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Beyond Missile Defense

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Abstract

An asymmetric arms race has developed with, on the one hand, the United States' pursuit of more accurate conventional weapons, a space-based military capability, national and several theater missile defense systems, and, on the other, the acquisition of ballistic missiles and increased emphasis on nuclear weapons by a number of other states. After a short description of the complex dynamics of this arms race, the paper describes the current state of international missile control, in particular focusing on the lacunae in the regime and the weaknesses in some of the proposals to go beyond. Finally, the paper argues for a comprehensive approach to deal with missiles and outlines a "framework" agreement to restrict the development, testing and deployment of all ballistic missiles and missile defenses.

Introduction

Over the past few years, with the Cold War long over, a new kind of arms race has started to become apparent. Unlike earlier efforts of the United States and the Soviet Union to match and exceed each other in the development and deployment of nuclear weapons, ballistic missiles, and conventional weapons, the new arms race is more global, and asymmetric in both the kind of states involved and the kinds of weapons. The United States is developing an array of new weapons systems for the maintenance of its global military dominance; the tip of the iceberg is the national ballistic missile defense (BMD) system being prepared under the rubric of protecting the continental United States from missile attack by third world states. There is also a diverse array of attendant theatre missile defense (TMD) systems to protect US military expeditionary forces around the world. The US is also developing increasingly accurate, stealthy, and longer-range conventional armaments, including a variety of missile systems, with improved ability to destroy hard targets like missile silos and buried command and control facilities. Any worst case analysis by military planners, especially in states who have suffered from US efforts to dominate globally, must face the prospect that with an ability to target launch sites, combined with antimissile systems able to destroy a limited number of missiles, the United States could mount or at least credibly threaten a pre-emptive attack in a crisis.

The traditional nuclear rivals of the US, Russia and China, have been the most concerned about US plans to deploy a BMD system; China, for example, has threatened that it will "not sit on its hands", and will respond with an arms-buildup (Ekholm 2000). At the same time, seeking to emulate US and Soviet strategic thinking and practice over the past fifty years that nuclear weapons and ballistic missiles can induce deterrence, a number of states are developing such systems, most notably, India, Pakistan, and North Korea.[1] Prior to these states is Israel, which has the most sophisticated nuclear weapons and missile program outside the five nuclear weapons states, but is closely tied to the US and protected from any international pressures in this regard. Iraq tried to develop both nuclear weapons and ballistic missiles, but the Gulf War and its aftermath have largely destroyed this capability. Other states

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tried and succeeded to varying degrees (e.g. South Africa, Brazil, Argentina, South Korea, Taiwan, and Sweden) but have ceased at least for now.

Since the development of both intercontinental-range ballistic missiles (ICBMs) and ballistic missile defenses of any kind is a complex and slow task, there is still time for political initiatives to prevent a costly arms race between offensive and defensive missiles, reduce concerns about US ambitions in the post-Cold War world, and limit the escalation of regional arms races and the scope of future wars.[2] We propose here that one direct way forward is to negotiate a truly comprehensive regime strictly controlling and eliminating ballistic missiles. This would place limits on all states with missile programs and not just be another ABM treaty or nonproliferation measure to limit the development or spread of ballistic missiles. States with advanced, long-range missile programs like the USA would have to stop further development of ballistic missiles and begin reducing them as part of a treaty bound process of eliminating the threat they pose to the rest of the world. In exchange, all other states would agree not to develop or acquire ballistic missiles or join in the reduction process.

Anti-missile systems that involve the development and use of ballistic missiles as interceptors would be forbidden as well.[3] Limits on the development of anti-missile systems are important because finding a commitment to going down to zero ballistic missiles while some states were building up anti-missile systems would be difficult. Missile disarmament in the context of the buildup of anti-missile systems could also lead to arms race instability and crisis instability endangering the whole disarmament process.[4]

Unlike existing arms control treaties, which often takes years to negotiate (it took over forty years after it was proposed for the CTBT to be completed, and it has not yet entered into force) we suggest a possible new approach that could contribute to building an international norm against ballistic missiles. We outline here the case for a Ballistic Missile Framework Agreement consisting of:[5]

- an immediate test ban on ballistic missiles and missiles intended for use in antiballistic missile systems, and a commitment to the complete elimination of these weapons;
- a formal negotiating machinery for realizing commitments on missile control and disarmament through a series of phased, inter-linked, overlapping stages, each involving ballistic missile reductions and limits on ranges;
- a pledge not to test and deploy space weapons as a first step to an internationally agreed space weapons ban and the demilitarisation of space;
- the creation of an international monitoring and inspection system to prevent the development, testing and deployment of ballistic missiles and space weapons;
- a regular public review, reporting, and implementation assessment procedure involving all the parties to the agreement.

The essential precondition at this stage would be agreement on the goals and agreement on a negotiating process to move towards them. As Mian (2000b) pointed out, commitment to such an initiative already exists in the Nuclear Non-Proliferation Treaty (NPT); the preamble to the NPT emphasizes its goal as 'the elimination from national arsenals of nuclear weapons and *the means of their delivery* pursuant to a Treaty on general and complete disarmament under strict and effective international control' (emphasis added). We suggest here a few simple initial steps that could form part of the base for the framework structure and help create the momentum for the disarmament process.

The NPT emphasizes its goal as "the elimination from national arsenals of nuclear weapons and the means of their delivery".

Ballistic missiles are, of course, not the only means of long-range military attack. Therefore, to go ahead with a comprehensive disarmament program for ballistic missiles, it is necessary to deal with other means of projecting military power around the world using platforms such as bombers and aircraft carriers, as well as ships, aircraft and submarines armed with long range missiles. As the regime is slowly put in place, there would have to be a parallel regime controlling all force projection capabilities, including the extra-territorial deployment of long range bombers, and patrolling of international waters by aircraft carriers, and cruise missile armed ships and submarines.

