic situation and sparked a crisis among the Japanese leadership. The atomic bombing of Hiroshima and Nagasaki did neither, but provided Japan, an acutely proud nation, with a face-saving means of surrender.[1]

Between March and August 1945, 66 Japanese cities were utterly destroyed by US 'fire-bombing,' killing an estimated 500,000 people, including 120,000 in a single night in Tokyo. These raids continued until the US was destroying centers of no more than 30,000 residents. Yet this five-month campaign of annihilation of Japanese cities did not provoke surrender. As is often the case in war, mass civilian casualties did not constitute a major strategic consideration for Japanese leadership.[2]

A second assumption underlying nuclear deterrence is that it prevented major war during the latter half of the 20th century. This is a non-falsifiable assertion, i.e., it cannot be tested and is therefore impossible to prove. A lack of hard, real-world data on successful cases of nuclear deterrence means this assumption is based on abstract propositions and models. "Because the science of nuclear strategy has no empirical reference points and data banks, it cannot be falsified and is, in this sense, 'imaginary.'"[3]

Third, nuclear deterrence theory assumes leaders will act rationally in times of extreme stress, such as when threatened with nuclear attack. History shows that under such conditions, humans are likely to display irrational, unpredictable behavior. Robert McNamara reflected on the 1962 Cuban Missile Crisis: "It was luck that prevented nuclear war…Rational individuals came that close to total destruction of their societies."[4]

Regardless of 20th century beliefs about nuclear deterrence, the 21st century reality is that the vast majority of security risks arise from threats against which nuclear weapons have

[1] Ward Wilson (2009). The Myth of Nuclear Deterrence. *Nonproliferation Review, 15* (3), 421-39: 422-27.
[2] Ibid.
[3] Emmanuel Adler (1992). The Emergence of Cooperation: National Epistemic Communities and the International Evolution of the Idea of Nuclear Arms Control. *International Organisation, 46* (1), 101-45: 107, quoting Alker.
[4] Errol Morris. (2004). *The Fog of War: Eleven Lessons from the Life of Robert S. McNamara [documentary film]*. USA: Sony Pictures Classics.

no utility: terrorism, climate change, environmental degradation, intra-state conflict and humanitarian disaster. Meanwhile, tens of billions of dollars are spent each year maintaining, expanding, or modernizing nuclear arsenals. National leaders have primary responsibility for ensuring the security of their citizens. As long as they believe nuclear weapons are vital for providing security, they will not disarm. Greater discussion of and debate over the value and utility of nuclear deterrence is essential if nuclear weapons are to be eliminated.

Ms. Maria Kristela Sylvia B. CASTRONUEVO
Efforts to achieve a world free from nuclear weapons have evolved. Mere recognition of its merits, treaties, agreements and policies were promulgated in formal talks, fora and conferences, which are now being undertaken regularly. Continuous monitoring of compliance and adherence to provisions of agreements is being conducted. Nuclear weapon states, particularly the US, have manifested their intentions and support to seek a world free from nuclear weapons.

Progress toward a nuclear free world has a long way to go. As US Defense Secretary Gates stated, a nuclear-free world is a goal that you have to move toward step by step.

The biggest obstacles to progress toward a nuclear-free world are:

a) Possession of nuclear weapons is an inherent part of the security and defense posture of NWS, such that these will enable them to address security threats (i.e., North Korea). But other states feel insecure and attempt to develop nuclear weapons in response. This cycle makes nonproliferation difficult to achieve.
b) Availability and accessibility of nuclear technical know-how for countries that want to pursue the development of nuclear weapons and capabilities.
c) Lack of political will and agreement among states to implement and adhere to the nonproliferation and disarmament measures.
d) Lack of verification measures of concerned international agencies to prevent non-nuclear states from acquiring nuclear weapons and, lack of a monitoring system for the compliances and adherence of states to nonproliferation and disarmament treaties and policies.
e) Presence of other elements/actors such as those engaged in nuclear black market and terrorist activities.

There is still much to be done to live in a world free of nuclear weapons. The most important factor at present is a sense of positivism, hope, and direction toward that goal.

Mr. Vannarith CHHEANG
The nuclear threat is the legacy of the Cold War, in which nuclear weapons were used for balance and deterrence. After the Cold War, other countries acquired nuclear weapons to protect themselves against invaders. Some states wish to possess nuclear weapons to destroy Western civilization. Although the Cold War itself ended, the Cold War mindset still exists.

The sense of fear and uncertainty pushes some leaders to desire nuclear weapons at any cost. The spread of nuclear weapons from one region to another could put the world at great risk.

There is a commitment by the leading possessors of nuclear weapons and the world community to reduce nuclear weapons, disarm, and push for a nuclear-free world.

To fulfill those objectives we need to overcome several challenges:

1. Reduce security uncertainty and fear by strengthening regional and global institutional mechanisms that can guarantee security for member states.
2. It is hard to move from a Cold War mindset and realist calculation of balance of power, but we can change from a hard balance of power to a soft balance of power ideology. A soft balance of power refers to economic and cultural power.
3. Whenever there is a demand for nuclear weapons, there will automatically be a supply of nuclear weapons. It is therefore necessary to abolish demand for nuclear weapons through legal, political, and economic measures. Strict sanctions and compliance measures can be applied to reduce and end any attempt to possess nuclear weapons. Strict control of the supply chain can stop the proliferation of nuclear weapons. Countries must jointly fight terrorist groups and prevent them from acquiring nuclear weapons and weapons of mass destruction.
4. Weak or fragile state institutions that possess nuclear weapons and enriched uranium are vulnerable to leakage to terrorist groups. The world community must assist weak states to build and strengthen their institutional capacity.
5. The global nonproliferation regime, especially the UN, cannot address nuclear proliferation issues unless superpowers and emerging regional powers empower this institution.
6. The world applauds efforts of the United States and Russia to reduce nuclear weapons and share a vision to build a nuclear-free world. Such acts could push other countries to follow suit.
7. Civilian nuclear energy plans should be accepted, as energy security is becoming a main concern for nations; however, it should be controlled and monitored to ensure it is not redirected to nuclear weapons programs.
8. The International Atomic Energy Agency (IAEA) should be strengthened.
9. Regional institutions such as the EU, ASEAN, and SAARC should be equipped with expertise to help promote a nuclear-free world. Global institutions such as the UN and the IAEA cannot work unless there is strong cooperation and collaboration with regional institutions.

Ms. Ngan Ha DINH

President Barack Obama's enthusiasm for a massive reduction of nuclear arsenals has received considerable support from his Russian counterpart. The biggest challenge hindering progress is continuing praise of nuclear deterrence.

Despite Obama's exciting and inspiring speeches and unceasing efforts abroad to persuade his counterpart in Russia for a new treaty on nuclear weapon control, the US

Congress and public appear to be indifferent. "We will need a strong deterrent…The notion that we can abolish nuclear weapons reflects on a combination of American utopianism and American parochialism," said former Defense Secretary James Schlesinger when asked about the possibility of a nuclear-free world anytime soon. This perception is affected by realistic concerns over nuclear terrorism and aggressive acts by Iran and North Korea, which show their ambitions to develop nuclear weapons. Moreover, the US role in offering nuclear deterrence for its allies puts it in a dilemma. Many of its allies have implied that they will initiate or accelerate nuclear programs if the US fails to provide a strong nuclear umbrella.

