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# Missile Proliferation and Defences: Problems and Prospects

Special Joint Series on Missile Issues

MONTEREY INSTITUTE OF INTERNATIONAL STUDIES

University of Southampton

CENTER FOR NONPROLIFERATION STUDIES

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## Space

# ABBREVIATIONS

| | |
|---|---|
| ABL | Air-Borne Laser |
| ABM | Anti-Ballistic Missile |
| ABMT | Anti-Ballistic Missile Treaty |
| AMD | Anti-Missile Defense |
| ANZUS | Australia, New Zealand and United States |
| ASAT | Anti-Satellite Weapon |
| BM | Ballistic Missile |
| BMD | Ballistic Missile Defense |
| BPI | Boost Phase Intercept |
| BTWC | Biological and Toxin Weapons Convention |
| CBM | Confidence Building Measure |
| CBW | Chemical and Biological Weapons |
| CD | Conference on Disarmament |
| CEP | Circular Error Probable |
| COCOM | Coordinating Committee for East-West Trade Policy |
| DPRK | Democratic People's Republic of Korea ("North Korea") |
| DSP | Defense Support Project |
| EKV | Exo-Atmospheric Kill Vehicle |
| EC | European Community |
| EPCI | Enhanced Proliferation Control Initiative |
| G7/8 | Economic Grouping of 7 (later 8) Major Industrialized Countries |
| GCS | Global Control System (for missiles) |
| GPALS | Global Protection Against Limited Strikes |
| GPS | Global Positioning System |
| GSK | *Global'naya Sistema Kontrolya* (GCS) |
| GSZ | *Global'naya Sistema Zaschity* (Global Protection System). |
| IAEA | International Atomic Energy Agency |
| ICBM | Inter-Continental Ballistic Missile |

| | |
|---|---|
| IFRI | Institut Francais des Relations Internationales |
| INF | Intermediate range Nuclear Forces Treaty |
| IRBM | Intermediate Range Ballistic missile |
| ISS | International Space Station |
| JDEC | Joint Data Exchange Center |
| JIIA | Japan Institute for International Affairs |
| LEAP | Lightweight Exo-Atmospheric Projectile |
| MCIMF | Mountbatten Centre International Missile Forum |
| MCIS | Mountbatten Centre for International Studies |
| MD | Missile Defense |
| MIIS | Monterey Institute of International Studies |
| MIRV | Multiple Independently-targeted Re-entry Vehicle |
| MIT | Massachusetts Institute of Technology |
| MRBM | Medium Range Ballistic missile |
| MTCR | Missile Technology Control Regime |
| NACD | Nonproliferation, Arms Control and Disarmament |
| NATO | North Atlantic Treaty Organisation |
| NBC | Nuclear, Biological and Chemical Weapons |
| NDU | National Defense University |
| NGO | Non-Governmental Organisation |
| NMD | National Missile Defense (of the United States) |
| NPT | Treaty on the Non-Proliferation of Nuclear Weapons |
| NSBM | Non-Strategic Ballistic Missile |
| NSG | Nuclear Suppliers Group |
| OPCW | Organisation for the Prohibition of Chemical Weapons |
| PfP | Partnership for Peace |
| PLA | People's Liberation Army |
| PPNN | Programme for Promoting Nuclear Non-Proliferation |
| PRIF | Peace Research Institute Frankfurt |
| ROK | Republic of Korea |
| SALT | Strategic Arms Limitation Treaty |

| | |
|---|---|
| SAM | Surface to Air Missile |
| SBIRS | Space-Based Infra-Red System |
| SBL | Space-Based Laser |
| SDI | Strategic Defense Initiative |
| SLBM | Submarine-Launched Ballistic missile |
| SLV | Space Launch Vehicle |
| SM | Standard Missile |
| SRBM | Short-Range Ballistic missile |
| START | Strategic Arms Reduction Treaty |
| THAAD | Theater High Altitude Area Defense |
| TLAM | Tomahawk Land Attack Missile |
| TMD | Theater Missile Defence |
| UCS | Union of Concerned Scientists |
| UN | United Nations |
| UNCAR | United Nations Conventional Arms Register |
| UNGA | United Nations General Assembly |
| USAF | United States Air Force |
| US DoD | United States Department of Defense |
| WEU | Western European Union |
| WMD | Weapons of Mass Destruction |
| XBR | X-Band Radar |

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# Introduction

by Ian R. Kenyon
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The Mountbatten Centre for International Studies (MCIS) at the University of Southampton and the Centre for Nonproliferation Studies of the Monterey Institute for International Studies are pleased to offer this second volume in their Special Joint Series on Missile Issues. This contains a group of papers prepared for a seminar held by MCIS in Southampton from March 30th to April 1st 2001 and devoted to the closely interrelated topics of ballistic missile proliferation and ballistic missile defence. MCIS, which has now been in existence for more than ten years, was created specifically to address policy issues in the international security arena, and although situated within the Department of Politics at Southampton University, its funding has been drawn from external sources, in the main U.S. charitable foundations. (The seminar and this volume have been made possible by the generous support of the John D. and Catherine T. MacArthur Foundation.) The Centre's name is derived from that of one of the architects of post-war British security policy, Lord Louis Mountbatten, whose residence, Broadlands, is close to Southampton and whose archives are in the University's care. Although MCIS has concentrated recently on providing the administrative base for the Programme for Promoting Nuclear Non-Proliferation (PPNN), it is now broadening its reach to other aspects of the future of arms control in global and regional relationships, through new activities such as the Mountbatten Centre International Missile Forum project (MCIMF).

The spread of ballistic missiles constitutes one of the most serious and complex non-proliferation challenges today. This problem was highlighted in an extensive study on the future of nuclear weapons conducted by MCIS between 1997-99.[1] It pointed to the role ballistic missile proliferation could play in threatening new action-reaction arms instabilities of great complexity and unpredictability, the reaction part of this equation being the pursuit of ballistic missile defenses, in particular by the United States. These instabilities were likely simultaneously to limit nuclear disarmament and to stimulate nuclear proliferation, as well as to threaten peaceful uses of space. In parallel, however, a process was also underway to build a regime to control ballistic missiles. This situation led MCIS to initiate a project focused on addressing this emerging range of politico/technical issues. One of its aims is to move the debate over missile defenses into an international context; another to assist in international efforts to develop mechanisms for multilateral control of ballistic missiles.

The strategy chosen was to engage some twenty states by requesting the preparation of short papers setting out national perceptions of the challenges facing the international community in these areas. The choice of states was inevitably somewhat arbitrary but included representative states from each of the regions where missiles are, or have been, a problem, together with states with past or present ballistic missile development programmes. Almost all those approached responded to some degree. The type of paper was left to the authors. As a result the project received some formal statements

[1] Darryl Howlett, Tanya Ogilvie-White, John Simpson and Emily Taylor, *Nuclear Weapons Policy at the Crossroads* (London: Royal Institute of International Affairs, 2000).

of government policy and some papers which were the private views of the authors but no less valuable given the positions occupied by those individuals. Some of the papers covered both issues but many confined themselves to discussing either proliferation — and the impact of the MTCR — or the United States' development of defences and its impact on the Anti-Ballistic Missile Treaty (ABMT).

An international workshop involving leading research organizations and individuals working in the field followed in December 2000 and the papers presented were published in March 2001.[2] In addition to MIIS and MCIS the other international institutes cooperating in the forum project are the Institut Français des Relations Internationales (IFRI); the Japanese Institute of International Affairs (JIIA); the Moscow Centre of the Carnegie Endowment; and the Peace Research Institute, Frankfurt (PRIF). Several individuals, well known as experts in the field, also participated. The purpose of the December workshop was to identify the main policy issues emerging from both the national and institutional papers and the evolving international debate on the issues, as well as preparing the agenda for the March seminar, which brought together the national paper-writers or their colleagues and those who had attended the research workshop.

The seminar was divided into five sessions, opening with a broad look at the nature of the problem, moving through existing and proposed international schemes for control and the United States' national response of missile defences, to a review of the situation in different critical regions of the world, and ending with a brief consideration of the problems of arms control in space. Participants came from countries which had provided the papers which had formed the starting point of the project and the discussion papers printed here come from a mixture of academic observers and government officials active in the field (the latter presenting their personal views and not necessarily those of their government).

It is intended that this seminar and the papers which follow will initiate a continuing process which will offer a significant contribution to international dialogue on these issues, through meetings, publications and the formation of an international consortium of research institutes to take this work forward.

[2] *International Perspectives on Missile Proliferation and Defenses* (Special Joint Series on Missile Issues with Mountbatten Centre for International Studies, Center for Nonproliferation Studies, Monterey Institute for International Studies, Monterey CA, March 2001)

# The Drivers Behind Missile Proliferation

by Alaa Issa *
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## INTRODUCTION

With the fall of the Berlin Wall and the end of the East-West divide, the arms control community began to direct broader attention to issues such as missiles and small arms that for a long time had been overshadowed by the debate on nuclear disarmament. In addition, the use of ballistic missiles by Iraq against Israel and Saudi Arabia during the 1991 Gulf War accelerated the focus of international attention and debate on the issue of missile proliferation in many parts of the world.

Several distinct perspectives have influenced the debate on missile proliferation during the past decade. First, the threat of missile proliferation is generally portrayed in western strategic and political circles as flowing from South to North. Indeed the arguments expounded by the United States for the deployment of NMD stress the need to counter the threat of missile attacks by rogue states, and reinforce this perception. This view is not accurate. In fact, if the experience of the past decade is a guideline, one will find that the use of missiles has been overwhelmingly directed from North to South, by NATO members against Iraq, Afghanistan and Sudan.

Second, because the debate on missile proliferation has generally been one-dimensional and has addressed the issue from the perspective of a limited group of countries, it has tended to divorce the "missile factor" from its surrounding regional and security context. Thus, consideration of the missile capabilities of a country like Iran — or even Iraq for that matter — usually takes place in isolation from the security setting in the Middle East *as perceived by that state.*

Third, the focus of the debate has been on ballistic missile proliferation. A brief examination of events during the past decade shows that the use of ballistic missiles in inter-state conflicts was limited to about 90 missiles launched by Iraq during the Gulf War. The same period witnessed the use of approximately 1100 cruise missiles in strikes against Iraq, Afghanistan, Sudan and Yugoslavia, and all with a much higher degree of effectiveness.

Fourth, the focus on missiles as a direct threat rather than as a means of delivery has precipitated a coordinated approach towards more restrictive supply policies with regard to missile technology and components in order to stem further horizontal proliferation of missiles.

Fifth, a fundamental change in military strategies began in the 1980's with the introduction of new doctrines for conventional deterrence that were based on concepts such as "deep attack" and "distance warfare". Missiles, space-based targeting and guidance, as well as precision guided munitions, are an integral part of these concepts, and the acquisition of missiles, particularly cruise missiles, flows from them. This aspect has not been prominent in the debate.