While the number of such systems may seem quite large, it must be remembered that these hi-tech systems are manufactured primarily, if not solely, in only a few countries. We realize that in these countries, any efforts to ban the sale or deployment of these are likely to be opposed by the military-industrial complex to a greater degree than efforts to ban ballistic missiles. Overcoming such resistance shall require public mobilization and a widespread social movement willing to challenge the national security narrative that underpins the investment of massive amounts of resources to building such weapons, and posit a more humane vision conducive to genuine human security.

While recognizing the interlinked nature of ballistic missile disarmament and other wide-ranging disarmament measures, for the purposes of this paper we limit our focus to ballistic missiles. Though we harbor no illusions about the likelihood of even a comprehensive disarmament regime for ballistic missiles at the current moment, we nevertheless feel that arms control efforts should think and plan for the long term. Even debating such a proposal would have some benefits. Sustained discussion of a comprehensive ballistic missile control regime could provide a cross-cutting look at a variety of arms control problems, from ballistic missile defense and the nuclear offense/defense knot to weapons of mass destruction proliferation, emerging regional arms races, and the dangers posed by a potential arms race in space. Such a debate might provide a renewed sense of the growing dangers posed by interrelated high technology arms races, and hence greater urgency to find solutions before we enter irrevocably into another round of great power arms competition.

The Shape of Things to Come

International concerns about US development and deployment of ballistic missile defense focus usually on the part of the

system that is land based and relies on ballistic missiles as interceptors, namely the National Missile Defense (NMD) System. However, this is only part of a much larger, more ambitious set of military programs, including offensive counterproliferation activities, space warfare as well as Theater Missile Defense (TMD). The latter spans the range from point defenses for use on the battlefield (able to defend an area of radius 40-50 km) based on the PAC-3 version of the Patriot missile, a Navy Area Defense system able to defend out to 50-100 km, the Theater High Altitude Area Defense System (THAAD) and the Navy Theater Wide which can defend out to several hundred km, an airborne laser for boost phase interception of missiles (i.e. soon after launch) which may be viable to distances of more than 300 km, and eventually a space-based laser intended to be capable of striking missiles launched anywhere on earth (O'Hanlon 1999).[6]

These are not independent, disparate systems but are shaped by an underlying vision aimed at maintaining US ability to deploy overwhelming military force throughout the globe, while minimizing risks posed by ballistic missiles both to US military forces and the continental United States. The experience during the Vietnam War seems to have convinced US war planners that "[t]o maintain political support for the use of military force" they would have "to ensure almost casualty-free wars" (Wall & Fulghum 2000). Accordingly, the sequence of measures aimed at neutralizing threats start with hitting weapon systems even during the design or production phase,[7] attacking them on the ground with precision guided conventional munitions (although the use of nuclear weapons is not precluded), and attempting to hit any launched missiles through boost-phase defense or theater missile defense systems. NMD, then, would merely be the final level of defense.

The current ballistic missile defense scheme is not the leak-proof "Star Wars" umbrella of the Reagan era, a fantasy all too easy to poke holes in both literally and figuratively. Rather, the emerging vision set out by BMD advocates is of a set of systems with more limited ambitions, intended to work together with a growing array of high-tech conventional weapons and a nuclear arsenal still capable of reducing any nation to radioactive rubble. Its goal is to assure freedom of action for the overwhelming conventional superiority of the US military. Adversaries contemplating a conventional, nuclear, chemical or biological missile attack on US forces would face the choice of launching an attack sufficiently small to risk failure if missile defenses prove effective, or in an effort to overwhelm those missile defenses, sufficiently large to risk devastating retaliation from a still large and diverse US nuclear arsenal.[8] While not all pieces of this architecture are in place, there are ongoing programs at various stages of development to construct all of these elements.

The Bush Administration, which has made clear its desire to push ahead rapidly on missile defenses, claims that the proposed systems will have only a limited defensive role. As Secretary of Defense Donald Rumsfeld put it: "The missile defenses we deploy will be precisely that – defenses. They will threaten no one, save those who would seek to threaten us with ballistic missile attack. They are certainly no threat to Russia. The purpose of missile defense is to protect against a limited number of missiles of increasing range and sophistication from rogue states – not against the thousands of missiles in Russia's arsenal" (Rumsfeld 2001a).

However, to understand the conflict between the US, Russia, and China over ballistic missile defense, these anti-missile systems must be viewed in a strategic context being transformed by the continued development of long-range, increasingly accurate nuclear and conventional delivery systems by the United States. The US is building on a formidable base, while the other states face severe resource constraints. It is in this context that President Bush's announcement of his intention to unilaterally reduce the US arsenal to 1700 to 2000 nuclear warheads should be viewed.

Currently, however, the US deploys over 8000 strategic and non-strategic nuclear weapons (NRDC 2001a). In contrast, Russia has about 6000 strategic and 4000 non-strategic nuclear weapons (NRDC 2001b). However, there are doubts about the preparedness of these forces; it is claimed that: '70 percent of Russian ICBMs are beyond their warranty lives and need to be replaced. Most command and control centers are no longer regarded as technically reliable. Forty percent of space assets operate in a much reduced capacity, and 70 percent are operating beyond their warranty life. Eighty-five percent of all launch complexes and technical support facilities are past their service life' (Khripunov 2000). China has a total of about 400 strategic and non-strategic nuclear weapons, with only a handful of intercontinental ballistic missiles - but it is suggested that China's arsenal may be practically obsolete by US standards (Arkin, Norris and Handler 1998; NRDC 2001c).