The US appeared to work closely with Russia to reduce stockpiles. After a meeting with President Obama at the G-20, Russian President Dimitry Medvedev told the press, that "We are ready to reduce the number of our strategic defence arms by several times compared to START." However, this must be read with Medvedev's statement that "we cannot agree with the US plans to deploy a global missile defense system. I want to underline that our proposals to cut (nuclear warheads) are only possible if the United States meets Russia's concerns." The reduction of Russian nuclear warheads will only follow the decrease of the US threat. Russian acts do not symbolize a willingness to drop its nuclear deterrent. Russian tactical nuclear weapons remain outside the scope of the new US-Russia nuclear control treaty. Russia is not expected to abandon its nuclear weapons very soon, as NATO and China are both expanding rapidly.

Given the perception that nuclear weapons are a vital component of defense policies, the dream of a world without nukes remains distant.

Ms. Togzhan KASSENOVA

The major obstacle to a nuclear-free world is the role nuclear states assign to nuclear weapons when they think about national security. For the purposes of this article, let us consider two key nuclear states – Russia and the United States. The concept of the *value* of nuclear weapons in both countries has failed to catch up with the post-Cold War reality; nuclear weapons have no military utility and cannot be used to deal with today's most pressing security threats, and their value as weapons of *deterrence* goes against the notion that the Cold War is over. If Russia and the United States are no longer enemies, why would they need to *deter* each other? Until the *perception* of the value of nuclear weapons changes, there can be no real breakthrough in nuclear disarmament.

Notwithstanding a unique push for a world free of nuclear weapons from all corners of the world, including the United States and Russia, today's reality is still rather bleak. In practical terms, not much has changed since the Cold War.

As of 2009, Russia maintains 13,000 nuclear warheads, and the United States has 9,400 nuclear warheads. If both countries manage to reach a deal on START and commit to reducing their respective arsenals to the anticipated 1,500-1,650 nuclear warheads each (beyond 1,700-2,200 nuclear warheads agreed to under SORT), this would still fail to bring about radical change in the strategic nuclear equilibrium: Russia and the United States will preserve an "overkill" nuclear capability.

Nuclear weapons still feature prominently in national security strategies of both countries. Russia's 2009 National Security Strategy (for the period until 2020) states that the Russian Federation will take "all necessary efforts […] to sustain parity with the United States in strategic offensive arms." The most recent documents attesting to US nuclear strategy – 2005 Doctrine for Joint Nuclear Operations and 2001Nuclear Posture Review (NPR) – include several statements that affirm the key role assigned to nuclear weapons in the US national security strategy and which point to the continuing perception of Russia as a nuclear antagonist. For example, the NPR, while noting the absence of "ideological sources of conflict with Moscow" and proclaiming that "the US seeks a more cooperative relationship with Russia and a move-away from the balance-of-terror policy framework," nonetheless concludes: "Russia's nuclear forces and programs … remain a concern." Russia is mentioned among "unexpected contingencies" and the operationally deployed forces are sized to meet the US goals in the context of immediate and *unexpected* contingencies.

Finally, nuclear missiles in both countries remain on high alert, which politically demonstrates a lack of trust toward each other and, in practical terms, creates danger of an accidental nuclear launch.

In other words, the size of nuclear arsenals, the prominent role given to nuclear weapons in the national security strategies of Russia and the United States, and the level of alert of nuclear missiles all point to vestiges of Cold War antagonism in a post-Cold War world. We find ourselves in a situation of "Strategic Paradox," when the Cold War is long over, but nuclear policies have not caught up with the new environment.

The implications of this are far-reaching. They go beyond just proliferation threats – the more weapons there are, the more nuclear material there is, the higher the chances are the unauthorized use by non-state actors. These policies send the wrong signal to other nuclear states with much smaller nuclear arsenals.

A brief window of opportunity exists in 2009-2010 that Russian and US decision-makers can use to revise their nuclear doctrines in the course of adopting new strategic documents – Russia's Military Strategy (to be presented by the end of 2009) and the US Nuclear Posture Review (to be presented in December 2009).

Mr. Dean KNOX

As the wheels of disarmament once again creak into motion, a sense of elation has emerged among proponents of a nuclear weapons-free world. The START follow-on treaty and the upcoming US NPR seem certain to set the stage for further reductions. Promising movement on the CTBT and an FMCT have raised hopes for breakthroughs in crucial corollary impasses. Yet while these trends are well and good, the most dangerous issue – the so-called "inalienable right" to enrichment and reprocessing – has lain largely untouched. Recent developments have not been reassuring: The discovery of a covertly constructed enrichment facility in Iran and the advent of yet another North Korean reprocessing campaign underscore the inability of the current non-proliferation regime to contain the spread of fissile material production capabilities; and the Nuclear Threat

Initiative's promising proposal of (and generous offer of funds for) an IAEA-controlled nuclear fuel bank, which would have made major strides in addressing the concerns driving the pursuit of enrichment technology, fell victim to narrow parochial interests in the Board of Governors. If attempts to restrain the proliferation of enrichment and reprocessing remain limited to ineffectual attempts at technology denial, recent advances in disarmament seem certain to stall; concerns over unrestrained breakout scenarios, already substantial, will only grow as stockpiles of nuclear weapons dwindle.

With a nuclear-free world seemingly within reach for the first time in a decade, the issue of fissile material production cannot be allowed to torpedo progress in disarmament. The nonproliferation regime must address the underlying incentives that push states toward acquisition of sensitive technologies, setting forth ironclad assurances that LEU fuel will not be used as a political weapon and offering attractive alternatives to reprocessing for the management of nuclear waste. With regard to reducing demand for indigenous enrichment, Russia's creation of an International Uranium Enrichment Center has been particularly helpful; the world would do well to consider Germany's suggestion of an extra-territorial multilateral enrichment sanctuary, as well as seek out an alternative sponsor for the NTI fuel bank. The question of reprocessing, unfortunately, has not received a similar level of intellectual interest – there are currently few options that adequately address the political challenges of domestic waste disposal which encourage states to pursue spent-fuel reprocessing. The international community must recognize that certain locations (e.g., West Australia, with its arid climate and geological stability) are inherently better suited than others (e.g., Japan, situated as it is along the Pacific Ring of Fire) for long-term waste disposal. The opening of an internationally available location on a commercial basis would, in addition to offering a potentially vast economic boost to the local economy, undermine a major argument for the pursuit of reprocessing technology. The current approach of resolving cases of proliferation as they arise will, as the world moves toward nuclear zero, grow increasingly unsustainable – only by eradicating the disease that underlies the visible symptoms can complete disarmament be achieved.

Mr. Kei KOGA

The biggest obstacle to progress toward a nuclear-free world is mistrust in other states' intentions and the belief that nuclear weapons, the most destructive weapons in the world, are the most effective means of deterrence. The degree of such a belief depends on the security environment that each state faces. Nevertheless, it is difficult to convince every state to relinquish its nuclear weapons or to not pursue a nuclear development program unless this mindset is discarded.

The basic belief that nuclear weapons are useful for deterrence is backed by several facts, but two stand out. First, there were no nuclear wars during the Cold War. Second, no Nuclear Weapon State (NWS) has had a war with another. Logically, a nuclear weapon is an easy way for even small states to gain deterrence if those states employ a "counter-value" strategy and acquire a means of delivery. Moreover, acquiring a nuclear weapon is an easy way to increase war-fighting capabilities. Increasing the number of nuclear

weapons, concealing the location of the nuclear weapons, and developing the means of delivery can compensate for a weakness of conventional forces.