This paper will attempt to identify major drivers behind missile acquisition and development and, to the extent possible, shed light on the counter-perspectives of the debate.

* *The views expressed in this paper are those of the author and do not in any way reflect an official position of the Government of Egypt.*

## TECHNICAL DRIVERS

### Ballistic Missiles

*Speed* is an element of critical military importance. It is one that is particularly advantageous in missiles, especially ballistic missiles, over aircraft which may take too long to reach targets deep in enemy territory during the initial stages of a surprise attack or initial strike.

A practical example of the difference between aircraft and ballistic missiles can be drawn from the Iraqi experience during the First Gulf War, when Iraq used its Mirage F- 1 fighter bombers to bomb Tehran. The aircraft had to travel approximately 650km from their bases to the target, which was a journey of about 45 minutes. In contrast the Iraqi Al Hussayn missiles required only seven to eight minutes to cover a similar distance.

*Assured penetration* remains one of the important attributes of ballistic missiles. The increased quality of air-defense systems has made it more difficult and expensive to employ aircraft, in material as well as in human terms. The presence of air defense systems requires the use of increasingly sophisticated aircraft, whether strike or bombers, that have high performance self-protection systems, as well as necessitating a significant number of sorties. The effectiveness of missile defense systems on the other hand remains questionable, particularly if facing saturation attacks. Assessments of the PATRIOT's performance in Israel and Saudi Arabia during the Gulf War differed widely, with success rates varying from a low of 40% to as high as 80%. This is an issue that still requires further study.

Several technical and operational characteristics interact to determine the *military effectiveness* of missiles, but of particular importance are range, accuracy, and warhead type.

The importance of *range* of a ballistic missile is relative to the theatre of operation and the tasks for which it is to be deployed. A ballistic missile with a range of 300km such as the SCUD-B type or derivative, if fired from Syria, can reach most strategic targets in Israel. On the other hand, if fired from Pakistan, it would be unable to reach the majority of strategically significant targets in India since they lie well beyond 300km from the Pakistani border. Furthermore, greater range increases the extent of the area that can be targeted, thereby expanding the geographical extent of any given confrontation.

With regard to *accuracy*, modern fighters and bombers are fitted with sophisticated weapons delivery systems that make it possible for them to achieve high accuracy when delivering conventional bombs, and even greater accuracy with precision guided weapons, much more than with ballistic missiles. While it is remains difficult to achieve a similarly high degree of accuracy with ballistic missiles, particularly those in the possession of many developing countries, it is important to bear in mind that accuracy in the case of ballistic missiles should be seen in terms of the character of the target and the nature of the warhead.

The character of targets of ballistic missiles remains primarily area targets such as cities or expansive military installations rather than precision or point targets, although improvements in the accuracy of guidance systems may gradually alter this fact. As for the nature of warheads, the majority of specialized literature concurs that ballistic missiles are most effective when delivering nuclear weapons, and to a lesser extent chemical and biological agents which encounter more complicated technical obstacles associated with release and dispersion etc. However, the destructive capacity of conventionally armed ballistic missiles cannot be brushed aside. During the Iran-Iraq War, missiles fired at Baghdad and Tehran caused tremendous damage and entire streets with their shops and houses were destroyed and high-rise buildings devastated. Furthermore, ballistic missiles can be made more lethal by the

use of high explosive warheads or fuel-air explosives.

**Cruise Missiles**

Cruise missiles generally operate at a high subsonic *speed*. Although some may fly as slowly as 100km per hour, others are capable of flying at speeds greater than Mach 3.

The *range* of cruise missiles can be less than 100km, but in some cases it can reach 3000km such as the Russian SS-N-21 and the American AGM-129A. The most commonly used cruise missile during the 1990's, the Tomahawk, has a maximum range of 1650km.

A high degree of *accuracy* is one of the major advantages of cruise missiles that is achieved through the use of advanced guidance systems. Ten years ago the Tomahawk Block II cruise missile, which was used against Iraq in the Gulf War, was estimated to have a circular error probable (CEP) of approximately 6 meters. This has probably improved greatly during the past decade, as the Block III missile was introduced in 1994 with the advantage of GPS assisted guidance, and will have been further refined by the time the Block IV is introduced in 2003. The effective use of Tomahawk cruise missiles by the United States against Sudan and Afghanistan in the summer of 1998, and by NATO during the Kosovo campaign, demonstrated how it is possible to inflict precise and severe damage on a target using cruise missiles.

A unique advantage of modern cruise missiles is the ability to *evade air defenses* by flying at extremely low altitudes, as low as 20 meters over flat land or water and 50 meters over rough terrain, and in some cases at supersonic speeds. They can also be programmed to fly around air defenses, and stealth technology can be incorporated in their design. Their small radar cross-section compares very favorably with that of fighters or bombers, and makes it very difficult for existing air defenses and SAM batteries to detect or destroy them.

Chemical and biological agents are most effective when released into the air at low altitudes and at relatively low speeds because this overcomes the technical problems of release and dispersal that would otherwise be associated with ballistic missiles. Because cruise missiles can fly at low altitudes and speeds, they are particularly well suited for delivery of chemical and biological weapons, in addition to their ability to deliver nuclear weapons, at a fraction of the cost of ballistic missiles.

The accuracy and effectiveness of cruise missiles, proven during the 1990's against Iraq and in the Kosovo conflict, and their suitability for a variety of strategic and operational roles such as augmenting and enhancing the effectiveness of aircraft, seem to make them the missile of choice for the future, much more so than ballistic missiles. The experience of the 1990's, the Gulf War, the strikes against the pharmaceutical plant in Khartoum and against Bin Laden's hideouts in Afghanistan, and the Kosovo campaign confirm this.

**MILITARY/STRATEGIC DRIVERS**

Missiles can perform certain military and strategic roles better than other types of weapons. Ballistic missiles travel at very high speeds and can be launched at night and in circumstances of poor visibility or weather. They can reach strategically important targets, such as airbases and air defense sites and command and control posts, that are far from the front lines, in a very short time. They can be employed operationally against enemy ground forces as occurred during the 1973 war against Israeli forces in the Sinai. Furthermore they can be highly effective against cities. During the 1988 War of the Cities, there were approximately 190 Iraqi ballistic missile strikes against Iranian cities (SCUD B's and Al Hussayn) and a corresponding 90 to 100 missile strikes on Baghdad (SCUD B's). The

attacks destroyed whole city blocks, killed thousands of innocent civilians and forced a sizeable portion of Tehran's population to flee the city.

While it is argued that the use of ballistic missiles during the Iran-Iraq War did not secure direct military gains for either side, thereby undermining the argument for the military effectiveness of conventionally armed ballistic missiles, there are two important direct results that must be taken into account:

First, the psychological effect of the use of ballistic missiles during the War of the Cities added to the atmosphere of desperation and exhaustion that prevailed in both countries, but particularly in Iran. From this perspective the effect of missiles cannot be ignored.

Second, the use of ballistic missiles in the war accorded those missiles a prominent role in the military modernization plans of both Iran and Iraq, thereby encouraging policies of acquisition and indigenous development of missiles in both countries, and probably resulting in a greater role for missiles in their respective military strategies thereafter.

The Gulf War of 1990-1991 was the first combat test for the new generation of cruise missiles developed in the 1970's, the Tomahawk cruise missile (TLAM). The Pentagon officially reported that 288 Tomahawk Block II missiles were launched during the war, and its assessment of their performance concluded that they were "highly successful" and valuable for a number of reasons, among them that they were highly effective when weather conditions restricted other precise munitions, and they made possible daylight attacks without endangering pilots' lives. The air-master plan had called for night attacks on Baghdad by F-117A stealth bombers, supplemented by TLAM strikes during the day, thereby ensuring round-the-clock attacks on the Iraqi capital.

The highly successful use of the Tomahawk cruise missiles in the Gulf War would lead to increasing resort to them thereafter. 45 TLAM's were launched against Iraq in January 1993 and in June of the same year 23 more were launched, while another 400 missiles were used in December 1998 in Operation Desert Fox. Also, 100 Tomahawk missiles were used to strike targets in Afghanistan and Sudan in August 1998, and most recently 238 missiles were reported to have been used in the Kosovo conflict in 1999.

The same success may have directly stimulated and speeded the development of the Tomahawk Block III which has a warhead that is equally lethal as that of its predecessor but 30% lighter, as well as having extended range and higher accuracy due to the use of GPS technology. Improved TLAM Block IV is projected to enter service with the U.S. Navy in 2003 and will have capabilities for battle damage assessment and in flight re-targeting.

## COERCION / DETERRENCE AS A DRIVER

The deterrence value of missiles stems from the warheads that they carry and from the fact that they are more difficult than aircraft to intercept and destroy by conventional air defenses.

With regard to warheads, the value of ballistic missiles is generally placed on their being equipped to carry nuclear weapons. In his book on ballistic missile proliferation, Aaron Karp states that "Soon after the news of the bomb being dropped on Hiroshima, the association between the rocket and the atomic bomb was complete, not only in the public mind but in the thinking of defense professionals as well".

The value of using ballistic missiles to deliver nuclear weapons is especially evident in the case of long-range missiles where nuclear weapons compensate for the inevitable inaccuracy, however limited, of the missiles. Shorter-range ballistic missiles such as Israel's Jericho II and India's Agni

are also capable of delivering nuclear weapons with a higher degree of accuracy.

Cruise missiles can also deliver the lethal combination of cruise missile accuracy and nuclear warhead destructiveness. The proven effectiveness of cruise missiles may have been behind Israel's recent acquisition of 3 modern Dolphin-class submarines from Germany with torpedo tubes suitable for launching long-range nuclear-capable Popeye turbo cruise missiles that would offer Israel a second strike capability. The missiles were reportedly test launched in the Indian Ocean near Sri Lanka in June 2000, and are reported to have hit their target at a range of 1500km.

But even when armed with conventional warheads the utility and effectiveness of missiles, especially cruise missiles, cannot be discounted. The Kosovo conflict provides an excellent example. A total of 238 Block III Tomahawks were fired during Operation Allied Force. The strike success rate was reported to be 85% despite the missiles being launched at heavily defended targets and in inclement weather conditions that prevented manned aircraft strikes. The Block III Tomahawks allowed for more precise targeting than was possible with the Block II missiles used against Iraq in 1991. Furthermore, the strikes against the Socialist Party headquarters and the television building in Belgrade were directed at specific floors and at aim-points calculated to increase chances that fire would spread in the buildings. The television building burned for 3 days.

This "effects-based-targeting" that was successfully applied to the television building will be an important element of the debate over future weapons requirements and operational concepts within the military establishment of the United States and of other countries which possess similar cruise missile capabilities. This experience must certainly have helped to justify the plans for development and deployment of the Block IV tactical Tomahawk missiles, and future generations that will be more lethal and accurate.