These, and other states the US views as potential adversaries, face not only BMD but a continuously modernized US nuclear arsenal with an emphasis on increased hard-target-defeat capabilities, a variety of long-range precision conventional armaments, and a constantly upgraded capacity, increasingly reliant on space-based systems, to find and pinpoint fixed and mobile targets.[9] As John Steinbruner (1999) notes, Russia and China are not only facing a technically 'more capable' US nuclear arsenal:

"They have substantial conventional force disadvantages as well. The sensing systems and information capacity associated with the projected NMD system would meaningfully enhance the preemptive potential of U.S. offensive forces, both nuclear and conventional. Even the limited initial deployment of 100 interceptors designed for 4-to-1 engagements would threaten the residual deterrent forces that Russia and China could expect to survive an initial U.S. attack."

Eugene Miasnikov (2000) estimates that by 2010, the US could possess a large counterforce potential even with conventionally armed ICBMs. For example, an attack carried out with 500 Minuteman III

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ICBMs and 336 Trident II SLBMs with an accuracy of 2 m (4 m) could destroy approximately 2000 (500) of Russian silo launchers – sufficient to deal with the currently operational 760 silo launchers (NRDC 2001b). Even the perception that the US has this ability would complicate consideration of further nuclear reductions. Alexei Arbatov (1999) writes in the same vein that:

"Another serious issue is the projected vulnerability of strategic forces to conventional counterforce strikes with precision-guided air-launched and sea-launched weapons (SLCM's [sea-launched cruise missiles] and carrier aircraft)… [after the] implementation of most of the START II reductions and with planned strategic force modernization complete, NATO aircraft would be capable of destroying 60 percent of Russia's fixed and 15 percent of its mobile ICBM launchers. Much greater damage could be inflicted by conventional strikes on command-control-communications systems, airbases, naval bases, nuclear weapons storage facilities, and support infrastructure."

These concerns are well founded. The US Air Force Space Command (AFSPC), for example, plans in the second decade of the 21st century to "Evolve Global, Conventional Strike" (AFSPC 2000). This includes developing long-range conventional missiles intended to destroy hardened targets and maneuverable re-entry vehicles capable of dropping a variety of submunitions and deliverables either via missile or from next-generation reusable space vehicles. A recent report to the U.S. Congress on *Defeat of Hard and Deeply Buried Targets* listed a number of other conventional weapons programs intended to increase U.S. capabilities, including improved earth penetrator bombs and an earth penetrator version of the air launched cruise missile.[10] The AFSPC *Strategic Master Plan* proposes "WMD storage sites, C2 facilities, maritime forces and massed ground forces" as targets of such new weapons.

Such plans should not be dismissed as wishful thinking. The Bush administration has submitted FY (Fiscal Year) 2002 spending plans to Congress calling for a $33 billion defense budget increase over that enacted for FY2001, including substantial increases for missile defense (AFPS 2001a). A high level Defense Department review panel also recommended heavy investment in a variety of stand-off missile systems.[11]

The chief motivation underlying the purported need for such new systems is to allow the US to continue profiting from "globalization", i.e., the widening and deepening of international markets for labor, commodities and capital. As the US Space Command's *Vision for 2020* states (USSC 1997):

"Historically, military forces have evolved to protect national interests and investments – both military and economic. During the rise of sea commerce, nations built navies to protect and enhance their commercial interests.... Likewise, space forces will emerge to protect military and commercial national interests and investment in the space medium due to their increasing importance...Although unlikely to be challenged by a global peer competitor, the United States will continue to be challenged regionally. The globalization of the world economy will also continue, with a widening between 'haves' and 'have-nots.'"

However, globalization also results in the spreading of modern technologies. This is recognized by, for example, the US Defense Department's Defense Science Board which has suggested that: "From a long-term strategic standpoint, globalization's most significant manifestation is the irresistible leveling effect it is having on the international militarytechnological environment in which DOD must compete. Over time, all states – not just the U.S. and its allies – will share access to much of the technology underpinning the modern military" (DSB 1999). This, it suggests, creates "opportunities and challenges to the maintenance of global military dominance."

In sum, it appears that US military planners see future conflict as inevitable, and when confronted with military forces armed with weapons and strategies based on following the US example, their response is to speed up the race.

US NMD Deployment: Impacts and Arguments

The biggest concern about the US NMD system is that it would work against the possibility of reductions of nuclear weapons to low levels, considered a necessary step towards the complete disarmament promised as part of the Nuclear Non Proliferation Treaty.[12] That US military planning and nuclear policy do not envision any truly significant reductions in the future is underlined by the recent reassurance offered to Russia that its arsenal is still large enough to overwhelm a possible US BMD, and will remain so "under the terms of any possible future arms agreements."[13] It further encouraged Russia to keep its nuclear weapons on a high state of alert – despite the increased risks of accidental launch this brings. To put President Bush's proposal cutting the US arsenal into perspective, it is important to note that the US defense department acknowledges that it can accomplish the full range of current nuclear weapons missions, including NATO weapons deployed in Europe and additional warheads available for cruise missile deployment on submarines, at proposed START III levels.[14]

Efforts to deal with the US National Missile Defense program have emphasized the need to maintain the ABM treaty and limit anti-missile systems. In December 1999, the UN General Assembly adopted a resolution on *Preservation and Compliance with the Treaty On the Limitation of Anti-Ballistic Missile Systems.* Although there were 68 abstentions, only four states voted against the resolution: US, Israel, Micronesia, and Albania (UN 2000). Despite this widespread international pressure, the Bush Administration has made it quite clear that it intends to continue with NMD deployment, announcing in December 2001 its intention to withdraw from the ABM Treaty (Mufson & Milbank 2001).

Responding to the larger and longer term challenge posed by US military plans involving space capabilities, several states,

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especially China and to a lesser extent Russia, have sought a international agreement on Preventing an Arms Race in Outer Space (PAROS), through negotiations at the Conference on Disarmament (CD) in Geneva (Rissanen 2001; DD 2000). According to the Russian ambassador to the CD, an ad hoc committee on the prevention of an arms race in outer space should "draw up specific, practical arrangements that would block the path to the transformation of the near-Earth space into a new arena for power confrontatio" (Rissanen 2000). Though isolated in opposition to such negotiations, the United States and Israel have succeeded in preventing PAROS talks.[15] This has, in large part, prevented the CD for agreeing even on a negotiating agenda for the past two years.