However, certain risks accompany the proliferation of nuclear weapons. First, there is the potential for nuclear accident. This is well illustrated by the 1962 Cuban Missile crisis. After the incident, there were numerous efforts between the United States and the Soviet Union for nuclear crisis management by installing a hotline or PAL, but in the post-Cold War era, nuclear proliferation at the state level, including India, Pakistan, North Korea, and potentially Iran, has yet to have such an assurance system. Second, nuclear deterrence may fail. Israel was about to use a nuclear weapon in the 1973 Arab-Israeli War. Although using nuclear weapons in a war is not the end of the world, it is likely to become a threshold for other states to use nuclear weapons and the general credibility of nuclear deterrence will come into question. Third, the potential use of a nuclear weapon by nonstate actors poses security threats. While the likelihood may be low, states cannot afford the costs inflicted by such attacks.

Still, the belief that the benefits of nuclear weapons surpass the risks of proliferation remains strong. One way to ameliorate the uncertainty problem is an institutional arrangement that increases transparency as well as builds confidence among states, although there is always a possibility that states may cheat if such arrangements do not have a means to enforce punitive measures.

Ms. Jonizel LAGUNZAD

The biggest obstacle to progress toward a nuclear-free world is the persistent appeal of nuclear weapons as capable of delivering both (a) material benefits (security through deterrence and/or the possession of a "strategic tool" for threat-making), and (b) national symbolic values (status, power).[5] So long as there are states or nonstate actors that believe in the utility of nuclear armaments in furthering their goals – whether economic, political, or strategic – the international security system will continue to be characterized by the existence of nuclear weapons. It is also important to highlight the nuclear weapons decision-making of states is derived from a host of factors/considerations including domestic politics and calculation of needs (regime survival/legitimation, for example), regional/global security contexts, material capabilities, and ideational factors; and each state's decision to acquire or retain nuclear weapons has its own combination of motivations. As such, there are questions as to whether a single, all-embracing package of disarmament/nonproliferation policy will work in all cases or will mitigate all proliferation problems.[6]

Further, a world free of nuclear weapons implies that no state (nuclear or non-nuclear) will rely on nuclear weapons as a security mechanism. The issue of continued US reliance on nuclear deterrence and a US commitment of extended deterrence to its allies creates tensions in this regard. President Obama, in his speech in Prague, accentuated this tension when he warned that while the US will work on reducing its arsenal, as long as

[5] See Wade Huntley, *Nuclear Non-proliferation: Time for New Thinking?* (Paper presented at the International Studies Association Annual Meeting, Feb. 28-March 3, 2007).
[6] Scott Sagan quoted in Huntley, 32.

nuclear weapons exist, "[the US] will maintain a safe, secure and effective arsenal to deter any adversary, and guarantee that defense to [US] allies."[7] This message only magnifies the role that nuclear weapons play in US security policy and in global security in general, as well as "the political value of nuclear weapons as symbols and threat-making security devices."[8] President Obama's message, therefore, can be interpreted as presenting an obstacle to the delegitimization of the acquisition, possession, and eventual use of nuclear weapons. As Scott Sagan rightly pointed out:

> [A] security-oriented strategy of maintaining a major role for US nuclear guarantees to restrain proliferation among allies will eventually create strong tensions with a norms-oriented strategy seeking to delegitimize nuclear weapons use and acquisition. ...US decision-makers will eventually have to choose between the difficult nonproliferation task of weaning allies away from nuclear guarantees without producing new nuclear states, and the equally difficult task of maintaining a norm against nuclear proliferation without the US government facing up to its local final consequence. [9]

Current nonproliferation norms/regimes have managed to restrain but not prevent nuclear proliferation. The many obstacles should not, however, stop us from envisioning and working toward a world without nuclear weapons – after all, political conditions evolve. If the goal is to get to zero, efforts would entail long-term commitment. There is no place for a short-horizon perspective; only a long-view with a long-term responsibility perspective.

Mr. Hiep Hong LE

Nuclear power has brought about great changes. Advances in nuclear technology have enabled countries to generate electricity from nuclear reactors to sustain economic development. Yet nuclear power has also caused massive tragedies such as the bombing of Hiroshima and Nagasaki, which claimed hundreds of thousands of lives. Despite international anti-proliferation and denuclearization efforts, the world still seems far from becoming nuclear-free. The lack of an effective global security system is the biggest obstacle that the international community needs to overcome to make this world safer.

Many policy makers, especially those who are realists, believe that in an anarchic world, countries have to rely on "self-help" to ensure national security and independence. Therefore, balance of power has long been a dominant framework. Developing a powerful military capability has been a popular choice for policy makers. As a result, nuclear weapons have been an aspiration of leaders who face external security threats. For example, North Koreans have stated clearly that they have been developing nuclear capability to defend themselves against threats from the United States and its allies. Therefore, among the conditions that Pyongyang sets for the abandonment of its nuclear weapon program is the conclusion of a non-aggression pact.

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[7] Remarks of President Barack Obama, Prague, Czech Republic, April 5, 2009, http://prague.usembassy.gov/obama.html

[8] Huntley, 35.

[9] Scott Sagan quoted in Huntley, 32-33.

The idea of a nuclear-free world would be idealistic without an effective global security system that offers countries alternatives other than one's own military power to stay secure. Various attempts have been made for the establishment of such a system, including the promotion of preventive diplomacy or the establishment of collective security systems. However, these attempts have not freed countries from their security concerns. Under these circumstances, nuclear capability remains an ambition of many countries.

Mr. David LIN

Hard science and technological innovation led to the creation of nuclear weapons and since then many global leaders, through artful politicking and persistent diplomacy, have been trying to rid the world of them. However, the same science and technology that created these weapons of mass destruction may well also be the biggest obstacle to a world without nuclear weapons. Since the emergence of nuclear weapons, the course of international politics have been shaped by the strategic utility of basic, mutual, and extended nuclear deterrence. Breaking this mould will require a fundamental cultural change in the way international security politics is conducted. A shift must occur in the way hard power is perceived and projected.

In President Obama's April 2009 speech in Prague, he highlighted how "the threat of global nuclear war has gone down, but the risk of a nuclear attack has gone up." The difference between *threat* and *risk* is nuanced but distinct. Since the end of the Cold War, the outright threat of state-to-state nuclear war has decreased, but the desire of state and nonstate actors to acquire nuclear weapons or nuclear power has increased. In the case of Iran and North Korea, the desire by these two countries to develop deployable nuclear weapons reflects the perceived efficacy of nuclear weapons as an international bargaining tool, making them a strategic weapon of choice and illustrating that state-based deterrence is very much still a viable strategic paradigm even in a world of increasing transnational security issues.

Conversely, the development of nuclear power as a viable alternative energy source means that more countries will begin the legitimate pursuit of nuclear power. In this pursuit, the risks of proliferation of weapons-grade capable nuclear material will similarly increase. At the end of the day, as long as there is dual purpose nuclear material, be it an energy source or a weapon of mass destruction, the threat and risk of nuclear weapons will exist. Until new technology is developed to take the place of nuclear weapons or render nuclear weapons ineffective, such weapons will remain the strategic armament of choice by leaders regardless of their intent to use it. Like many accomplishments in science and technology, nuclear weapons will only become irrelevant once they become outdated and replaced by more advanced science and technology.

In Obama's words, "[Denuclearization] will not be reached quickly – perhaps not in my lifetime. It will take patience and persistence." Global denuclearization is a worthwhile goal, but one caught in the paradox of scientific progress. Being a creation of science and technology, nuclear weapons will only become irrelevant through science and technology

be it in the form of an impenetrable missile shield or a more destructive weapon of war. Getting to zero may be more of a science than we think.