The Kosovo conflict, with its massive use of air power and cruise missiles, offered a warning to many states that the United States and other NATO allies possessed capabilities for which they have no adequate response, and which could be used against them in a future conflict. On the one hand it was an example of coercion or compellence — if one can use such a term — as a driver for the continued possession and refinement of cruise missiles by those states that possess this capability, and, on the other, a deterrent to states that might one day contemplate hostile action against NATO or one of its members. At the same time, it may well provide the incentive for acquisition of these missiles and related technology by states that do not yet possess them.

## POLITICAL DRIVERS

The technical, military and strategic value of missiles should not be seen in a vacuum, but rather in the context of the wider political and security concerns in different regions or alliances.

In South Asia, there is an enduring state of imbalance due to the deep disparities between India and Pakistan in terms of ethnic and religious affiliations, military objectives and the size of their territories, populations and armed forces. Furthermore, India sees itself as a regional power on a par with China and is determined to elevate its military reach to the same level. The problem of missile proliferation in the region has to be seen in terms of those three dimensions, in addition to the nuclear weapon capabilities of the three countries.

In the Northern Hemisphere, the ideological and political divide that prevailed for many decades between East and West, and its security implications, fuelled an arms race in both nuclear and conventional weapons. The development and refinement of missiles into an effective means of

delivery by both the Eastern and Western blocs was a product of this environment.

NATO countries, individually and collectively, are increasingly involved in conflicts beyond the alliance's conventionally accepted theatre of operations. In such conflicts, whether Kosovo or Iraq, the loss of NATO soldiers' lives carried a very high political and social cost on the home front, and thus an increased utilization of cruise missiles by NATO military in order to minimize any loss of life.

In some cases the political considerations alone can be the primary driver for missile acquisition. The purchase by Saudi Arabia in 1988 of approximately 60 CSS-2 ballistic missiles from China is an indicative example. By that time, events in the First Gulf War had made it impossible for Saudi Arabia to ignore missiles or ignore the possession by virtually all of its neighbors of missile capability in one form or another.

In terms of accuracy the CSS-2 does not rate very highly, with a CEP of about 2000 meters. Without a nuclear warhead's capability to compensate for this inaccuracy, it seems that the actual military value of the missiles was rather limited. The range and payload of the missiles seems to have been of marginal benefit to Saudi Arabia, since it already possessed F-15 and Tornado fighter bombers that could penetrate deep into hostile territory and inflict considerable damage. However, all of those factors did not stop Saudi Arabia from acquiring the missiles.

Prestige can also be a motivator to acquire missiles or missile technology, but its validity seems to be limited to a few cases, historically and geographically. Perhaps Libya is the most recent example of a state that has sought and acquired missile capability without a corresponding security requirement to justify the investment.

# The Prospects for Control: Missile Proliferation, the MTCR and the Broader World

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## INTRODUCTION

Based on prior analysis of the drivers behind missile proliferation, this paper will examine some of the responses to that proliferation. Canada is a member of the Missile Technology Control Regime (MTCR) and this discussion will begin from an MTCR perspective, but will also go beyond that framework to discuss broader multilateral responses to the problem. In doing so, it will take a broad-brush, scene-setting approach starting with the innermost core of control activity and working out, layer by layer, from the specific to the general.

### The MTCR: Traditional Roles

Since its first Plenary in September 1988, the MTCR has enjoyed success in the specific area of its mandate — coordination of restraint by members in transfers to other states of defined types of missiles and related technology, with the aim of countering missile proliferation. The Regime acts as a consultative and coordinating mechanism on export control policies and mechanisms. It has no regulatory or enforcement powers; these powers are exercised by its members in their national capacity. The Regime does, however, suggest guidelines for such export controls, and provides a detailed Annex on goods and technology covered.

As the pressures for missile proliferation have expanded – based on political, economic, strategic and technological developments on both the supply and demand sides – the first reaction of the Regime has been to reinforce its activities on this most traditional aspect of its work. Developments in this regard have included, for example, keeping abreast of new weapons technologies as reflected in the Equipment and Technology Annex to the Guidelines for Sensitive Missile-Relevant Transfers; broadening the scope of consideration beyond the traditional focus on transfers of ballistic and cruise missiles and their technology; enhancing information-sharing on missile suppliers, shippers and users, including the issues of diversion and fraud; and increasing attention to such issues as intangible transfers.

If enhanced activity of this traditional nature has not allowed the MTCR single-handedly to stop all missile proliferation in its tracks, the fault is due not to any lack of intelligent hard work, but rather to a shift in the nature of the problem itself.

## EXPANSION OF MTCR ACTIVITIES

The most significant aspect of this shift has been the marked increase in indigenous missile production and/or export programs by non-MTCR states, associated tests of missiles with regional and broader impact, and cooperation among such states on missile research and development. This development inevitably undercuts to some extent the supplier regime, which by definition depends for its effectiveness on a monopoly or near-monopoly on the goods, technology and related processes it seeks to control. The members of the Regime still possess this status *vis-à-vis* some of the more sophisticated

* *This paper reflects the views of the author and not necessarily those of the Canadian Government or the MTCR. Comments welcome: robert.mcdougall@dfait-maeci.gc.ca.*

technological components involved in developing ballistic missiles, but the "grip" this provides is gradually being eroded as non-Regime users themselves become more sophisticated.

The next level of response by the Regime was therefore an enhanced program of "outreach" activities involving contact with other states important in the missile field, whether producers, possessors, transit states or simply countries concerned with the impact of missile proliferation in their region. Notably accelerated at the Tokyo MTCR Plenary of 1997 and extended by the Budapest (1998) and Noordwijk (1999) Plenaries, there has been a marked increase in such activities as visits by the Chairman to selected states (on his own, or in the company of representatives of other MTCR member states); seminars on largely technical topics bringing together MTCR and non-MTCR countries; policy-oriented round tables hosted by the Regime; and establishment of informal contact with other international bodies active on the non-proliferation and export control fronts.

This "broader mandate" approach, as it is sometimes termed, has as its goal a wider appreciation of the problems caused by missile proliferation, education on the Regime's own purposes and approaches, and the encouragement of non-member states to take a stronger stand on the issue, *inter alia*, by enhancing national export control policies and regulations. The broader mandate approach is intended to reinforce and is in turn reinforced by greater bilateral contact by individual members of the Regime with pertinent states on missile-related issues. Perhaps the most prominently-reported recent example of this approach was United States contact last year with the DPRK on the latter's missile production and export programs. Finally, while the Regime has taken a cautious approach on the membership issue, it continues gradually to expand, with the Republic of Korea having just taken its seat.

## THE EVEN BROADER MANDATE

Meanwhile, however, the conviction has grown that even more needs to be done. In particular, there has been increasing uneasiness over the lack of a normative structure to back up non-proliferation activities on missiles. Few if any MTCR members are taken with the line advanced in certain other fora, to the effect that broad adherence to a normative non-proliferation structure, even a legally binding one, should somehow make export control regimes unnecessary — the evidence of cheating by a number of states on their commitments under existing agreements is seen as sufficient counter-argument. There has, however, been a growing tendency to contrast the situation of the MTCR with that of regimes such as the Nuclear Suppliers Group or the Australia Group, where the normative basis for action reflects widely accepted treaty commitments. There is also an increasing perception that only a clear normative structure can settle questions about "legitimate" versus "unacceptable" missile-related behaviour.

Thus came the decision, confirmed at the Helsinki Plenary (2000) to "approach countries outside the MTCR in order to engage them in a broader common effort to agree a multilateral instrument open to all States." This decision was taken in the context of deliberations over the previous year on "a set of principles, commitments, confidence-building measures and incentives that could constitute a code of conduct against missile proliferation."[1] Consultations on this approach are continuing on a national and Regime basis, and although no text has been made public, there has been significant academic and other public commentary on its approach and contents.

As noted in a different paper[2] this bland announcement represents a noteworthy attempt by a

[1] Ministry for Foreign Affairs of Finland, Press Release, 13 October 2000, "Plenary meeting of the missile Technology Control Regime 2000" (http://formin.finland.fi/english/).
[2] See pp. 29-36 below.

significant element of the global community to promote the creation of the first multilateral instrument setting out normative standards and agreeing to cooperative approaches on missile-related activity. The MTCR decided to take the action based on shared concerns over the problems of missile proliferation, and in the conviction that more had to be done to address them.

Some states have questioned whether the MTCR was the right place to start such a process, given its purely supply-side membership and mandate, and the suspicion with which export control regimes generally are viewed in some quarters. The most direct response to this criticism is that the countries concerned had to start somewhere; that the MTCR represents a major reservoir of expertise and experience on the subject; that probably the most logical forum for negotiating such an agreement — the Conference on Disarmament in Geneva — is currently not taking on new assignments; that the clear intention of the process begun at Helsinki is to create a genuine multilateral agreement open to all and applying to all subscribing states equally; and that the current consultation process is open on both substance and process. The mooted code is however very much a work in progress.

## MEANWHILE, IN THE OUTSIDE WORLD

The MTCR is not, of course, the only body to express concern about missile proliferation, or to propose new ways to deal with it. Recently, for example, two new specialized fora have emerged which will have a significant impact on multilateral consideration and action on missile proliferation. One is the Russian proposal for a Global Control System (GCS), which focuses on concrete action in the fields of pre-launch notification, incentives and an ongoing consultative mechanism. These ideas overlap with those being considered by the MTCR (and Russia is an active participant in the Regime) but the GCS has a different membership, including a significant number of non-MTCR states. In this regard, as many participants noted at the GCS meeting in Moscow in February 2001, there are strong possibilities for synergy between the two bodies. It will, however, be important to maintain complementarity rather than competition as the guiding force between the MTCR and the GCS.

A second important new forum is the UN group of governmental experts established under the General Assembly resolution on missiles sponsored last year by Iran.[3] This group is currently being formed and will start its work later this year, with a report to UNGA 2002. The group is charged to consider missiles in all their aspects, so it could decide to go well beyond a missile proliferation focus. Where it chooses to place its analytical energies, and how this relates to such efforts as the MTCR consultations, the GCS and various contemporary bilateral and national efforts, will be a key factor in the direction and progress of multilateral activity on missiles over the coming 18 months.

## COMPLICATING LINKAGES

The missile proliferation problem has important contextual links with other arms control, security and related issues. These linkages can complicate progress on normative instruments and other missile-related initiatives, but in the real world, they cannot be ignored.