There has also been a parallel effort at demonstrating the technical incapability of the proposed NMD system to deal with the purported threat. Several analysts have enumerated potential counter-measures that could defeat NMD.[16] Since most of these countermeasures are relatively simple, any country that has the ability to make ICBMs should surely be able to make these. Thus, it is concluded, NMD would both be ineffective and drive an arms race, partly through the construction of countermeasures.

Though important, such arguments are far from sufficient. First, the debate about the efficacy of the NMD system has taken on the character of a tussle over which "experts" the government should believe in. Second, since the debate is carried out within the set of assumptions that prompted support for a NMD system, namely the assumption that countries like Iraq and North Korea do pose a potential threat, it leads to proposals for alternatives that achieve the same goal as NMD, only better: for example, proposals for boost phase defense. Thus, these concede the fundamental point that the solution to potential "threats" is more and better weapons and that the answer to conflict is through military means, a recipe for insecurity and arms races.

Third, technical critique fails to address the underlying political economy that drives missile defense and other military systems. During the late 1960s, as the US made its first plans for deploying a missile defense, Noam Chomsky argued that such a technical discussion "is perhaps somewhat beside the point for two reasons. First, the ABM may be even more dangerous if it does work than if it does not. Hubert Humphrey recently pointed out that if the ABM 'does achieve an effective missile screen, it could release policy-makers from the restraints imposed by enemy second-strike capacity' – no small consideration in a country as devoted to international violence as ours. Second, the motivation for the ABM is largely political and economic, not technical at all. Insofar as the ABM program serves as a subsidy to the electronics industry, it makes no difference whether it will work or not… And if the ABM is discarded, some equivalent monstrosity will no doubt take its place until some radical change in ordering of national priorities occurs (Chomsky 1970)."

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This analysis is just as relevant today. William D. Hartung and Michelle Ciarrocca (2000) point out that the 3 big weapons contractors, Lockheed Martin, Boeing, and Raytheon, "are looking to missile defense as a medium-to-long term source of revenues and profits to help them recover from recent management and technical problems that have slashed their stock prices in half and reduced their profit margins. In FY1998-99, the four largest missile defense contractors (the Big 3 plus TRW) have shared over $2.2 billion in Pentagon research and development funding for research projects. These four firms completely dominate the missile defense program at this point, accounting for 60% of total missile defense contracts issued by the Pentagon in FY1998- 99." The same three companies have contributed over $2 million to the 25 most hard-core NMD boosters in the Senate and spent $34 million on lobbying during 1997-98 (Hartung & Ciarrocca 2000).

The State of International Missile Control

In trying to address the acquisition of ballistic missiles by newer states, the mainstream arms control community has focused on a narrow, nonproliferation approach aimed at buttressing the Missile Technology Control Regime (MTCR). The MTCR was initiated in 1987 with seven members and has grown to 33 member states; members agree not to help non-members build or acquire ballistic missiles with ranges greater 300 km and payloads greater than 500 kg.[17] It has had little effect in creating and sustaining an international norm against missile exports because its design fundamentally limits its effectiveness; at best it could be said to have delayed some missile programs.[18] This is because:

1. The MTCR does not address the ballistic missile arsenals and programs of member states, i.e., the nuclear weapon states and their allies.
2. Numerous shorter-range missiles are already deployed in developing countries.
3. Although they can slow-down the military technology flow, supply-side controls are incapable of stopping the spread of missile technology in the long run.
4. The MTCR has no specific verification and enforcement mechanisms.
5. Export controls over dual-use goods can be in conflict with international technology cooperation and commercial interests in civilian spaceflights;[19] these may generate incentives to circumvent the control regime.

A few states have made preliminary proposals within the limits of the MTCR. At the recent MTCR meetings the United States, Britain, and France offered steps to reinforce MTCR export controls by an increased dialogue with non-MTCR parties, pre-launch notification for missile and space launches, and international standards in the missile field. At the October 2000 MTCR Plenary Meeting in Helsinki, Finland, member states envisaged an outreach to nonmembers and agreed on a Draft International Code of Conduct Against Ballistic Missile Proliferation, including a set of principles, commitments, CBMs and incentives, that could increase openness about development and testing, including voluntary commitments (MTCR 2000). Deliberations on the code continued and an augmented draft text

was produced at the Plenary Meeting in Ottawa in September 2001. Universalization of the draft Code through a transparent and inclusive negotiating process open to all states on an equal basis is envisaged. France has offered to hold the first negotiating session in 2002 (DD 2001).

Other states are now considering options for a stronger missile nonproliferation regime specifically as an alternative to missile defense. At the June 1999 G-8 summit in Germany, the former Russian President Boris Yeltsin proposed a Global Control System for the Non- Proliferation of Missiles and Missile Technology (GCS). In his April 25 statement at the NPT 2000 Conference, the Russian Foreign Minister Igor Ivanov urged consideration of a Russian proposal for a global missile confidence-building and nonproliferation regime (Rice 2000).

A goal of the proposed GCS is to increase transparency and reduce the risk of miscalculation or misunderstanding. Nations would be required to provide notification of missile or space-launch vehicle (SLV) test-launches. To discourage proliferation, the GCS would offer incentives to members of the regime that forswore the use of missiles to deliver weapons of mass destruction; including security assurances against the use of missile systems, assistance from the UN Security Council if such weapons were used, and assistance in the peaceful uses of space for members that gave up missiles as weapons.

Despite the offered incentives, the GCS proposal is merely a nonproliferation regime, comparable in some respects with the NPT but without its Article VI obligation to disarm. It seems unlikely that major developing countries would accept another regime in which the five nuclear weapon states are left as the only missile powers. If, on the other hand, all of the states currently with missiles or planning such a capability in the near future were allowed to keep their missile arsenals, then the value of the regime would be severely limited; even negotiations on the regime may well serve to incite future missile developments plans in other states.