Ms. Bao Chau NGUYEN
The biggest obstacle to progress toward a nuclear-free world is the theory of deterrence. With the predominance of realism and the anarchic nature of international relations, statesmen are compelled to provide for their own security. This creates a paradox and a security dilemma; states tend to strengthen their own security capacity or seek allies to balance threats from enemies.

More nations have acquired these weapons. Testing has continued. Black-market trade in nuclear secrets and nuclear materials abounds. Efforts to contain these dangers are centered on a global nonproliferation regime but nations have broken the rules.

The US and Russia are supposed to lead the world in reducing the nuclear risks since they possess 96 percent of the world's nuclear weapons. They can significantly lower global stockpiles while setting an example for other states and catalyzing progress multilaterally. However, none of these efforts really takes place. "Nuclear weapons are used every day," said former U.S Defense Secretary James Schlesinger, "to deter our potential foes and provide reassurance to the allies to whom we offer protection." The Cold War has ended, but the US still needs to deter Russia, which has the largest nuclear capability of any potential adversary, and the Chinese, who have a modest (and growing) capability.

The US nuclear umbrella protects more than 30 allies world-wide and provides necessary reassurance to its allies, both in Asia and in Europe, some of whom continue to be concerned about their Russian neighbor such as Poland and the Baltic States.

The second obstacle is that terrorists are determined to acquire nuclear weapons. One terrorist with a nuclear weapon could unleash massive destruction. This will menace existing international commitments concerning disarmament and nuclear nonproliferation. Countries, especially major powers, in fear of being the target of terrorism, will seek ways to escape from restraint and gain more freedom in the development and deployment of pre-emptive and preventive nuclear programs. That is the reason why the Obama administration encounters difficulties ratifying the new strategic arms treaty as well as resubmitting the Comprehensive Test Ban Treaty, which was rejected by the Senate 10 years ago.

North Korea and Iran have concluded that all states, instead of exerting vain efforts to eliminate nuclear weapons, should learn to live in peace with them. A credible nuclear deterrent policy, in turn, should require a safe, secure and reliable stockpile of nuclear weapons.

Ms. Dayea Diana PARK
To advance to a nuclear-free world, *all* global actors must reverse how they perceive nuclear weapons strategically. In Northeast Asia, peaceful economic growth has often been attributed to the existence of a credible nuclear deterrent provided by the United

States. This attitude remains strong, especially as countries remain suspicious of each other's intentions. Therefore, the greatest challenge is to come up with an alternative security scenario that would compensate for the eradication of nuclear weapons and maintain the deterrence that these weapons provide.

The logic of achieving zero at the immediate aftermath of the Cold War was far simpler than it is today. We must now consider the capabilities of countries like China, India, Pakistan, and even North Korea – and their reluctance to give up their nuclear weapons. Therefore, the United States needs to cooperate more convincingly on international denuclearization efforts. Only then would the counter-proliferation agenda gain momentum. Indeed, as nuclear terrorism and the possession of nuclear weapons by nonstate actors threatens the already complex nuclear landscape, a coordinated international effort to prevent this is vital.

I recommend using nuclear weapons reduction negotiations to address an emerging strategic need for greater nuclear energy cooperation. The United States must first work on a bilateral level with Russia to create a model for transitioning a nuclear weapons program into a safe nuclear energy program with appropriate safeguards. After its success, the United States and Russia would jointly lead a multilateral effort with nuclear weapons states to effect similar programs within their own countries to reduce their nuclear arsenal for a more practical, useful application of its existing technology and R&D efforts in the nuclear sector. Finally, after gaining the full cooperation of all nuclear weapons states, former nuclear weapons states would join an international organization of nuclear energy states that agrees to and enforces the appropriate protocol for particular facets of nuclear energy use. For example, research and agreement on areas such as reprocessing and the handling of spent fuel would happen within the realm of this organization. An international protocol for the safety of nuclear energy facilities will be strictly enforced by an international group formed within this organization. Consequences for insufficient security for these facilities will need to be severe – possibly the complete loss of energy privileges for a country that fails to meet these standards. Non-nuclear weapons states with nuclear energy programs would join the former nuclear weapons states as founding members of this organization. States that aspire to have their own nuclear energy programs would apply for membership and gradually gain membership, pending their ability to build and enforce the safety of their nuclear energy facilities and radioactive material.

Mr. David SANTORO

The pursuit of nuclear disarmament is in many ways the pursuit of an ideal for the world. Although the danger of global annihilation has virtually been nil since the end of the Cold War, there are still numerous dangers of mass destruction that would decrease considerably should nuclear weapons be eliminated.

However, while nuclear disarmament is a worthwhile goal, it is important to realize that it cannot happen overnight because of complex issues, both of political and technical nature. Leaving aside the fact that the physical elimination of weapons is costly and time-consuming, nuclear weapons are so deeply embedded in the fabric of the international

system that phasing them out will require much time and concerted efforts at the highest levels of governments.

Most importantly, lessons about the feasibility (and, to some extent, about the desirability) of a nuclear-weapon-free world will be drawn as the disarmament process proceeds. New instability problems will emerge as nuclear weapon states downsize their arsenals, first between the United States and Russia; then between the United States, Russia, and China; and then between these three powers and other nuclear weapon states. Proliferation crises will also influence the evolution of disarmament mechanics, with current developments in North Korea and Iran helping to determine how much nuclear disarmament can be achieved – and how quickly.

More than a destination, nuclear disarmament should be seen as a journey – a long and difficult journey – that needs to be conducted on a step-by-step basis to have any chance of success. That is why US Assistant Secretary of State for Verification and Compliance Rose Gottemoeller entitled one of her recent speeches, "The Long Road from Prague."

Ms. Jennifer SHIN
President Obama's declaration of the goal of 'global zero [nuclear weapons]' in Prague in April 2009 ignited global interest in nonproliferation and arms control initiatives to help pave a new path of nuclear policy. Collaborative efforts among academic scholars, government officials, and think-tank analysts have resulted in discussions and debates about the complex issues of how to approach the goal of global zero.

Approaching the ambitious goal of global zero is easier said than done. Not only are there technical issues to consider (life-extension programs for warheads near retirement within the stockpile, stability of the nuclear stockpile infrastructure, modernization of weapon systems), but policy concerns as well (extended deterrence, the role of nuclear weapons within a changing national security environment, Allied commitments in the Asia-Pacific region and NATO). To prioritize these issues in terms of urgency and need is too complex since different groups of experts will argue for different priorities. However, the biggest challenge on a path to global zero is the timing and understanding of how to approach these issues collectively with ongoing war efforts and emerging insurgent and nuclear threats.

The current timeline of the post-START II Treaty negotiations, Nuclear Posture Review, Quadrennial Defense Review, and even the health care bill all coincide at the end of 2009. However, the insights of those working within these groups stretch these timelines out to early 2010. President Obama must use this crucial time to establish a clear, coherent strategy for the future of nuclear policy. To announce a goal of global zero before even deciding how to deal with current nuclear stockpiles and policy commitments was hasty. The role of nuclear weapons and the stockpile will continue to be a part of national security strategy; modernization of the stockpile and various warheads and missiles close to retirement is crucial to sustain the reliability and credibility of the nuclear deterrent as long as it exists. Understanding the 'new enemy' of the changing

security environment will enable us to better define the role of nuclear weapons and how to use them, and ultimately reduce them, most effectively.