One such link connects missile proliferation and the ballistic missile defence (BMD) proposals made by various countries. BMD has, of course, a long history, earlier associated with the strategic missile balance between major powers, but in its current incarnation tending to focus on, and be justified by, reference to smaller states with newly-acquired or newly-produced missile forces. This is the same group that forms the main focus for traditional missile non-proliferation efforts. Thus the two

[3] UNGA Resolution 55/33A, adopted on November 20, 2000, by 97 votes to 0 with 65 abstentions.

programs blend at the edges, sharing a number of core issues, such as the need for a careful qualitative and quantitative assessment of the actual threat. The linkage also raises such questions as the best balance between defence, deterrence, non-proliferation initiatives, confidence-building measures and the creation of normative agreements. It is one thing if such approaches to a perceived missile threat are all compatible, another if they conflict directly or in geo-political terms.

Another major link lies between ballistic missile technology and space launch programs. The utilization of space for peaceful purposes is a valuable benefit to many countries and in broad terms a right (subject to the preservation of international peace and security). For some, its benefit is indirect, while for others it entails the development of a national space industry and infrastructure, which in turn may or may not include launch capability. From a missile proliferation point of view, complications arise only in the last case. Throughout the entire period since the end of World War II, there has been a significant technological overlap between programs to develop peaceful space-launch vehicles and programs to develop offensive ballistic missiles. Rockets designed for military purposes have been converted to civilian use and *vice versa*. The differences relate only to a very few parameters, including launch direction, maximum velocity and, of course, payload – all factors that come into play mainly on or after launch.

Those concerned with missile proliferation must therefore take into account the possibility of diversion of technology from civilian to military programs, but without hampering legitimate peaceful space activity. There is also a linkage in this regard between ballistic missile developments and proposals for an expanded ban on the basing of weapons in outer space, *inter alia* because only those nations with an independent launch capability can consider placing weapons into orbit.

## BUT BASICALLY, WHY SHOULD ANYONE SIGN UP?

It is impossible to consider missile proliferation in a political vacuum. It is regarded as a serious problem, not in the abstract, but because of actual or perceived potential uses by specific states, especially states believed to possess or be developing weapons of mass destruction that could be mounted on such missiles. Such examples as the cases of Iraq, the DPRK and the India-Pakistan dyad reflect the sort of real-world circumstances that create concerns over missile activity. There will always be realities at the political and national security level (and sometimes at the economic level as well) which introduce real complications in engaging some states in global non-proliferation activities. One cannot make the development and execution of global initiatives in the field dependent on the prior resolution of such national and regional issues, some of them among the most intractable in all of geo-politics. Yet by definition, the states concerned are among those whose participation in such a global regime are most pertinent.

The ultimate argument for any arms control agreement is that a reduction in the global number and lethality of any weapons system reduces the likelihood that such weapons will be used, that they will act to harm international peace and security, and that they will be responsible for death and destruction. But these benefits operate most clearly at the level of the global or regional community. Moving from the universal to the specific, why should any given state give up its option to acquire missiles or the resources and infrastructure needed for their development, especially given the increasing power and utility of missile systems? How can a state that already possesses significant stocks of missiles, on which it believes its national security rests, be convinced of the benefits of restraint and reduction? No country acting in its own rational self-interest is going to take such actions without compensating benefits to its national security. On the other hand, neither should countries be expected to allow their territories to come or remain under

missile threat without attempting to counter such a situation.

Few if any arms control agreements, however, are of immediate direct benefit to a given signing country *taken in isolation*. Virtually all such agreements place restrictions or limitations or demand reductions from all who take part, leading some to argue that such agreements weaken the state. Acceding to such an agreement can only be of security benefit to a given country if it also binds those other states, regionally or globally, that the first state sees as a threat to its own security. So countries can perhaps be persuaded to exercise restraint in or build down their missile forces, for example, if those they view as enemies do so also. And they may be persuaded to restrict the flow of missile technology to allies and other states if they perceive that this is part of a broader trend that enhances global stability and security. On this basis, a broad international missile agreement with extensive coverage (globally or by region) could help damp the fires of proliferation and promote disarmament.

## AND WHERE DO WE GO FROM HERE?

This is clearly a complex and confusing field, but an increasingly important one. How should the *status quo* be evaluated, and what are the prospects?

A full-fledged international treaty – comprehensive, universal, non-discriminatory, legally binding, covering all types of missiles and all aspects of production, testing, holdings, and transfers and including strong elements of norm-building, transparency and verification – would be the most likely kind to engage states in exercising restraint and reduction. But countries on different sides of the missile proliferation question see the problem differently – some in fact do not see it as a problem at all, and some see efforts to promote restraint and reduction as a geo-strategic challenge thinly disguised as an arms control initiative.

So matters must be taken a few steps at a time, focussing on less ambitious initiatives to start; on politically rather than legally binding agreements; on building blocks in the form of codes of conduct, normative consensus and transparency programs; on certain types of missiles and certain types of missile activity as initial targets; on national and bilateral initiatives; and on regional solutions (including for example consideration of missile free zones). Only when greater consensus and a higher comfort level have been generated will more universal and binding approaches be saleable.

An analogy can be drawn with progress over the last decade on small arms. Ten years ago, the "destabilizing accumulation and transfer of small arms and light weapons" was a matter of pressing interest largely to certain experts and to the distressing number of combatants and non-combatants who suffered the lethal impact of these arms. From about five years ago, there was an explosion in public and political concern and interest. Governments, NGOs and regional and international organizations all suddenly wanted to make a contribution. Study groups, task forces, multilateral committees and action coalitions sprang up, with little or no coordination. This period was highly beneficial for sensitizing decision makers to the serious nature of the problem, and for providing brainstorming opportunities on possible solutions. It was however light on coherence, division of labour and funding mechanisms. It is just over the past year or so that these elements, so essential to effective action, have emerged, for example with the UN`s Firearms Protocol and its upcoming small arms conference.

If the small arms issue is entering this third phase, then missile proliferation has just entered the second. It is beginning to gain recognition as a major global problem, with lethal capabilities spreading and increased numbers of people at risk. Steps to improve the situation, not yet well coordinated, are beginning to be considered and tried out. NGOs and think-tanks are commencing a serious analysis of the issue involved, sometimes interacting with

parallel government analytical efforts. In some ways, this can be a frustrating time, but then genuine attempts are being made to achieve an important end – the generation of global consensus on an issue which touches both the very real security interests of nations and the lives of their citizens.

# The United States and the Evolution of International Supply-Side Missile Non-Proliferation Controls *

by David A. Cooper, PhD

The purpose of this paper is to provide factual background on the Missile Technology Control Regime (MTCR), and particularly the singular role that the United States has played in establishing and maintaining the MTCR as the keystone of international efforts to impede missile proliferation. It does not seek to engage in normative debate on the merits of the supply-side approach to nonproliferation generally, or the MTCR specifically, relative to other anti-proliferation strategies or tools. It therefore does *not* address the question of whether a supply-side instrument such as the MTCR requires some type of complementary demand-side treaty-norm in order to maximize its effectiveness or legitimacy.

The MTCR is loosely comparable to multilateral export control instruments pertaining to other weapons of mass destruction (WMD) nonproliferation areas, for example the Nuclear Suppliers Group (NSG) or the Australia Group. It is a highly informal political arrangement wherein a group of like-minded participants voluntarily undertake to coordinate their national export control regulations and practices for missile-related items. All collective decisions are taken by consensus. As currently organized, the MTCR aims to prevent the spread of "Category I" items – defined as unmanned systems (e.g., rockets, cruise missiles) inherently capable of delivering a 500 kilogram payload to a range of 300 kilometers and their major subsystems – including by controlling "Category II" dual-use equipment or technology that could pose a high risk of contributing to Category I items. National implementation is informed by the Regime's two operative documents: the MTCR Guidelines, and the Equipment and Technology Annex (both of which are publicly available). These provide that transfers of Category I items are subject to a "strong presumption of denial", regardless of destination or intended use. (Any unmanned system intended for WMD delivery is also subject to the same restriction.) Export decisions regarding dual-use Category II items are evaluated based on case-by-case national judgements regarding proliferation risk. The only absolute prohibition is on transfers of Category I production facilities.

Washington from the beginning has been a driving force behind creating and maintaining a vigorous international system of supply-side nonproliferation controls on missile technology. Indeed, the very concept of "missile nonproliferation" was first conceived and implemented unilaterally by the United States. The original premise was that long-range missiles capable of delivering nuclear weapons should explicitly be equated with these weapons. Accordingly, it was seen that longstanding efforts to curb the spread of nuclear weapons should be extended to encompass their means of delivery. Although a somewhat novel concept when it was first conceived, equating delivery systems with proscribed weapons was a logical extension of the basic formula for bilateral nuclear arms control and disarmament practice – for instance in SALT, INF, and START – that in fact focused almost exclusively on delivery platforms rather than weapons *per se*.



*The views expressed in this article are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government*

A discernible U.S. policy of discouraging the spread of nuclear-capable missiles can be traced as far back as 1964. It was not codified until 1982, however, when President Reagan's National Security Decision Directive-70 (NSDD-70) incorporated missile nonproliferation as a formal U.S. foreign policy objective. In addition to mandating the immediate implementation of stringent unilateral export controls on missile-related military and dual-use equipment and technology, NSDD-70 also called for simultaneously trying to multilateralize this effort among key Western supplier countries.[1] Beginning with Britain, the United States put out feelers almost immediately to other members of the Group of Seven (G-7) major industrialized countries to sound out their willingness to participate in an export control regime.[2] The unambiguous U.S. objective going into this process was to get the most stringent regime possible.[3]

In March 1983 the United States formally initiated what would prove to be a long and rancorous round of secret multilateral negotiations by circulating a classified paper called "Missile Technology Control". The paper proposed negotiating common G-7 export control guidelines for ballistic and cruise missiles and associated technology. These would include provisions for consultations and amendments, and would be implemented nationally using a detailed annex of equipment and technology to be updated yearly, with national participation codified by the exchange of confidential diplomatic notes. Although vague on details, the proposal laid out the basic structure and procedures of what eventually would become the Missile Technology Control Regime (MTCR).[4]

In the event the MTCR negotiations stretched out for half a decade. Although all of the governments involved quickly reached consensus on both the need for, and the basic principles of a missile nonproliferation regime, the proverbial devil proved to be in the details. Negotiating the crucial technical Annex identifying the parameters of "Category I" systems and various "Category II" items involved time consuming work by technical experts. But the thorniest issues were political. The most significant controversy involved the degree of national discretion that would be retained, with Washington pushing for an automatic, centralized mechanism modeled on the COCOM system of strategic trade controls targeting Communist countries. There was also disagreement on whether space launch vehicles (SLVs) should be treated differently from offensive missiles in light of their legitimate civilian application. For its part Washington was adamant that civilian SLVs had to be viewed as strictly equivalent to military missiles, because they were technologically indistinguishable. These issues led to a deadlock that bogged the negotiations down for nearly two years.[5]

In the end Washington was forced to compromise on its most ambitious plans for a centralized mechanism in order to get agreement among the entire G-7. Although the outcome was less than Washington had sought, it nevertheless satisfied basic U.S. objectives. Washington proposed that, in return for the allies agreeing to an absolute prohibition on transfers of Category I production facilities, it would soften its stance on

[1] Ronald Reagan, National Security Decision Directive 70: Nuclear Capable Missile Technology Transfer Policy, November 30, 1982; Richard H. Speier, *The Missile Technology Control Regime: Case Study of a Multilateral Negotiation*, unpublished manuscript.