A breakthrough in transparency arrangements was achieved on December 16, 2000 with the establishment of the Joint Data Exchange Centre (JDEC) in Moscow, staffed by military personnel from the US and Russia (ACT 2000). The US-Russian *Memorandum of Understanding on Notification of Missile Launches* provides for pre- and post-launch notification of all ballistic missile tests and space launches, as well as notification of failed satellite launches. Other countries can join the agreement.

In Canada, experts from several countries met in March 2000 and February 2001 to examine options and alternatives to respond to US missile defense (CCFPD 2000; LCSGI 2001). The first meeting discussed multilateral approaches to more effective ballistic missile control, international monitoring, and early warning. Participants emphasized the need to implement riskreduction and confidence-building measures, such as de-alerting, improved ballistic missile early warning and launch notification. The monitoring and surveillance of missile and space-related activities and the exchange of technical data were identified as the keys to an effective missilecontrol verification system. The second meeting recommended modernizing international space law to deal with the dangers of space weapons and warfare, expanding the JDEC, and making GCS co-operation multilateral. Participants also suggested that as a first step Canada come out in support of a moratorium on test-flights of ballistic missiles.

On November 20, 2000 the 55th session of the UN General Assembly adopted by 97 votes to 0 with 65 abstentions a resolution on missiles (A/C.1/55/L.1/Rev.1) introduced by Iran. The resolution emphasizes the "need for a comprehensive approach towards missiles, in a balanced and non-discriminatory manner, as a contribution to international peace and security." It requests the Secretary-General, with the assistance of a panel of governmental experts, to prepare a report on missiles in all its aspects.

Moving Towards a Global Missile Ban

The asymmetric multipolar arms race that is developing, between US efforts at global military dominance and the efforts of other states to keep from being left behind is profoundly dangerous.[20] Present efforts at managing the threat of ballistic missiles, from the US and other states, are compartmentalized and do not address interconnections and feedback. Further, the gap between these efforts and new developments in military technology for anti-ballistic missile systems is large and growing, and largely misses out on what may be required to constrain the US. The absence of multilateral norms for missiles/ missile defense has even elicited concern from the Secretary General of the United Nations (UN 2001).

There have been earlier proposals to limit ballistic missiles that were far-reaching. A former director of the US Arms Control and Disarmament Agency proposed that the US-Soviet Intermediate-range Nuclear Forces (INF) Treaty to ban all missiles with ranges from 500 to 5500 km be globalized (Adelman 1991). Such a ban was proposed again by Canada to the members of the MTCR in 1995 (IDR 1995). This would of course leave the nuclear weapons states with their long-range missiles. Another suggestion is a Zero Ballistic Missiles (ZBM) agreement prohibiting testing, production, and deployment of ballistic missiles, which picks up on a proposal made by US President Ronald Reagan to Mikhail Gorbachev at the famous Reykjavik summit in 1986 (Frye 1992; Frye 1996; Sherman 1987). Reagan called for a 50% reduction within five years and the total elimination of US and Soviet missile stockpiles within ten years.[21] Unfortunately, Reagan's parallel insistence on his 'star wars' space based anti-missile system prevented any further effort in this direction.

A ballistic missile framework agreement would set up a formal negotiating process for dealing with ballistic missiles, anti-missile systems, and analogous weapons systems.

A more detailed scheme was proposed by the Federation of American Scientists in their Zero Ballistic Missile regime, which aimed at the complete elimination of offensive ballistic missiles, combined with unilateral declarations as well as regional and global multilateral agreements (Lumpe 1993; Holton, Lumpe & Stone 1993). The ZBM proposal suggested a fourstage scheme lead-

ing towards ballistic missile elimination:

- Stage I: The US and Russia agree to make substantial and accelerated cuts in the number of deployed missiles beyond START II; ballistic missile-free zones are negotiated in certain regions.
- Stage II: An international Missile Conference would be held to discuss critical issues, negotiate the implementation of regional ballistic missile-free zones and reductions announced in Stage I.
- Stage III: The ZBM regime would be designed; an International Agency for Ballistic Missile Disarmament (IABMD) would be created to supervise the ZBM process and to provide technical and diplomatic assistance to states.
- Stage IV: All states would move on varying schedules to zero ballistic missile capability within an agreed period of years.

Such proposals did not command much official attention, in part because they were considered too ambitious and going too far all at once. It has been felt unlikely that "the five declared nuclear weapon states would agree to forego all their ballistic missiles in a single action, eliminating their nuclear deterrent in its current form" (Dean 1998). At the same time, as we have argued, without a comprehensive scheme aimed at eliminating missiles and similar systems, there is unlikely to be global agreement on containing the problem. To get around this bind, we suggest that what seems to be required to control and eliminate ballistic missiles is a formal arrangement that will:

1. recognize the problem of ballistic missiles and comparable delivery systems and express appropriate concern,
2. commit to eliminate these weapons as soon as practicably possible,
3. identify the fundamental political and scientific issues involved in meeting such a goal, and
4. provide a mechanism to tackle these issues in a systematic step by step manner through a scheduled negotiating process.

These requirements are very similar to the kinds of structures found in recent international conventions dealing with environmental problems such as the *Vienna Convention on Protection of the Ozone Layer* and the *UN Framework Convention on Climate Change*. These international agreements dealt with chemicals that constituted a grave and urgent danger to society, were largely produced in a minority of states, were of great significance to them, but were a global hazard and required international agreement to deal with them. These conventions set up a standing negotiating process, a Conference of Parties, which was mandated to find means to meet the goals of the agreement.