Ms. Emily WARREN
There is a litany of obstacles to progress toward a nuclear-free world. Different obstacles will be more or less prominent at different moments in the many-decades long effort that advocates like President Barack Obama envision.

In 2010, the biggest and most intractable obstacle to progress will be the simple fact that Iran's strategic interests will continue to compel it to break the rules established by the nonproliferation regime and that its transgressions will disproportionately threaten the interests of the United States. The growing recognition in 2010 on the part of policymakers worldwide that it will not be possible to roll back Iran's nuclear program, whether it is meant for immediate warhead development or mere latency, will inspire new fears of agreeing to policies that are likely, in the long-run, to be in many countries' best interests.

In the United States, Iran's nuclear program will be used as a strong argument against ratification of the Comprehensive Test Ban Treaty and possibly for the development of new nuclear warheads. Though, when brought to its logical conclusion this argument makes little sense, it will nevertheless be politically powerful and is likely to play strongly with the US public. As both ratification of the treaty and the prevention of the development of new nuclear weapons are vital steps in President Obama's plan to display the US commitment to working toward a nuclear-free world, this obstacle could mean that the US fails to show much if any leadership in this area.

In Europe, Iran's nuclear program will make it more difficult to remove NATO's short-range nuclear weapons from European soil, as Turkey will make a strong case for enhanced rather than diminished shows of force and will threaten to build its own nuclear weapons if its allies refuse to comply with those demands.

In Russia and China, the opposite problem will make it difficult to spur significant changes. Though, intellectually, most Russian and Chinese senior officials and foreign policy advisors agree that Iran's nuclearization is a significant problem, they see this as predominantly affecting the United States in its self-proclaimed role as global policeman. The only solutions readily apparent, however, require roughly equal efforts on the part of – and impose roughly equal costs upon – the US, Russia, and China. This misalignment of national costs and benefits, at least as they are currently perceived, will make deals difficult to come by, barring major concessions by the United States in areas of greater interest to Russia and China.

Unfortunately, Iran may be only the beginning of obstacles to efforts to move toward a nuclear weapon-free world. If the case of Iran is not successfully addressed, then many more Irans may follow, making the biggest obstacles in the future not verification or reconstitution, but rather the proliferation activities of the many countries spurred to follow in Iran's footsteps.

Ms. Ting XU
The biggest obstacle to a nuclear-free world is the nature of nuclear weapons. The power of nuclear destruction is huge and we do not have means to counter this potential destruction. Thus, possessing a nuclear arsenal is still a credible deterrent for countries that are relatively weak. We could engage in efforts for a long time without any real progress because distrust among countries and regional security calculations makes nuclear deterrence a last reserve for negotiation. Meanwhile, the fact that the international community has yet to realize one case of denuclearization of a country (with the possible exception of South Africa) makes nonproliferation claims non-credible. One way to solve the issue of distrust and security calculation is to achieve a technological breakthrough that creates an effective countermeasure to nuclear weapons themselves.

Ms. Adrian YI
Following is a phased action plan toward achieving a nuclear-free world proposed by a non-partisan international committee, Global Zero:[10]

- 2010-2013: The United States and Russia negotiate cuts to 1,000 warheads apiece, while preparations are made for multilateral talks;
- 2014-2018: A multilateral accord for proportional reductions among all nuclear weapons nations is negotiated and ratified, and civil nuclear safeguards are strengthened;
- 2019-2024: A Global Zero accord is negotiated and ratified; and
- 2025-2030: All remaining nuclear warheads are eliminated.

This action plan does not address the most immediate and the most challenging obstacle to a nuclear-free world: extended deterrence. How do countries work toward a nuclear-free world or, "global zero," when nuclear weapons are such an integral part of their national security strategy? In April 2009, President Obama and President Medvedev committed the "two countries to achieving a nuclear free world" in a joint statement. This was immediately followed by a speech in Prague where President Obama announced the need for a treaty that "verifiably ends the production of fissile materials intended for use in state nuclear weapons" signaling a need for a type of FMCT. However, two months later, on June 16, Obama and ROK President Lee issued a joint statement that reassures "the continuing commitment of extended deterrence, including the US nuclear umbrella." There is an inherent conflict in pursuing complete global disarmament while employing and relying on extended deterrence for national security. Remove nuclear deterrence from the national security strategy of all nations, including the US and Russia, and the most immediate obstacle to a nuclear-free world will be removed.

Mr. Tong ZHAO
The biggest obstacle to a nuclear free world is the lack of trust and confidence among states. This lack of trust and confidence among nuclear weapons states (NWS) makes it difficult for them to move aggressively toward nuclear disarmament. This is not only the

[10] http://www.globalzero.org/files/pdf/gzap_presentation.pdf

case between first-tier nuclear weapon states, reflected by the slow nuclear disarmament talks between the US and the USSR/Russia, but also applies to the strategic interaction between first-tier and second-tier nuclear weapons states. For instance, while China believes a robust nuclear arsenal is critical in undermining possible nuclear coercions from the US, the US is concerned about the intentions behind a modern Chinese nuclear force. Serious mistrust and suspicion make positive nuclear interaction among NWS costly and difficult.

The lack of trust and confidence is observable between NWS and non-nuclear weapons states (NNWS) too. NNWS are critical of NWS' slow progress toward nuclear disarmament, while NWS tend to view NNWS' interest in indigenous nuclear fuel cycle capacity as a potential threat to the global nonproliferation regime. Suspicion between NWS and NNWS has greatly slowed progress in nuclear disarmament and nonproliferation efforts because the two issue areas are so closely interrelated that any progress in one area is highly dependent on progress in the other.

Mistrust has contributed to the perplexity of nuclear disarmament by tying nuclear disarmament to other thorny issues such as conventional strategic weapons and space weapons. NWS are so apprehensive about each others' advancement in non-nuclear strategic weapons that some insist on addressing the threat posed by conventional strategic weapons, space weapons, and missile defense systems in parallel with nuclear disarmament. Although legitimate and reasonable, such issue linkage has further complicated disarmament negotiations.

It is fair to liken the problems relating to nuclear disarmament to the Prisoners' Dilemma. Every country and the international community as a whole will benefit if global zero is achieved. However, because of mistrust and suspicion, every state has an incentive to cheat by developing or keeping nuclear weapons. The end result, obviously, is great difficulty in moving forward on the path of nuclear disarmament.

Developing safeguard and verification mechanisms may be an effective approach to provide trust and confidence, although it is both resource and time consuming. A problem in relying on such an approach is that the confidence in verification mechanisms is highly dependent on the degree of trust and confidence between states. The current debate around the effectiveness of the Comprehensive Test Ban Treaty (CTBT) verification system seems to point to the fact that, for a state that is highly suspicious of its rival's intentions, there will never be a verification system that is good and robust enough.

As the lack of trust and confidence is the fundamental obstacle to a nuclear-free world, dialogue and communication remain the most practical and promising approach to address this problem. Dialogue and communication, especially at the track-two level first followed by the track-one level, has proven effective during negotiations of the CTBT, and could play a similar role in the nuclear disarmament movement. The meetings of CSCAP Study Groups provide a perfect opportunity to facilitate dialogues and communications on nuclear disarmament, and will contribute to confidence-building among states in this area.