[2] Deborah A. Ozga, "A Chronology of the Missile Technology Control Regime", *Nonproliferation Review* Vol. 1, No. 2.

[3] Personal interview with Thomas E. McNamara, Assistant Secretary of State for Politico-Military Affairs (1993-98); Deputy Assistant Secretary of State for Politico-Military Affairs (1983-86), Washington DC, 1998.

[4] Speier, *op cit*.

[5] Personal interview with Thomas E. McNamara; Speier; both *op cit*.

transfers of individual Category I systems. Instead of automatic restrictions absent a collective consensus allowing a transfer, it would accept the lesser standard of a "strong presumption of denial" except on rare occasions. This formula provided a clear and strong proscription, but nonetheless left the ultimate decision on any particular transfer to national discretion. When it tabled this proposal in 1986, the United States stressed that it amounted to a weaker regime than it would have wanted, and warned that it was absolutely unwilling to compromise further. Although negotiations continued for another year, this compromise ultimately was accepted, with minor modifications.[6] The MTCR was announced to the world in 1987, essentially multilateralizing the existing system of U.S. missile control policies.

In the MTCR's first years, the United States worked successfully to solidify its longstanding interpretation (dating back to the earliest negotiations) that the Guidelines applied to all Category I programs, regardless of whether these were civilian SLVs, or if the destination was a country known to have a nuclear weapons program.[7] Although the Regime's rules applied to exports of Annex items to any destination, the United States sought to strengthen implementation by circulating a list of countries of particular proliferation concern, which it urged partners to consider in taking national implementation decisions.[8]

Starting with the first Bush Administration, the United States initiated a sustained effort further to expand the Regime's institutional scope. In October 1989, Vice President Dan Quayle publicly called for all European Community (EC) states to join. The Administration soon expanded on this proposal, suggesting that membership should include all EC, NATO, European Space Agency, and ANZUS countries.[9] The 1990-91 Gulf War provided both impetus and opportunity for Washington to energize its ongoing efforts to strengthen the MTCR, leading to a flurry of U.S. proposals at the March 1991 MTCR plenary meeting. For instance, the Regime agreed to expand its focus to encompass chemical and biological weapons (CBW) delivery systems.[10] At the same meeting, the United States asked the Regime to adopt catch-all controls along the lines of its new Enhanced Proliferation Control Initiative (EPCI) regulations.[11] (Such controls apply to *any* item – including specifically non-

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[6] *Ibid.*

[7] Allen H. Holmes, Testimony Before the Subcommittee on Defense Industry and Technology of the Senate Committee on Armed Services, 1989, in US Congress Senate, *Ballistic and Cruise Missile Proliferation in the Third World*, 101st Congress, 1st Session, Washington DC (USGPO); Henry Sokolski, Testimony Before the Subcommittee on Technology and National Security of the Joint Economic Committee, 1990, in US Congress Joint., *Arms Trade and Nonproliferation* (I), 101st Congress, 2nd Session, Washington DC (USGPO), 1992; Henry Sokolski, Testimony Before the House Committee on Foreign Affairs and its Subcommittee on Arms Control, 1990, International Security and Science, in US Congress House, *Proliferation and Arms Control*, 101st Congress, 2nd session, Washington DC (USGPO); Elisabeth Verville, Testimony Before the Subcommittee on Technology and National Security of the Joint Economic Committee, 1990, in US Congress Joint., *Arms Trade and Nonproliferation* (I), 101st Congress, 2nd Session, Washington DC (USGPO); John Zimmerman, Director Strategic Technology Affairs, State Department (1987-1989), Telephone interview, 1998.

[8] James M. LeMunyon, Testimony Before the Subcommittees on Arms Control, International Security and Science, and on International Economic Policy and Trade of the House Committee on Foreign Affairs, 1989, in US Congress House, *Missile Proliferation: The Need for Controls (Missile Technology Control Regime)*, 101st Congress, 1st Session, Washington DC (USGPO), 1990; Zimmerman, *op cit*.

[9] Richard A. Clarke, Testimony Before the Subcommittee on Technology and National Security of the Joint Economic Committee, 1991, in US Congress Joint., *Arms Trade and Nonproliferation (I)*, 101st Congress, 2nd Session, Washington DC (USGPO), 1992.

[10] Holmes, op cit; Ozga, *op cit*.

[11] LeMunyon, *op cit*.

Annex items – that contribute to a Category I system.) Although Washington failed to get a formal catch-all provision added to the MTCR Guidelines, it continued in subsequent meetings and through bilateral diplomacy to push for adoption of national catch-all controls, with the result that a majority of MTCR states now implement catch-all controls nationally.

By the end of the Bush Administration, the Annex and Guidelines had been markedly strengthened, membership had been significantly expanded to include virtually all Western states, institutionalization had been instituted with a monthly consultative mechanism to allow the Regime to operate collectively between annual plenary meetings, and major internal differences regarding interpretation had been largely resolved in Washington's favor. At U.S. urging, the Regime had also collectively associated itself with prior U.S. invitations to non-members to adhere to MTCR rules on a unilateral basis. Washington had augmented this invitation by launching its own bilateral campaign promoting unilateral adherence by key non-member suppliers. Indeed, in the MTCR's first few years Washington conducted bilateral missile nonproliferation talks with at least ten non-member governments.[12]

A policy review in 1993 confirmed for the incoming Clinton Administration that the MTCR had become a mature export control regime – i.e., that it effectively regulated problematic transfers by its members. The United States therefore decided to use the MTCR as a jumping off point to address the supply-side problem posed by proliferation by non-member suppliers. In this regard it intensified bilateral diplomacy to promote the MTCR Guidelines as a global norm for responsible export control behavior. Specifically, Washington redoubled its efforts to secure formal commitments to abide by MTCR rules from non-member suppliers. Partly by using the carrot-and-stick approach of threatening unilateral sanctions against entities in non-member states that violated MTCR standards, and selectively offering various rewards as an alternative, Washington was able to negotiate a series of export control agreements with key non-member suppliers, including Israel (1991), Russia (1993), South Africa (1994), and Ukraine (1994).[13] It has also succeeded in initiating outreach programs by the Regime to encourage unilateral adherence by non-member transshipment countries.

Notwithstanding these successes, the U.S. strategy of employing bilateral carrots-and-sticks to enforce MTCR export control norms was not entirely successful. The most notable failures have been China and North Korea. In December 1991, in return for relief from recently imposed missile sanctions, then Secretary of State James Baker III received a verbal promise from Foreign Minister Qian Qichen to adhere unilaterally to MTCR export norms. However, in seeking to formalize this commitment in writing two months later, the Chinese backpedaled, agreeing only to abide by the original 1987 version of the Guidelines, and refusing explicitly to recognize any version of the Annex.[14] This odd formulation in essence nullifies any commitment, because the 1987 Guidelines do not encompass CBW-capable missiles, nor the key concept of range/payload trade-off (i.e., inherent

[12] Carus, W. Seth. *Ballistic Missiles in the Third World: Threat and Response* (Westport: Praeger, 1990). Clarke, *op cit*; Verville, *op cit*.

[13] Bertsch, Gary K. & Victor Zaborsky, "Bringing Ukraine into the MTCR: Can U.S. Policy Succeed?", *Arms Control Today*, *27*(2); Bowen, Wyn Q. "U.S. Policy on Ballistic Missile Proliferation: The MTCR's First Decade (1987-1997)". *Nonproliferation Review*, 5(1), 21-39; Ozga, *op cit*; Pikayev, Alexander A., Leonard S. Spector, Lina V. Kirichenko, & Ryan Gibson, *Russia, the U.S. and the Missile Technology Control Regime*. London: Oxford University Press. (Adelphi Paper 317); U.S. Department of State, "U.S. and South Africa sign missile non-proliferation agreement", *U.S. Department of State Dispatch*, *5*(42), 694.

[14] Rennack, Dianne E., *China: U.S. economic sanctions*. Washington, DC: Congressional Research Service. (CRS report for Congress; no. 96-272F.)

capability versus operational configuration). Moreover, the Annex represents an essential implementing requirement for any version of the Guidelines. Three years of intensive bilateral diplomacy at senior levels, along with a second sanctions waiver, yielded another Chinese ministerial statement in 1994.[15] Unfortunately, this new pledge did little more than reaffirm Beijing's equivocal stance.

In early 1998, Washington sought once and for all to bring China firmly into the fold as an adherent. The United States secretly proposed a grand bargain: it would provide an extensive package of incentives – including a blanket waiver to Tianammen Square sanctions and guaranteed access to a much larger share of the U.S. satellite launch market – in exchange for an unambiguous commitment to fully and faithfully adhere to MTCR standards. But when only weeks later allegations surfaced that this offer had been motivated by improper campaign contributions, it was quickly dropped.[16] Getting a firm Chinese commitment to adhere fully to the MTCR thus remains a key unfulfilled U.S. goal that the Clinton Administration has bequeathed to is successor.

The current situation is much the same regarding North Korea. Washington specified in the 1994 Agreed Framework negotiations – designed to diffuse a nuclear proliferation crisis sparked by North Korea's withdrawal from International Atomic Energy Agency (IAEA) safeguards – that restraining missile technology exports was a concern that the DPRK needed to address before full implementation could move forward.[17] This led to several years of inconclusive bilateral talks in which the United States sought, among other things, to secure a commitment to adherence to MTCR rules.[18] Although North Korea eventually agreed to a moratorium on test launches of long-range missiles, a firm agreement eluded the Clinton Administration in its final weeks, leaving it now up to the new Bush Administration to assess whether the negotiations were promising enough to continue to pursue.[19]

Even as it promoted unilateral adherence by non-members, the United States beginning in 1993 moved to expand MTCR membership to include significant non-Western supplier countries, including Russia, Ukraine, Argentina, Brazil, and South Africa. Because this policy entailed bringing heretofore targets of the Regime into its ranks, Washington sought to institute safeguards to prevent the MTCR from becoming a "technology supermarket" for incoming members. These included seeking to bolster the rules constraining inter-partner trade, only admitting countries that were already significant potential suppliers of missile technology, and only welcoming states "that subscribe to international nonproliferation standards, enforce effective export controls and [except Russia and China] abandon offensive ballistic missile programs".[20]

Membership expansion went forward, but the United States failed to win support within the Regime for any of its proposed countervailing

[15] John Holum, Testimony before the House Committee on International Relations. In U.S. Cong. House, *Export of missile-related technology to China.* Washington DC: Federal Document Clearing House; McNamara, *op cit*.