As in these conventions, a ballistic missile framework agreement would set up a formal negotiating process for dealing with ballistic missiles, anti-missile systems, and analogous weapons systems, with a clear goal of eliminating them. The agreement would result in a series of phased stages, each being a step towards the ultimate goal. As a reflection of the seriousness of the issue, agreement would be needed at the outset on a moratorium on the further development, testing and deployment of ballistic missiles and anti-missile systems. Such a "missile threat freeze" would be like earlier nuclear test ban moratoria that created time and a climate conductive for negotiations.

The flight test ban and launch control regime elements of a moratorium on ballistic missile development could help prevent future arms races, and development of long-range conventional weapons operating from or through space. Although not a substitute for a more comprehensive Outer Space Treaty, which would unambiguously prohibit the emplacement of weapons and weapons delivery platforms in space, a launch control regime that included inspections would help reveal efforts by any nation to place weapons in space. A ban on test flights of ballistic missiles could also have an immediate positive impact on the most volatile areas of emerging international arms competition, especially in South Asia, the Middle East and Northeast Asia.[22]

Given current political circumstances, an international monitoring and inspection system will be necessary to build trust in the missile control and disarmament regime.[23] Various technical and non-technical means of verification exist to focus on observable rocket characteristics that provide indications of rocket type and performance.[24] The efficiency of verification depends on the stage in the missile life-cycle that is to be controlled. For example, the flight test ban should be relatively easy to verify.

Though somewhat harder, the development of ballistic missiles (activities other than flight tests) may also be amenable to various inspection schemes, especially in light of the experience gained in monitoring the INF and START agreements. Much of the missile infrastructure – such as production facilities, test ranges, tracking and communication facilities, missile containers and missile-carrying vehicles – is highly visible. However such technical means for remote sensing need to be accompanied by inspections; these could draw on the experiences of the UN Special Commission (UNSCOM) inspections in Iraq.

Because of their dual-use, it is difficult but not impossible to differentiate between ballistic missiles and SLVs. Some functional differences and operational characteristics could be used to improve distinction, such as differences in the basing mode, the testing procedures, the payload, flight trajectory, guidance systems and re-entry. To determine the basic payload type – in particular, to detect re-entry vehicles at the front of a rocket – without disclosing proprietory information, non-intrusive devices and techniques can be applied, such as scanning and radiographic devices.

Adequate verification capability would be further enhanced if the leading missile powers spend even a small fraction of their military budgets in developing verification technologies and building the necessary infrastructure. It is worth emphasizing that the goal is to ensure adequate – not perfect – verification. The potential risks of breakout under such a regime should be compared to a world with multiple arms races with much higher levels of insecurity.

A missile flight test ban would help halt or slow a range of arms races and proliferation dynamics either in progress or likely to commence in the near future.

We expect claims that any limits on ballistic missile development by states with extensive missile arsenals will make

Table 1. Missile Programs With Range Over 300 km Outside of the P-5

Country	Name	Missile Characteristics	Range (km)	Payload(kg)
India	Agni	ballistic missile	1500-2500	1000
India	Sagarika	naval ballistic/cruise missile	300	500 (?)
Pakistan	Shaheen-I	ballistic missile	750	1000
Pakistan	Shaheen-II	ballistic missile	2300 (?)	1000
Pakistan	Ghauri II	ballistic missile	1500-2300	500
Israel	Jericho I	ballistic missile	500	1000
Israel	Jericho II	ballistic missile	1500	1000
Israel	?	submarine launched missile	1500	?
Iran	Shahab III	ballistic missile	1300	750
North Korea	No Dong I	ballistic missile	1000	1000
North Korea	No Dong II	ballistic missile	1500	1000
North Korea	Taepo Dong	ballistic missile	2000	1000
Taiwan	Sky Horse	ballistic missile	950	500

Sources: Carnegie Non-Proliferation Project website (www.ceip.org/npp); Ramana & Nayyar 2000; Mahnaimi & Conradi 2000; Zakheim 1999.

them unable to defend their national interests adequately. Any useful discussion of an argument of this kind requires these states to articulate precisely what "national interests" require to be defended by increasingly sophisticated long range, accurate ballistic missile systems. In particular, it would require an answer to how a missile flight test ban would impair adequate "deterrence."[25] The power projection roles of these weapons and the interests they serve would thus come to the surface in public debate, rather than the more typical situation of these states hiding behind the generalities of deterrence.

Conclusion

Our main interest in revisiting the idea of a treaty banning ballistic missiles is to give it wider currency and provide a positive alternative to those who refer to the threat of ballistic missile proliferation to support the development of BMD systems. We suggest that a comprehensive ballistic missile control regime would address both the multiple threats and technologies claimed as necessary either to deter them or to provide direct defenses. Even the initial steps towards a truly comprehensive ballistic missile control regime, such as a missile flight test ban, would help halt or slow a range of arms races and proliferation dynamics either in progress or likely to commence in the near future. By doing so, it also would help disentangle the growing problem of multiple arms races that feed on each other.

An agreement to eliminate ballistic missiles would delegitimize missiles as symbols of military, technical, economic, and political prestige, appropriately described as "trappings of power" (Nolan 1991). It would enhance global security and stability by increasing decisionmaking time and removing the threat of accidental ballistic missile launch. When compared to the MTCR, it would be more conducive to cooperation and pursuit of legitimate civilian space efforts. Because it aims at the elimination of a complete class of weapons in a non-discriminatory fashion, it would have a certain political appeal.

The effort to achieve a global missile control regime provides a kind of positive mirror image of the endless quest for military supremacy through technology. The militaries of powerful states attempt to do long-range planning, in part because the development cycle for complex weapons systems commonly takes a decade or more. Arms control advocates too must think long-term – the time to cut off these emerging arms races is now, before weapons systems have developed unstoppable momentum and constituencies in respective military services, military research and development laboratories, military contractors, and parliaments, most particularly in the US. By beginning today to think systematically about concepts that may appear too distant a prospect to take seriously, we may discover previously unnoticed opportunities.