Mr. Telmuun ZORIG

The task of creating a nuclear weapon-free world is a daunting challenge. The last half of the twentieth century saw the world shiver from fear of nuclear war between two superpowers. We must be grateful that nuclear war was avoided in the last century, and in this century we must truly work toward creating a nuclear weapon-free world.

The first obstacle to creating a nuclear weapon-free world is nuclear deterrence. States rely too much on it and fail to see the danger of everyone acquiring a nuclear weapon. Nuclear deterrence worked during the Cold War era as mutually assured destruction threatened both superpowers. But nuclear deterrence has become a means of safeguarding one's sovereignty, especially of small, rogue countries like North Korea. This is the reason why pursuing nuclear weapons has become attractive to many countries.

Another obstacle is the reluctance of nuclear weapon states to eliminate weapons of mass destruction. Ronald Reagan and Mikhail Gorbachev had visions of a nuclear weapon-free world when they met in Reykjavik in 1986. They failed to achieve this mission but they did stop the nuclear weapons arms race. Today US, Russia, and other nuclear powers are reluctant to follow up on agendas talked about during the Reykjavik meeting.

The nuclear Non-Proliferation Treaty (NPT) provides that a) states that did not possess nuclear weapons as of 1967 agree not to obtain them and b) states that do possess them agree to eliminate these weapons over time. So far the NPT failed to achieve both of these goals. Member states are not committed to achieving the goal of creating a nuclear weapon-free world. Instead, they are focused on controlling the flow of sensitive technology and material while maintaining their status as nuclear powers.

The concern is terrorism. This is definitely the most challenging task. Even if states reach a consensus on eliminating nuclear warheads, terrorist groups do not have to follow these rules. This makes them fearsome enemies.

If terrorist groups acquire nuclear weapons, the results would be devastating; especially for great powers like the US, Russia, and China. All three have conflicts with terrorist-related groups such as the rebels in Iraq and Afghanistan, the Chechnya separatists, and Xingjiang Uyghur minorities – all of which allegedly have contacts with Al Qaeda. United by common hatred, any extremist group and the likes of Al Qaeda might consider a nuclear attack on major cities of these countries. The results would be overwhelming.

The last but not least important factor is trust among states. States lack the trust needed to reach consensus on eliminating nuclear weapons. If such a consensus is indeed achievable, then trust among participants is essential.

Appendix B

Pacific Forum CSIS

YOUNG LEADERS

Tenth Meeting of the CSCAP Study Group on
Countering the Proliferation of Weapons of Mass Destruction in the Asia Pacific
Hanoi, Vietnam ◆ 6-8 December 2009

Biographies

Ms. Natasha BARNES is pursuing an MA in Political Science at the University of Canterbury on nuclear disarmament and diplomatic strategy involving middle power states. She has a BA with First Class Honours, in Diplomacy and International Relations, with undergraduate majors in Political Sciences and European Studies from the University of Canterbury. Natasha tutored in world and environmental politics at the University of Canterbury and was a guest lecturer in these classes. Natasha presented at the National Consultative Committee on Disarmament annual conference on current dynamics at the NPT Prep Com 2009, (which she attended as a NGO representative). Natasha recently co-authored a paper in a future edition of the Non-Proliferation Review Journal, and has worked for the Refugee Services Aotearoa as a resettlement team leader. Natasha now works for Disarmament and Security Centre in Christchurch.

Mr. Justin BISHOP is pursuing an MA in Diplomacy and Military Studies at Hawaii Pacific University with a focus on Chinese energy security and its implications for the global security environment. Justin currently works at Pacific Forum CSIS as a Research Assistant, and at Cubic Applications as a Research Analyst. Previously, Justin served as a Research Assistant at the Asia Pacific Center for Security Studies, with a focus on Counter-terrorism in South and Southeast Asia. Mr. Bishop has worked on a wide variety of projects including: Chinese energy security, the CSCAP WMD Handbook, military modernization throughout Asia, and South/ South East Asia terror issues.

Ms. Catherine BOYE is pursuing an MA in international policy studies with a specialization in international security at the Monterey Institute of International Studies. She was the 2009 Monterey Fellow with Pacific Forum CSIS. She received a BA in political science and a BA in international studies from the University of Utah in 2006. Her research interests include Chinese military policy, Chinese energy policy, East Asian Security, disarmament and nonproliferation.

Mr. Lyndon BURFORD is a nuclear disarmament specialist with experience in research, education and public outreach in this field. Lyndon has an MA in Political Science and a Postgraduate Degree in Diplomacy and International Relations (both with First Class Honours) from the University of Canterbury, New Zealand. His Master's thesis examined the historical influence of nongovernmental organizations on New

Zealand's nuclear disarmament advocacy. Lyndon's experience in education and public outreach was gained at the nongovernmental *Disarmament & Security Centre* where worked from 2005-2007. He is an independent researcher, examining New Zealand's nuclear disarmament advocacy since 2000.

Ms. Maria Kristela Sylvia B. CASTRONUEVO is a research analyst of the Armed Forces of the Philippines Resource Management Office. Formerly, she was a researcher of the Armed Forces of the Philippines Modernization Program Management Office. She studied Bachelor of Arts in Public Administration at the National College of Public Administration and Governance, University of the Philippines – Diliman.

Mr. Vannarith CHHEANG is Executive Director of the Cambodian Institute for Cooperation and Peace (CICP). He holds a BA in International Relations from the Institute of International Relations, Vietnam and an MA in International Relations from the International University of Japan. He worked with the Japan Assistance for Small Arms Management in Cambodia and was a research fellow at the Japan-US research institute in Niigata, Japan and the Cambodian Institute for Cooperation and Peace. He published several articles relating to political economy and international relations.

Ms. Ngan Ha DINH is at the Department of International Law, Diplomatic Academy of Vietnam.

Ms. Mai Lan DO is a Vietnamese research fellow in the Institute for Foreign Policy and Strategic Studies, Diplomatic Academy of Vietnam (DAV). Her bachelor thesis, defended at the Diplomatic Academy of Vietnam in 2008, was about the hegemony of the United States since the World War II, and she is currently working on a manuscript of an article on the future of the Europe Union after the Lisbon agreement takes effect.

Dr. Togzhan KASSENOVA is a Senior Research Associate at the Washington DC office of the Center for International Trade and Security (The University of Georgia). In 2007-2008 she was a postdoctoral fellow at James Martin Center for Nonproliferation Studies (CNS) in Monterey, California. She holds a Ph.D. in Politics from the University of Leeds. Her primary areas of research are WMD non-proliferation and strategic trade controls. For several years Togzhan worked as a journalist and later as a university professor. Her first book, *From Antagonism to Partnership: the Uneasy Path of the US-Russian Cooperative Threat Reduction* (ibidem-Verlag/Stuttgart), was published in 2007.

Mr. Dean KNOX is a nuclear engineer and a recent graduate of the Monterey Institute of International Studies' certificate program in nonproliferation studies. A Chinese speaker, his research centers on Chinese security policy, particularly with respect to proliferation, US-China relations, and Taiwan. Dean is a research assistant at the Stockholm International Peace Research Institute's China and Global Security Programme.

Mr. Kei KOGA, from Japan, is a Vasey Fellow at the Pacific Forum CSIS and a Ph.D. candidate in International Relations at the Fletcher School of Law and Diplomacy, Tufts University. Before attending Fletcher, he served as a Research Fellow at the Japan Forum

on International Relations (JFIR) and as assistant executive secretary at the Council on East Asian Community (CEAC), where he researched political and security cooperation in East Asia on traditional and non-traditional security issues. He also teaches International Relations and East Asian Security at the Open University of Japan. He received an MA in International Affairs at the Elliott School of International Affairs, George Washington University, and a B.A. in International Affairs at Lewis & Clark College.