[16] Howard Diamond, "U.S. Renews Effort to Bring China Into Missile Control Regime", *Arms Control Today*, March 1998, p. 22.

[17] Personal interview with Robert L. Gallucci, Assistant Secretary of State for Politico-Military Affairs (1992-3).

[18] US Cong. Senate, *Proliferation Primer* (Majority Report of the Subcommittee on International Security, Proliferation and Federal Services of the Committee on Governmental Affairs); "N. Korea Expanding Missile Programs", *Washington Post* 20 November 1998; "N. Korean Pledge Eases Missile Fears", *Washington Post*, September 13, 1999.

[19] "Bush to Pick up Clinton Talks on N. Korean Missiles" *Washington Post*, March 7, 2001.

[20] *Fact Sheet: Nonproliferation*, (White House, Office of the Press Secretary, 1993).

safeguards. It therefore has resorted to the extremely contentious practice of imposing its own highly restrictive membership criteria on a unilateral basis by exercising its consensus veto on membership applications, specifically by imposing zero-missile requirements on new members such as Argentina, Brazil, Hungary and South Africa.[21]

In recent years Washington's main supply-side focus within the MTCR has been to enforce strict compliance and otherwise maintain the status quo. However, the United States has recently responded positively (albeit cautiously) to vigorous efforts by some MTCR partners to enhance the Regime with global demand-side elements. At the 1999 MTCR Plenary the United States supported a proposal to develop a global Code of Conduct Against Missile Proliferation, to serve as a voluntary guideline for members and non-members. The content of the resulting draft is not yet public, but reportedly involves voluntary transparency measures, for example on space launch programs.[22] (Assembly of WEU 2000; Smith 2001).

In summation, the United States has worked assiduously for nearly two decades to put in place a robust system of international supply-side controls on the spread of missile technology. The MTCR has always stood as the locus of these efforts. To date this project has largely been a success, at least as measured in its own terms. In addition to establishing an effective record in governing the missile-related transfers of its participants, the Regime increasingly has become recognized as a wider export control norm.

Given that the MTCR represents a mature supply-side mechanism, the real question looking ahead is whether the Regime can build on its supply-side successes by taking on a demand-side role. This newest undertaking – the impetus for which (in contrast to other major MTCR developments) does not appear to come from Washington – raises significant questions. Can (and should) a limited-membership, supply-side export control regime serve as an effective foundation for a global demand-side anti-missile norm? For example, is a limited-membership supply-side mechanism likely to be the most persuasive emissary for carrying forward a demand-side message? And could attempting to do so undermine the Regime's ability to continue to perform its core supply-side mission? Regardless of how one feels about the supply- versus demand-side elements of international nonproliferation efforts, it may be that these very different strategies are best pursued separately, rather than through a single instrument.

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[21] Personal interview with Janet Karicka, Desk Officer for Space and Missile Nonproliferation Policy, ACDA (1995-8).

[22] WEU Assembly, *Transatlantic Cooperation on Anti-Missile Defence* (Report submitted on behalf of the Technological and Aerospace Committee, November 2000), http://www.weu.int/assembly/eng/reports/1717c; Mark Smith, "Verifiable Control of Ballistic Missile Proliferation", *Trust and Verify* (95).

# The Global Control System

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## INTRODUCTION

In 1998, missile launches by North Korea and Iran dramatically demonstrated the inadequacy of the international missile non-proliferation regime. This is currently based on the Missile Technology Control Regime (MTCR), established in 1987 by the seven largest industrially developed nations. The MTCR is a supply side informal export control regime, that sets guidelines which member states can use to harmonize their national export control legislation with that of other participants in the Regime. The MTCR also limits missile developments by some member states. U.S. policy has sought to ensure that no state beyond the original seven members, other than Russia and China, can become a full member of the Regime if they are developing or deploying missiles with a range of more than 300 kilometers. In 1998 an exception was made for the Ukraine, however, which upon joining the Regime retained the right to possess missiles with a range between 300 and 500 kilometers.

The MTCR has three basic drawbacks: lack of universality, legally non-binding status, and the absence of an international body monitoring its compliance. Lack of universality is the main problem. From the very beginning, several major producers of missile technologies, including the Soviet Union, remained outside the Regime. Since 1987, the MTCR has been gradually expanded to include such key producers as Russia, Ukraine and Brazil. Two other missile powers - China and Israel - voluntarily accepted MTCR guidelines without joining the Regime formally. They did it, however, through bilateral memoranda with the United States, and not via the MTCR contact office established in the French Foreign Ministry. However, missile proliferation took place at least as fast as the Regime expanded, and by early 2000 four major missile producers - India, Pakistan, Iran and North Korea - had emerged outside the MTCR. Moreover, it was no secret that they were among the nations targeted by the Regime. Thus, there is a group of important missile producers outside the MTCR that does not accept any obligations restricting their missile development and missile related exports. Their accession to the Regime seems currently to be a political impossibility.

Since 1998 the international community has proposed and implemented several measures to tighten curbs on the further spread of missile capabilities. All those measures were primarily directed at engaging key MTCR non-members in the Regime. First, existing efforts aimed at securing Ukrainian and Chinese participation in the MTCR were increased, resulting in Kiev finally acceding to the Regime in that year. China's membership was more problematic, and consultations were deferred when their embassy in Belgrade was bombed by NATO in May 1999 during the campaign against Yugoslavia. Second, France proposed measures for improving the transparency of missile launches by providing notification in advance. In September 2000 this idea received approval, in principle, at the MTCR member states' meeting in Helsinki. Finally, in June 1999 Russia's President proposed a Global Control System (GSK - from the Russian *Global'naya Sistema Kontrolya*) at the G8 summit at Cologne, Germany. This was developed in a more detailed

form through two international conferences arranged for governmental representatives by the Russian Ministry of Foreign Affairs, and held in Moscow in March 2000 and February 2001.

## THE MAIN COMPONENTS OF THE GSK

The GSK originated in 1992, when the then Russian President, Boris Yeltsin, proposed a Global System for Protecting the International Community Against Missile Attack in his speech given at the UN Security Council on January 29. However, by 2001 the idea of the Global Control System had evolved into something extremely complex and comprehensive, which encompassed both the MTCR and several existing notification and confidence building measures.

Unlike the 1992 proposal for a Global Protection System (GSZ - from the Russian *Global'naya Sistema Zaschity*), the GSK does not propose any military defense measures. The GSZ called for the establishment of an international non-strategic missile defense system, possibly operated by multilateral military contingents. By contrast the GSK proposal contains non-military enforcement measures only, although military options might be envisaged in some other areas.

### Non-Proliferation Regimes

According to the vision circulating inside Russia's foreign policy establishment, the GSK would consist of two large blocks of elements from existing or new international regimes, and an implementation and consultation mechanism.[1] The first block is represented by missile non-proliferation regimes; the second by missile transparency regimes. The non-proliferation block includes:

- the MTCR;
- its Code of Conduct;
- incentive mechanisms;
- security assurances;
- national and multilateral measures to enhance missile non-proliferation; and
- diplomatic and economic enforcement measures.

Two of these elements already exist and four are new. An important problem of the existing missile non-proliferation regime is that it does not address the incentives which may be stimulating a country's missile build-up. There are two primary motivations for states to develop their missile programs: the desire for technological development and the need to deal with security threats. New mechanisms of incentives and security assurances should be established to neutralise these motivations; to provide non-members with incentives not to develop missile technologies; and to offer them positive gains from giving up existing programs.

Nations develop missiles in order to stimulate their scientific and technological development. Although there are no specific proposals on the possible nature of the mechanism to discourage them from missile development for that reason, it is clear that the mechanism of incentives should preserve the interests of non-member countries in their technological development by channeling it into less destabilizing and perhaps more lucrative forms. For instance, the incentives mechanism may include providing satellite launch facilities for non-members which abandoned their national missile programs. The launches could be conducted by the MTCR countries at a discounted rate. A similar paradigm lay behind the approach discussed by DPRK leader Kim Jong Il and Russian President Putin in 2000 on freezing Pyongyang's missile program in exchange for three satellite launches provided for the North Koreans from a foreign launch site. Britain might also serve as a useful historic precedent here. In the early 1960s, it decided to abandon its national missile programs and concentrated instead on satellite development: an equally high-tech activity to its former missile related ones.

[1] Alexander Klapovsky, "Structure of Global Regime of Missile Non-Proliferation", *Yadernoye rasprostraneniye*, Issue 37, October-December 2000, p. 15.

National security threats are another important motivation for nations developing their own missile capabilities. A mechanism for offering security assurances to such states, in addition to a mechanism of incentives, might be established to address this. A precedent exists here in the nuclear proliferation area, where the nuclear weapon powers have provided negative security assurances for non-nuclear weapon states. In a more informal way, such assurances have also formed part of the U.S.-North Korean dialogue. To persuade Pyongyang not to restart its nuclear weapons program, the United States agreed not to conduct the large scale military exercises in South Korea that North Korea regarded as threatening to its national security. More recently, the DPRK hinted at its possible willingness to abandon its missile program, and not to export missile technologies, in exchange, *inter alia*, for full diplomatic recognition by the United States.

These two global mechanisms could be supplemented by further national and multilateral measures to enhance missile non-proliferation. For the supplier states, the most important national measure is export control legislation and the mechanisms to enforce its implementation. For instance, by the mid- to late-1990s, Russia had established national export control legislation that met international standards. However, there were two sets of problems over its implementation. First, the criminal code contained loopholes and punishment for illegal exports of missile technologies was very light. Secondly, law enforcement agencies were too weak to effectively prevent illegal export activities. Since 2000, along with the general stabilization of the situation in the country, the authorities have gradually started to address and solve that problem.

Multilateral measures, besides the MTCR and its Code of Conduct[2], might include the making of new regional arrangements by various groups of states to limit their missile capabilities. Alternatively the MTCR members might decide to create consortia facilitating the launching of satellites for those non-members that decided not to pursue their own national missile programs.

The recent Russian idea of a European anti-missile defence system (AMD) against non-strategic ballistic missiles (NSBMs) might also fit into the category of multilateral measures. This system was proposed by the Kremlin in February 2001 to Lord Robertson, NATO's Secretary General, and involved a phased approach. In the first stage, Russia, NATO and any other interested European country would initiate an assessment of common missile threats. If such a threat were found, the participants could move to the second stage of discussing practical aspects of how to deal with it most efficiently. If non-military means should be recognized as inefficient, or should fail, the countries could move to the third phase of elaborating military means to neutralize the missile challenge, including development of anti-missile interceptors and an AMD architecture. For that, Moscow has offered its anti-missile research and development facilities and test ranges, as well as its existing S-300 and S-400 surface-to-air interceptors.