Such an effort is all the more necessary in the aftermath of the attacks of September 11, one of whose results has been the muting of dissent in mainstream U.S. political debate on all matters concerning the military, including the funding of programs not directly related to what the government calls the "war on terrorism." In particular, it is likely to give increased impetus to theater missile defense programs, which are seen by the military as essential both to protect concentrations of U.S. forces and to reassure allies who might fear missile attack by U.S. adversaries in their regions. Other programs which may be accelerated include those aimed at increasing U.S. capabilities to apply conventional force from a great distance without reliance on forward bases, which the current crisis has shown can be difficult both to obtain and to secure.

A global missile control regime and the types of steps it should encompass provides a common focus both for discussion and for organizing efforts for disparate elements of the world's peace movements. These now include the long-established anti-nuclear weapons organizations and the large but dispersed grassroots anti-nuclear movement, the growing movement against US space weapons deployment, as well as the emerging peace movements in regions threatened by dangerous new arms races, particularly South Asia. There is also a broader movement against economically unjust and ecologically unsustainable globalization, which is beginning to make the link for a new generation of activists between military "power projection" and the interests it serves.

Even if achieving a ballistic missile control regime is unlikely in the immediate future, discussion of such a regime would, by providing a different perspective on technology development, the dynamics of arms racing, verification issues, and the reasons claimed for constant upgrades to military forces, help break the current deadlock in nuclear arms reduction efforts. The chances for progress will be improved if the attention – and pressure – of broader civil society can be brought to bear, perhaps through a campaign for the comprehensive flight-test ban as the first step away from the abyss of a new arms race, which would be effective, simple for a wider public to understand, and relatively easy to verify.

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1 North Korea has pledged to stop flight-testing its long-range ballistic missile (Wagner 2001).

2 The need for such an alternative to deterrence and missile defense has been emphasized by Jayanta Dhanapala. Speech, "Eliminating Nuclear Arsenals: The NPT Pledge and What It Means" (Talk at All Party Group on Global Security and Non-Proliferation, House of Commons, London, England, 3 July 2000).

3 The development of certain other types of ballistic missile defenses – for example, those employing lasers from or space – would be limited indirectly by the launch inspection and control elements of the regime proposed here; see further discussion below and in a separate paper under preparation.

4 On the stability issues concerning missile defense see (Scheffran, 1989) and (Scheffran, 2001a).

5 This idea is based on a suggestion for the Fissile Material Cutoff (Mian 2000a). Some of the elements for ballistic missiles have been outlined in (Scheffran 2001b). The framework approach was first developed for environmental treaties such as the Climate Change Convention.

6 The current Navy program for area wide terminal phase theater missile defense recently was canceled, but the Defense Department has stated that it still plans to proceed with some type of system to fill this role (DOD 2001).

7 This is not entirely new. Plans to bomb Russian nuclear laboratories were contemplated in the late 1940s and early 1950s. In the 1960s, there was wide ranging discussion about various options, including bombing and sabotage of nuclear installations, for annulling the Chinese nuclear bomb (Burr & Richelson 2000/01). What is new about the current vision is the ability to credibly use accurate conventional weapons capable of inflicting sufficient damage. An example of this strategy was the 1998 attack on a purported chemical weapons plant in Sudan. It was revealed only later that the bombed installation was a pharmaceutical factory. The US is not the only country to follow this strategy; Israel carried out an attack on Iraq's Osirak nuclear reactor in 1981.

8 A recent policy analysis conducted for the Defense Threat Reduction Agency made this point clear: 'A bold aggressor with many weapons will have to contend with the possibility that large-scale casualties would generate a nuclear reply by Washington; thus nuclear weapons may be seen as a credible deterrent of those high-end attacks. The strategic value of damage limitation and vulnerability reduction efforts then is to help ensure that nuclear threats are credible where they are also necessary – to deter large-scale exploitation of NBC weapons to gain strategic advantage – and are not necessary where they are not clearly credible – for less damaging uses of NBC' (Roberts 2000).

9 For an example of US efforts at using space reconnaissance to revolutionize US intelligence gathering capabilities and 'guarantee US information superiority' see (Covault 2000). For an overview of U.S. research aimed at developing more useable nuclear weapons for hard-target defeat roles, see (Lichterman 2001).

10 For an overview of U.S. conventional precision strike weapons programs, see (Krepinevich, Jr. & Martinage, 2001: 21-24).

11 Some of the programs recommended for increased investment are: 'B-2 and B-52 bomber upgrades, more procurement of the Joint Air-to-surface Stand-off Missile, miniaturized munitions, precision-strike upgrades, and tactical Tomahawk missiles… information operations/ warfare, conversion of some ballistic missile submarines to carry cruise missiles, the advanced land-attack missile and the standoff land-attack missile.' See (AFPS 2001b).

12 For example see (Lewis & Postol 1997; Pike & Ferguson 2000; Bunn 1999).

13 'Both the United States and the Russian Federation now possess and, as before, *will possess under the terms of any possible future arms agreements,* large, diversified, viable arsenals of strategic offensive weapons consisting of various types of ICBM's, submarine-launched ballistic missiles, and heavy bombers' (emphasis added). The quote is from a document, originally leaked to the Bulletin of Atomic Scientists, 'that American negotiators have presented to the Russians with proposals for amending the 1972 ABM treaty, in order to allow the United States to build a limited national missile defense system'. See (NYT 2000).