Ms. Jonizel LAGUNZAD received her MA in Diplomacy, and International Affairs from the Australian National University in July 2009. At ANU, she specialized in ASEAN and Asian regionalism, China politics and society, Asia-Pacific security, as well as crisis management, negotiation, and conflict resolution. Her professional experience is mainly in public policy, strategic communications, and advocacy campaigns. She worked for the Philippine government for six years, most recently as a Director at the Office of Sen. Richard J. Gordon of the Philippines, where she provided analysis, support and strategic direction to legislative and political programs. She is finishing an MA in Asian Studies, major in China, at the Asian Center, University of the Philippines.

Mr. Hiep Hong LE is a lecturer at the Faculty of International Relations, College of Social Sciences and Humanities, Vietnam National University (VNU) in Ho Chi Minh City. He teaches International Political Economy, Advanced English of International Relations, and is developing courses on International Negotiation and Asia Pacific Security. Prior to his academic career at VNU, Hiep worked for Department of International Law and Treaties, Ministry of Foreign Affairs of Vietnam from 2004 to 2006. Hiep received his BA from Vietnam Institute of International Relations (now Diplomatic Academy of Vietnam) in 2003. In 2008, he earned his MA in International Relations and Master of Diplomacy from the Australian National University by an Australian Leadership Award.

Mr. David LIN is a defense contractor working for a US combat support agency in countering the spread of WMD through regional security cooperation programs. David spent substantial time abroad, implementing a new British border security and biometrics collection program. He worked for a UN-affiliated nongovernmental organization managing an array of international education and advocacy programs. He was a staffer on Capitol Hill and a researcher at an international security policy think-tank and has published articles in university-level journals on stability operations and interagency cooperation. He is pursuing an MA in Security Policy Studies with a focus on US defense policy and transnational security issues at the George Washington University.

Ms. Bao Chau NGUYEN is a lecturer on History of International Relations at the Diplomatic Academy of Vietnam. She was a representative of Vietnam to international conferences such as the ASEAN Logics in Indonesia, the Global Women Summit in Hanoi; and was an active participant in the successful organization of the ASEM 9th Summit, APEC Summit, etc. Chau graduated with a BA in International Relations from the Diplomatic Academy of Vietnam and received honors in 2008.

Ms. Thi Huong NGUYEN is at the Administration Office of the Commission for External Affairs of Vietnam.

Ms. Diana PARK is a resident Kelly/Korea Studies Fellow at Pacific Forum, CSIS, and a recent graduate of the School of Foreign Service in Georgetown University. Her thesis on South Korea's defense industry, "South Korea's Arms-for-Energy Strategy," was published in the Columbia University Journal of Politics and Society in April 2009. In 2008, Diana worked at the headquarters of Samsung Corporation, Trading and Investment Group, specializing in energy investment and overseas development. In 2007, she was part of a US NGO delegation on a humanitarian mission to North Korea. She is also a founder and former president of a social justice organization, Truth and Human Rights in North Korea, which aims to include human security in discussions in policy toward North Korea in Washington.

Ms. Trang Thuy PHAM is an official with the Americas Department of the Ministry of Foreign Affairs in Hanoi, Vietnam. She was a Pacific Forum CSIS Vasey Fellow in Hanoi. She received a BA in international economics at the Institute for International Relations in Hanoi in 2006. Her research interests include relations among the US and Asia, especially US-China-ASEAN trilateral cooperation.

Dr. David SANTORO is a nonproliferation analyst at the Simons Centre for Disarmament and Nonproliferation Research (Liu Institute for Global Issues, The University of British Columbia). David is a research associate at the Paris-based Center for Transatlantic Studies and at the Center for International Security and Arms Control Studies (Paris). Prior to that, he served as a teaching fellow in international relations and international security studies at Macquarie University (Sydney) and was involved with the Assembly of the Western European Union and the French Ministries of Defense and Foreign Affairs. His current research is on P-5 nuclear nonproliferation diplomacy and East Asian security issues.

Ms. Jennifer SHIN works as a Strategic/Nuclear Security Analyst with Defense Solutions Group-Strategic Missions, Science Applications International Corporation (SAIC). She provides analytical support to the Office of the Deputy Assistant to the Secretary of Defense for Nuclear Matters regarding the national strategic deterrent and related issues. She has also worked with the Institute on Global Conflict and Cooperation to support the Northeast Asia Cooperation Dialogue program, focusing on security stability within Northeast Asia.

Ms. Emily WARREN joined the Hewlett Foundation 2007 after graduating from Stanford University with a B.A.H. in economics and a minor in Political Science. She manages most grantmaking out of the Foundation's Special Projects program and directs the Foundation's Nuclear Security Initiative. The Initiative supports work toward three broad outcomes: (1) strategic stability: developing and preserving cooperative strategic nuclear relations among the major powers; (2) better international rules: developing an effective, enforceable, and equitable nuclear nonproliferation regime, with a near-term focus on a new US nuclear posture, START renegotiations, ratification of the CTBT, the

Global Summit on Nuclear Security, a successful NPT Review Conference, and a consensus on new rules for the nuclear fuel cycle; and (3) industry responsibility: shifting more of the burden for effective materials security and nonproliferation practices to the civilian nuclear power industry.

Ms. Ting XU was born in Sichuan, China. She started her career as an account executive for Dentsu, Inc. Before she joined the Bertelsmann Foundation, she was a World Bank consultant, working on sustainable development projects for China. She was a member of the World Bank team on Wenchuan Earthquake Emergency Relief and Reconstruction in 2008. Ms Xu has also worked for the International Fund for Agricultural Development in Washington and the Asian Development Bank Institute in Tokyo. She was a Graduate Fellow of the United Nations Association. She holds a BA in Business Administration from Beijing Normal University and an MA in International Economics and International Affairs from Johns Hopkins University, School of Advanced International Studies.

Ms. Adrian YI is a Kelly Fellow at the Pacific Forum CSIS. She received her MA in Korean Language at the University of Hawaii as a part of the National Security Education Program (NSEP). She studied at Korea University for a year and interned as a research assistant at the Center for Security and Strategy at the Korea Institute for Defense Analysis (KIDA). She received a BA in International Relations and Foreign Languages (Chinese and Japanese) from the University of Puget Sound. She studied Chinese at Middlebury College and has studied abroad in Japan through the Rotary Program. She also worked with the Department of State at the American Institute in Taiwan.

Mr. Tong ZHAO Tong Zhao is a second-year PhD student in the Program of International Security, Technology, and Policy in the Sam Nunn School of International Affairs at Georgia Tech. He received his BS in physics and MA in international affair, both from Tsinghua University in China. He worked for the Office of Foreign Affairs in the People's Government of Beijing Municipality. His area of interest is arms control and disarmament. He joined the Sam Nunn Fellowship group on Science, Technology and International Security, and was a fellow of the Nuclear Threats Summer Fellowship (PPNT) program. He has worked on issues and published papers relating to missile defense, missile proliferation, regional strategic stability, and China's security policy.

Mr. Telmuun ZORIG is the Deputy Director's Research Assistant at the Institute for Strategic Studies in Mongolia. His research interests are international relations, energy, and nuclear nonproliferation. He obtained a BA in International Relations at the Institute of International Studies and an MA in International Politics at Fudan University. Upon completion of his education, he worked for an NGO, MonAme. MonAme's research focus included: mining, energy, environment, education. His research interests include: international relations, energy, and nuclear nonproliferation.