The final element of the non-proliferation block consists of diplomatic and economic enforcement measures. This represents a significant change in the traditional Moscow position in the area of arms control and non-proliferation agreements. In the past, the Soviet Union consistently opposed inclusion of enforcement steps in such agreements, and Russia only reluctantly started to accept them in the early 1990s. Nevertheless, it could be difficult to find an example of a major existing arrangement which permitted the introduction of specific enforcement measures against its members.

In addition, the second phase of the Russian 2001 proposal on European non-strategic AMD, the discussion of practical steps to deal most efficiently with emerging missile threats, could be considered as

[2] See Robert McDougall's article "The Prospects for Control: Missile Proliferation, the MTCR and the Broader World" in this volume, pp. 9-14.

an element of the proposed diplomatic and economic enforcement measures.

**Transparency Regimes**

Like the non-proliferation block of international regimes, the transparency block consists of six sets of existing and proposed regimes and measures. These include two elements of the MTCR's Code of Conduct aimed at establishing transparency over ballistic missiles and space launch vehicles. The four proposed regimes included in the GSK are:

- launch notifications;
- technical monitoring of launches;
- an international missile data center; and
- additional confidence building measures.

Various bilateral and multilateral launch notification regimes already exist in these areas. As early as September 1971, the United States and the Soviet Union signed an Agreement on Measures to Reduce the Risk of Outbreak of Nuclear War. It was of unlimited duration, and did not require parliamentary ratification. *Inter alia*, the Agreement asks each side to notify the other party in advance of missile launches if they are targeted outside the national territory and directed towards the other state.

The second intergovernmental notification agreement between Moscow and Washington, on the Prevention of Incidents On and Over the High Seas, was concluded in May 1972. It entered into force immediately and has been renewed for successive periods of three years with either side needing to give six months notice prior to a renewal of its intention to withdraw from it. According to the Agreement, the parties notify in advance, "through the established system of radio broadcasts of information and warning to mariners" any actions in the high seas which might constitute a danger for navigation and air flights. Ballistic missile launches into international waters constitute such a risk, and therefore have to be notified under the Agreement. The notifications announce which areas of the open sea are closed for navigation and flights, but do not require a state to give information on the nature of the danger. The notifications are to be provided not later than three to five days before the action in the open sea.

In 1979, these notification measures were supplemented by provisions in the Strategic Arms Limitation Treaty (SALT) II, signed between the United States and the Soviet Union. Neither side ratified it, nor has the document ever entered into full legal force. However, both Moscow and Washington followed the Treaty provisions voluntarily until 1985. According to it, each side had to notify the other side of multiple land-based strategic ballistic missile (ICBM) launches, as well as of single ICBM launches aimed outside national territory with a flight trajectory in any direction. The agreement did not call for notifications of submarine launched ballistic missile (SLBM) launches.

In May 1988 Moscow and Washington signed another intergovernmental document, an Agreement on Notifications of Launches of ICBMs and SLBMs. The Agreement represented another step in improving the confidence building regime in the area of ballistic missile launches. For the first time the document covered all SLBM launches, as well as all ballistic missile launches taking place completely within the national territory. The Agreement was of unlimited duration. According to it, each side should notify the other no less than 24 hours before any ballistic missile is launched of the date, site of launch and place of fall.

In 1991 the Strategic Arms Reduction Treaty (START) I was signed by the Soviet Union and the United States. It entered into force in December 1994 after all five participants – the United States and four post-Soviet successor states – Russia, Belarus, Kazakhstan and Ukraine, ratified it. Its provisions required all sides to give notification of any ICBM or SLBM flight tests, including those conducted for launching objects into the upper atmosphere and outer space. In addition to notification in advance of data provided in accordance with the May 1988 Agreement, the

Treaty also requested additional telemetric information.

Besides the United States, Russia enjoys informal confidence building cooperation with other countries, including the United Kingdom and Norway. The latter informs Moscow of launches of meteorological rockets, because they are conducted in areas monitored by Russia's missile early warning system. In 1995 the Russians mistakenly interpreted the launch of a Norwegian meteorological rocket as a launch of a military missile, and the black case of the Russian President was activated for the first time since the end of the Cold War.

Multilateral notification regimes were initiated by the Convention on the Registration of Objects Launched into Outer Space, which was concluded in 1975 and entered into force in 1976. Any state may participate. The Convention established a mechanism for registering spacecraft with the UN, which provides full and open access to this data. The registration takes place after the satellite is placed in orbit.

Regimes for the notification of missile launches have mostly been developed within the bilateral U.S.-Russian framework, and there is still a lack of multilateral regimes in this area. Other missile nations could follow the U.S. and Russian example and voluntarily notify the international community of both the timing and major characteristics of their missile tests. Such developments might then be formalised in a new notification Convention negotiated by the Conference on Disarmament in Geneva.

Regimes to perform technical monitoring of missile launches are much less developed than notification ones. A rudimentary one is contained in the strategic arms control agreements concluded between Moscow and Washington. They prohibited the impeding of national technical means of monitoring compliance with these agreements, and prohibited the encryption of telemetric data from missiles in flight. Further discussions took place between Russia and the United States in the 1990s under the auspices of the RAMOS project on U.S.-Russian cooperation in joint monitoring.

Provisions on international monitoring of missile launches were also contained in the 1992 GSZ proposal. In September 1998, Russia and the United States took their first practical step towards cooperative monitoring by agreeing to establish a mechanism permitting the exchange of data from national missile early warning systems, with a view to multilateralizing this at some point in the future. However, Moscow and Washington have still not implemented a bilateral monitoring regime for missile launches. This will require further development of the notification regimes, in both a bilateral and multilateral frameworks For currently, multilateral missile monitoring exists inside multinational security organisations. For instance, there is extensive cooperation between the air defenses of several of the former Soviet republics, with the early warning facilities of Russia, Ukraine, Belarus, Kazakhstan exchanging data in real time.

The concept of an international data exchange center has been developed in a more effective way than the multilateral monitoring of launches. In 1987 the Soviet Union and the United States agreed to establish Nuclear Risk Reduction Centers. These collect notifications of missile launches received through existing bilateral agreements and arrangements. The nature of this data has been gradually changing over time.

In June 2000 Russia and the United States agreed to continue implementation of the measures agreed in the Joint Statement of September 1998, and decided to establish a Joint Data Exchange Center (JDEC) in Moscow. This Center will start operations in June 2001. Filtered data on missile launches from the national missile early warning systems of each side will be delivered to the JDEC. At a later stage, information concerning launches by other countries will be added, if it constitutes a threat to the other side. Cruise missiles could be also included in future JDEC operations. On

various occasions Russia has also expressed its interest in establishing a truly international missile data center, probably on the basis of JDEC. The JDEC was also mentioned as an element of the proposed European AMD system.

Additional confidence building measures might include providing more detailed data on missile launches on a voluntary basis. The period between notification and actual launch could be also extended. A launching nation could invite representatives of other states to its launch sites, and perhaps to attend missile launches. Although it would not constitute a strong challenge for the United States and Russia, for some nations like North Korea that would mean a significant advance in the transparency of their missile programs.

**International Implementation and Consultation Mechanisms**

International Implementation and Consultation Mechanisms could include three components:

- a GSK coordination body;
- mechanisms for international consultations;
- various other institutional frameworks.

Russia has traditionally been interested in establishing international bodies to monitor compliance with, or to coordinate the activities within, various multilateral regimes. In the late 1980s the Soviet Union expressed its interest in establishing an international institute for monitoring compliance with the MTCR. Beyond the understandable interest of Moscow's diplomatic establishment, this interest could be explained by the fact that such international organizations would provide a better basis for member states to advance their views, and give greater leverage to their members in dealing with potential non-compliance and violations.

The GSK international coordinating body might focus on the phased build up of the system and the functioning of its various components. It would be cheaper to establish a single monitoring institution, rather than have several organizations supervising individual components of the proposed system, such as the MTCR Code of Conduct, incentives security assurance mechanisms, notification and monitoring regimes, etc.

The coordinating body could be complemented by an international consultative process, which would address various topics and include a range of interested participants. For instance, the bilateral U.S.-Russian JDEC dialogue might be complemented by Russia-NATO AMD discussions aimed at the multilateralization of the JDEC. Other talks could take place on a bilateral basis, like those between the United States and the DPRK. Institutional frameworks for international consultations might be also quite numerous. The Russia-NATO Permanent Joint Council could be an appropriate forum for discussing the AMD proposal. Meetings of MTCR member states have already become a place for elaborating ideas for the Code of Conduct.

**Political Evolution**

From the very beginning, the idea of the GSK met with a suspicious response from the United States. Washington was concerned that the GSK was being promoted in order to establish an alternative to its plans for NMD deployment, and to undermine the MTCR. As a result, the United States participated in neither of the GSK conferences arranged in Moscow in 2000 and 2001. Conversely, the United States' closest allies - Western European countries, Japan and Israel - decided to attend both meetings, together with non-allied nations and countries of proliferation concern. In the March 2000 conference 48 states participated. In February 2001 the number of participating states exceeded 70. The GSK idea therefore helped to establish a new forum, where representatives of various countries, including those perceiving each other as a source of missile threat, had an opportunity to discuss their concerns directly.

Between 1999 and 2001 the GSK was transformed into a very comprehensive concept, including almost everything which occurs in the missile non-proliferation area (except, maybe, counterproliferation). Its strong side was an attempt to combine various multilateral, bilateral and national efforts into an integrated international response to missile proliferation. From this viewpoint, the two conferences in Moscow played a generally positive role. At the same time, the complexity and comprehensiveness of the concept - notwithstanding the U.S. reaction - represented the major obstacle for elaborating more specific and better focused measures against missile proliferation within the GSK framework.

Initially the GSK was clearly elaborated as an alternative to a purely military and technical approach towards combating the missile threat. But this could be considered as an advantage, as it helped to create a more balanced response. For the GSK was clearly a complementary, rather than a competing, concept vis-à-vis the Code of Conduct. The fact that it was discussed outside the MTCR framework should not be considered as an attempt to undermine the Regime. While the Code of Conduct represents a platform for a concerted MTCR approach towards non-members, the GSK has helped to build bridges between members and non-members through inviting both the former and the latter to Moscow conferences. Such meetings cannot be convened within the MTCR framework.

The United States concerns about the GSK as an alternative to Washington's inclination to provide a weaponized response to missile proliferation should be alleviated by the Russian AMD proposal. Like the GSK, the AMD contains a balanced strategy against the missile threat, combining both military and diplomatic responses as its prime components. Given the GSK's - probably intended - vagueness and complexity, the AMD could also be incorporated within that concept.