14 William S. Cohen, the Secretary of Defense in the Clinton Administration, stated, 'Nuclear forces are an essential element of U.S. security, serving as a hedge against an uncertain future and as a guarantee of U.S. commitments to allies. Accordingly, the United States must maintain survivable strategic nuclear forces of sufficient size and diversity – as well as the deployment of theater nuclear weapons to NATO and the ability to deploy cruise missiles on submarines to deter or dissuade potentially hostile foreign leaders with access to nuclear weapons. The United States continues to work toward further agreed, stabilizing reductions in strategic nuclear arms. Once the Treaty on Further Reduction and Limitation of Strategic Offensive Arms (START II) has entered into force, the Department is confident that it can maintain the required deterrent at the force levels envisioned in a future treaty (START III), as agreed to in the March 1997 Helsinki Summit and reinforced at Cologne, Germany, in June 1999.' See Chapter 6 ('Nuclear Forces and Missile Defenses') of (Cohen 2000). Cuts below this level are likely to be accompanied by "improvements" aimed at making the remaining nuclear arsenal more useable, such as precision low-yield weapons. See, for instance, (Pincus 2001).

15 Despite an initial effort in 1957 to get agreement on the exclusive use of outer space for peaceful purposes, the United States consistently has maintained that "peaceful" uses of outer space means only nonaggressive uses and that military uses of space, including placement of weapons in space, is permissible unless specifically forbidden by treaty. Article IV of the 1967 Outer Space Treaty prohibits the placing in orbit or on "celestial bodies" 'nuclear weapons or any other kind of weapons of mass destruction.' For an overview of the development of law relevant to the weaponization of space see (Menon 1989).

16 For a recent example see the results put out by the Study Group Organized by the Union of Concerned Scientists and Security Studies Program, MIT in (UCS 2000).

17 Current MTCR members are Argentina, Australia, Austria, Belgium, Brazil, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, the republic of Korea, Luxembourg, Netherlands, New Zealand, Norway, Poland, Portugal, Russia, South Africa, Spain, Sweden, Switzerland, Turkey, Ukraine, the United Kingdom, and the United States. See for example (DD 2001).

18 See (Scheffran & Karp 1992). Nolan (1989) argues that the 'controls on missile exports, however desirable, represent efforts to assert great power prerogatives in a world in which the foundations for such prerogative are eroding quickly.'

19 One forecast of the worldwide satellite launch market for 2000-2009 estimates the value of satellites at over $126 billion and the cost of launch services at over $49 billion. See (Teal 1999).

20 It is often assumed that the main motivation for the nuclear and missile programs of states are regional threats and thus they do not have anything to do with the P-5 arsenals. But the P-5, especially the United States, have a global military presence and thus are a *de facto* 'regional' threat to all countries. Further, the premise that equitable disarmament is unnecessary for nonproliferation has been termed 'the grandest illusion of the nuclear age' (Perkovich 1999, 464).

21 For analyses of the proposal see the special issue of *International Security* 12, no. 1, (Summer 1987) and (Schultz 1993).

22 For an analysis of the applicability of such a regime to the case of South Asia, see (Mian & Ramana, 1999).

23 We explore this in greater detail in a separate forthcoming paper.

24 See further (Scheffran 1995), (Scheffran 1997) and (Scheffran 1993).

25 A loss of confidence in the reliability of a military system does not translate into a gain in confidence that the system *will* fail. Thus, the perceived deterring ability is not lost. This issue has been extensively discussed by Sherman (1987).

26 North Korea has pledged that it would not flight-test the Nodong II (Perlez 2000). This could imply that it has terminated the program or is planning to do so.

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The main objectives of INESAP are to promote disarmament of nuclear weapons and their delivery systems, to tighten existing arms control and non-proliferation regimes, as well as to implement unconventional approaches to curbing the proliferation of weapons of mass destruction and to controlling the transfer of related technology.

INESAP is a non-profit, non-governmental network organisation with participants from all over the world. It is part of the worldwide activities of INES. The INESAP Coordinator, who manages most of the INESAP activities, is hosted by the Interdisciplinary Research Group in Science, Technology and Security (IANUS) at Darmstadt University of Technology (Germany). The international Coordinating Committee of INESAP has seven members on four continents.

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Western States Legal Foundation (WSLF) recognizes that nuclear weapons affect the environment, the economy, the role of violence in society, and democracy itself. Rather than enhancing "national" security, nuclear weapons threaten our fundamental human security. WSLF seeks to abolish nuclear weapons, compel open public environmental review of nuclear technologies, and ensure appropriate management of nuclear waste. Grounded in nonviolence and rooted in both international and environmental law, the principle guiding WSLF's activities is democratization of decision making affecting nuclear weapons and related technologies.

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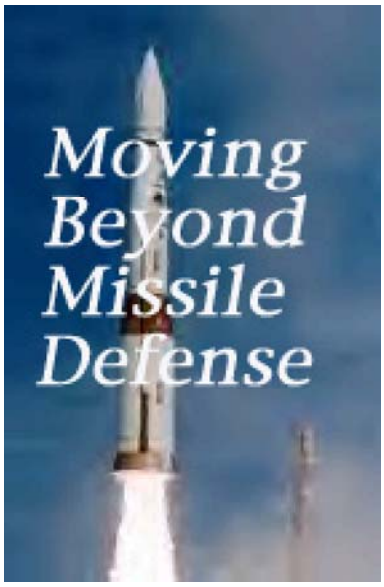
Western States Legal Foundation maintains an extensive website at www.wslfweb.org. As a special feature, the WSLF website provides links to many topic-related government documents.



Petition for a Missile Freeze

Weapons of mass destruction and their means of delivery pose an intolerable threat to peace and security. An arms race between missiles, anti-missile systems and space weapons would move the world closer towards annihilation. The best response to these threats is the establishment of a comprehensive security framework that prohibits weapons of mass destruction, missile and anti-missile systems and the weaponization of space.

To reduce the danger, we call for the following immediate steps:
1. Stop missile and anti-missile testing and deployment.
2. Initiate negotiations for an international treaty banning missiles and space weapons.

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*By providing your e-mail address, you will receive periodic updates on Moving Beyond Missile Defense. The results of this petition will be delivered to the United Nations General Assembly, the United Nations Conference on Disarmament, the Nuclear Non-Proliferation Treaty Review Conferences, the Human Rights Commission, and the governments of nuclear weapons states and nuclear threshold states.