Appendix C

PACIFIC FORUM CSIS
YOUNG LEADERS

Tenth Meeting of the CSCAP Study Group on
Countering the Proliferation of Weapons of Mass Destruction in the Asia Pacific
Fortuna Hotel ◆ Hanoi, Vietnam
6-8 December 2009

Agenda

Sunday, December 6

17:30-18:00 YOUNG LEADERS introductory session with Brad Glosserman (Meet in the Fortuna Hotel Lobby)

18:30 Welcome Reception/Dinner

Monday, December 7

9:00 **Welcome remarks**
(CSCAP Vietnam and USCSCAP)

9:15 **Session 1**: **Developments in the Global Nonproliferation Regime**
Discussions will focus on developments since our last meeting that impact the global nuclear nonproliferation regime. What is the status of the 2010 Review Conference of the Nuclear Nonproliferation Treaty (NPT)? Are there significant developments at the UN Conference on Disarmament? What are the prospects for ratification of the Comprehensive Test Ban Treaty and completion of the Fissile Material Cutoff Treaty? What are the prospects for and the implications of a US-Russia arms control agreement to replace START 1? What are the significant issues coming out of the IAEA Board of Governors Meeting and the General Conference? What are the implications of the Iranian nuclear program? What should be done about the reported nuclear facility in Myanmar? How do these developments affect the Asia-Pacific region?

10:45 **Session 2: Developments on the Korean Peninsula**
This session will examine the status of denuclearization in Korea. What are the respective parties' assessments of recent developments? Can the Six-Party Talks be resumed? What are the alternatives to those talks? How have the application of UN sanctions impacted the situation? What impact have these sanctions had on the global nonproliferation regime? What role should regional organizations play in the process?

14:00 **Session 3: Disarmament Issues**

This session will discuss prospects for nuclear disarmament. How should disarmament be defined? How do we envision the disarmament process? How do the CTBT and FMCT affect the process? Are confidence-building measures possible and feasible? What are first steps in the disarmament process? How can verification be addressed? How would these developments affect security relationships in the Asia-Pacific region and how can countries in the region – and CSCAP – contribute?

15:45 **Session 4: Nuclear Energy**

This session will focus on the nuclear energy renaissance and its implications for the Asia-Pacific region. What nuclear energy facilities, including research reactors, are planned in the region? Are those plans consistent with IAEA projections for a dramatic increase in nuclear energy utilization? What are the safety and security implications of this increase? What measures can be taken to increase transparency at nuclear power facilities? Are these measures necessary? What is the appropriate role for regional organizations in ensuring safety and security of nuclear facilities and materials?

Tuesday, December 8

9:00 **Session 5: Review and update of Asia-Pacific WMD Handbook**

This session will provide an update on the Asia-Pacific WMD Handbook. It will include a review of completed chapters as necessary.

Presenter: Carl Baker

10:15 **Session 6: CSCAP Memorandums Breakout Session**

In this session breakout groups will meet to build on recommendations from the 9th WMD Study Group Meeting. The session will focus on developing the contents of specific CSCAP Memorandums to address disarmament, enhancing civilian nuclear energy safety and security, strengthening the implementation of nuclear weapons free zones, and improving compliance with nonproliferation obligations in the region. Young Leaders will be integrated into each group.

14:30 **Session 7: CSCAP Memoranda Plenary Session**

Breakout groups will present recommendations.

16:00 **Session 8: Wrap up and Future Plans**

This session will focus on future work of the Study Group. How should the Study Group focus its future efforts? How can the WMD Study Group complement and support the ARF Intersessional Meeting on Nonproliferation and Disarmament? How can it better facilitate the implementation of its recommendations?

16:30-17:30 YOUNG LEADERS Roundtable Discussion, moderated by Brad Glosserman

PACIFIC FORUM CSIS
YOUNG LEADERS

Fifth Meeting of the Export Control Experts Group (XCXG)
Council for Security Cooperation in the Asia Pacific (CSCAP)

Fortuna Hotel ◆ Hanoi, Vietnam
8-10 December 2009

Agenda

Tuesday, December 8

18:30 Opening Dinner

Wednesday, December 9

9:00 Welcome and Introductions

9:15 **Session 1: Feedback on CSCAP Memorandum on Guidelines for Managing Trade of Strategic Goods**
This session will provide feedback from the session on CSCAP Memorandum #14 from the ARF, national governments, and experts. It will include a read-out from the ARF Inter-sessional Meeting and offer the opportunity for participants to evaluate the progress being made in national implementation of the recommendations outlined in the memorandum. How have the recommendations been received? Are the recommendations realistic? What challenges are anticipated in their full and sustainable implementation? Are there opportunities to develop regional-level solutions to some of the recommendations?

10:45 **Session 2: Proliferation Networks and Export Controls**
This session will focus on the relationship between proliferation networks and export controls. How do proliferation networks operate? How significant are they? How do illicit brokers circumvent national licensing requirements? What are the major challenges associated with identifying illicit brokering of dual-use goods? What are the lessons learned from previously identified proliferation networks? What is the relationship between transnational crime hubs and proliferation networks? Are there common solutions to addressing these problems?

13:30 **Session 3: Capacity-building in the Asia Pacific – Overview of Regional Capacity**
This session will focus on recent experiences from the region in implementing components of the export control regime. What are the key components of an effective export controls regime? What activities are regulated? Is a well-specified control list in place regulating trade in dual-use and conventional munitions items? What agencies should be involved to

ensure effectiveness? Do they have adequate legal authority, trained manpower and resources to carry out their respective responsibilities? What assistance and outreach programs are available? Presentations and discussion should address the capacity development process, lessons learned, and anticipated outcomes.

15:15 **Session 4: Capacity-building in the Asia Pacific – Role of Enforcement**
This session will focus on the enforcement component of the export control regime. The purpose is to examine alternative approaches to dealing with enforcement including organizational structure, inter-agency coordination, role of national Customs, coast guard/navy and intelligence agencies, challenges in implementation and enforcement of existing regulatory mechanisms, and technological solutions to improve national enforcement capacity.

18:30 **Reception and Dinner**

Thursday, December 10

9:00 **Visit to the Export Controls Division at the Noi Bai Airport in Hanoi.**

13:30 **Session 5: Regional Mechanisms and Linkages**
This session will focus on the implementation of export controls in the Asia-Pacific region. How is the region linked to the global nonproliferation architecture, especially to the export control regime? How do export controls fit into the ASEAN Regional Forum? What role can or should regional organizations and mechanisms, such as the Bangkok Treaty, play in promoting export controls in the region? What are the challenges to developing robust export control capacity at national levels that promote the region's trade and security objectives? How do these initiatives support the global export control regime? Are they adequately institutionalized? To what extent are national-level export control initiatives and "best practices" shared between countries in the region?

15:15 **Session 6: Wrap-up, Next Steps and Concluding Remarks**
This session will focus on next steps envisioned improving the export control regime in the region and more specifically on the role the Export Controls Experts Group can serve in the regime. What are the options available for implementing national programs? What types of outreach would be most effective in expediting implementation of the recommendations outlined in the CSCAP Guidelines for Managing Trade of Strategic Goods? What areas should the Export Controls Experts Group focus on in future meetings?

16:00 -17:30 **YOUNG LEADERS Roundtable Discussion, moderated by Brad Glosserman**