In sum, the GSK demonstrated itself as a useful mechanism to permit involvement of MTCR non-member states in international discussions on missile proliferation and how better to resist it. The need for such a forum will continue in the future, and the Moscow conferences have a reasonable chance of continuing support. Certainly, all the elements envisaged by the GSK cannot be promoted simultaneously. Instead, the international community might concentrate on such key issues as:

- enhancing the MTCR through its universalization and institutionalization;
- increasing the transparency on missile launches, partially through the Code of Conduct;
- discussing a possible mechanism for funding incentives to abandon missile programs, possibly at Moscow conferences;
- developing the multilateral missile data exchange center through a combination of the U.S.-Russian bilateral arrangements, AMD multilateral discussions, and mechanisms generated by the Code of Conduct.

# New Approaches to Combating Missile Proliferation

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## INTRODUCTION

At the conclusion of the Helsinki Plenary of the Missile Technology Control Regime (MTCR) on October 13 2000, a press release issued by the Finnish Government on the Regime's behalf included the following paragraph:

> The partners continued their deliberations started in the previous Plenary in 1999 on a set of principles, commitments, confidence-building measures and incentives that could constitute a code of conduct against missile proliferation. They decided to approach countries outside the MTCR in order to engage them in a broader common effort to agree a multilateral instrument open to all States.

Although succinct in wording, these two sentences reflect a noteworthy event in global non-proliferation and disarmament: the attempt by a significant segment of the global community to promote the creation of the first multilateral instrument setting normative standards and agreeing cooperative approaches on missile-related activity.

The MTCR's exact state of progress on the drafting of such a code of conduct, and on its contacts with other countries in that regard, are not yet a matter of public record. This paper can however provide an indication of the approaches that Canada has taken in playing its own role in the MTCR deliberations to date, its views to the missile proliferation issue more broadly and a few thoughts on where the international community might go from here.

## BACKGROUND

Missile tests over the last few years in the Middle East, South Asia and the DPRK, together with revelations on Iraqi missile development programs and less dramatic but equally significant ballistic missile research and development efforts within a growing number of other countries, all point to the need for accelerated arms control and non-proliferation efforts in this area, in the interests of promoting regional stability and reducing the availability of sophisticated delivery systems capable of mounting weapons of mass destruction. Other aspects of missile development have also recently raised concerns with some parties, for example misunderstood or otherwise unanticipated launches.

A basic problem in the field is that no comprehensive and widely-agreed norm has been established on what missile activities are "wrong". The international community criticizes specific activities by individual countries on a case-by-case basis, but there is no multilateral instrument or agreement providing a basis on where to draw the line between acceptable and unacceptable activities. This differentiates the situation from that governing weapons of mass destruction, where international treaties provide norms enforced by a variety of verification and other mechanisms.

A few bilateral agreements do exist on missile-based weapons systems and/or warheads (e.g. the

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INF, START and ABMT Treaties between the United States and Russia), but they do not provide a direct basis for multilateral action. The MTCR does exercise some control over international transfers of medium-range missiles and related technology, but its membership is not inclusive, it is not universally accepted as a norm-building institution, and its mandate in any event does not cover all aspects of the missile proliferation situation (qualitative improvements in the domestic production capabilities of a growing number of states, for example, and increasing exports by states with no interest in joining the Regime).

An increasing number of countries and institutions have, however, recently expressed willingness to look at broader forms of international activity on missiles. Examples are as diverse as, bilateral launch notification measures (e.g. USA/Russia and India/Pakistan at Lahore); public expression of interest by various states in a multilateral missile treaty; agreement on greater activism by the MTCR at its Budapest (1998), Noordwijk (1999) and Helsinki (2000) Plenaries; the G8 Summit Communiqués at Cologne (1999) and Okinawa (2000); UNGA resolutions in 1999 and 2000; and non-governmental statements such as the July 1999 report of the Tokyo Forum (which called for strengthened MTCR guidelines, global or regional agreements and "other realistic ways to control and reverse missile proliferation").

## GENERAL FACTORS

If the ultimate goal of such activity lies in developing agreed international norms and mechanisms covering missile production, transfer, testing and deployment, the ultimate diplomatic means would presumably be a full-fledged legally-binding treaty. However, going for such an agreement directly off the mark could well run up against strong national security and commercial interests and encounter lengthy delay before any results emerged. As an alternative, a hierarchy of different steps starting at a lower level than the full treaty approach could be considered, negotiated and implemented in the near term.

A number of general factors would first need to be reviewed, relating to the scope of any measures (comprehensive or partial). These would need to consider at least three areas:

— geographic coverage (i.e. which countries to include). This would be complicated by the fact that the countries most active in the field, and which would be among the most important to include, might not always be the most eager to enter negotiations.

— functional coverage (i.e. what activities are involved). This would be complicated, *inter alia*, by the need to reflect the interest by an increasing number of states in developing capacity for orbiting civilian satellites and conducting other peaceful activities in space, and the consequent need to distinguish civilian and military programs in terms of development, testing and launch activity.

— technological coverage (i.e. what technologies would be restricted). This would be complicated not only by the need to decide what functional activities to consider for each type of ballistic missile (long range/orbital, medium range and tactical/short range), but also by the need to decide whether/how to cover non-ballistic missiles (such as cruise missile delivery systems).

Another general factor would be the question of how binding a given instrument would be. The options range from simple declarations or statements of principle with no commitment beyond best efforts, to politically binding agreements of a significant breadth of coverage and degree of specificity, to fully-binding international treaties.

A final general factor would be where the steps to deal with the missile proliferation problem could

most productively be discussed, analysed and monitored. At an initial stage, when the basic task is to decide in general terms how the issue should be addressed, a broad-based approach is probably appropriate and likely inevitable. At some point, however, a decision will have to be taken on how to shift from broad consideration to the more focussed negotiation of various agreements. Different aspects of the missile proliferation problem might also be best considered and negotiated in different fora.

A separate but related issue concerns the establishment of permanent bodies to carry out any measures agreed through the various processes of consultation and negotiation. These could range, for example, from a notification and data center for launches, to an informal conference-based structure without fixed secretariat (as currently used by the NPT), to a formal treaty-based international institution. Although important in the longer term, this issue is however secondary to and dependent on the content of the eventual agreements with which the bodies are associated.

Given a resolution on these and other pertinent general factors, concrete steps can be considered. Many of these have already been discussed in various fora, falling into two broad categories: enhanced activity by the MTCR and negotiation and implementation of a range of new multilateral instruments and mechanisms.

On the MTCR side, improvements within its existing mandate could, for example, include a more activist role in dealing with key non-partners; increased linkage with other non-proliferation regimes through enhanced inter-regime contact; strengthening of technologies covered; and extension of membership. More generally, the Regime can also be utilized as one forum for discussion on broader international treatment of missile proliferation problems. The goal there could be for the MTCR to play a new and more pro-active role in addressing the causes of proliferation and help to broaden acceptance of norms against the development of new missile systems. As an expert body with a long-standing and well-demonstrated concern on missile proliferation, it is well-placed to serve both as a centre for consultation among its own members and as a credible partner/sponsor for the engagement of a wide range of non-member states in exploratory exchanges on these issues.

Suggestions currently in play for new instruments and measures include increased transparency mechanisms on production, holdings and transfers; multilateral launch notification procedures and a notification/data center; consideration of verification measures; establishment of principles/guidelines that seek to establish norms on missile production/transfer/testing/launch; and negotiation of politically-binding codes of conduct that attempt to establish norms of national behavior. The ready acceptance of such proposals cannot simply be assumed, however. There already exists international support for certain of them, but some countries have concerns about the impact of such proposals on their individual/regional national security approaches and standing, others have argued that they would simply legitimize existing missile production programs at the expense of new entrants and yet others are concerned about the process of legitimizing certain activities in the process of attempting to control them. Such arguments need to be addressed.

## STRATEGIC APPROACHES

Given the complexity of the factors outlined above, a comprehensive strategic approach is clearly needed in addressing the missile proliferation problem. This is not to say that final agreement has to be reached immediately on a complex and fully-articulated agreement or plan covering all possible elements of a strategy, but simply that there should be an informal but well-thought-out understanding regarding what the international community can hope to achieve and how various multilateral initiatives fit into the bigger picture.

In conceptualizing such a strategy, consideration can be given to approaches that have

featured in various combinations in previous non-proliferation, arms control and disarmament (NACD) arrangements. Suggestions are offered below, as might be applied over time to missile activities.

*Non-proliferation*: This approach focuses on agreements or mechanisms restricting transfers of technology deemed too dangerous for open access . It includes both supplier-based export control regimes (of the type already represented by the MTCR) and normative declarations on supply/acceptance of specific types of weapons and related technology (such declarations are found in the NPT and other treaties but have not so far been agreed multilaterally for missiles).

*Arms control*: This approach acknowledges that the countries party to an agreement possess and will continue to possess the weapons in question, but seeks to restrict or reduce numbers, deployment, operational characteristics or other quantitative indicators. The START process is a current example. A more general application to missiles could be envisaged, although it could raise "legitimization" concerns.

*Disarmament*: This approach declares specified weapons illegitimate and seeks their destruction. It forms the basis of the Chemical and Biological Weapons Conventions and a major basis of the NPT. On the missile side, there have been bilateral successes such as the INF Treaty, and it is possible that agreement might be reached on multilateral elimination of certain classes of missiles.

*Confidence-building measures (CBMs)*: This approach seeks to reduce tension, avoid misunderstanding and promote further cooperation by enhancing mutual understanding and trust, for example through pre-launch notification initiatives. Transparency is a key element in this approach. In this regard, the voluntary UN Conventional Arms Register already covers most missiles above 25 km in range and could be an even more effective instrument if more widely utilized.

*Norm-building measures*: This approach seeks to build a broad consensus on acceptable versus unacceptable behavior in terms of weapons development, testing, possession, deployment, transfer etc. There is currently no universal agreement in this regard on missiles, however. A legally-binding agreement would require extensive consensus-building among the necessary interested parties, although a politically binding mechanism might be easier to achieve.

*Verification and monitoring*: Always a difficult aspect, but vital to agreements that depend on mutual assurance that other states are not cheating on their obligations. There are extensive examples, both institutional (eg the IAEA and the OPCW) and situational (eg UN-authorized measures in Iraq, which include missile proliferation aspects). The experience of certain U.S.-Russia missile-related agreements demonstrates that even strict verification measures can be agreed if the parties consider the matter in question sufficiently important.

*Incentives*: Positive reasons for joining an NACD regime, sometimes necessary to gain the adherence of states being asked to give up current or potential weapons programs. One possibility for example could involve support for legitimate civilian space programs linked to the abandonment of ballistic missile programs, as is reportedly being discussed between the United States and the DPRK.

*Security assurances*: Another means to assure states being asked to forgo certain weapons that their security interests are not thereby being irretrievably damaged. These come in two broad flavors: "positive assurances" centred on pledges that threat or use of missiles against a certain state would generate diplomatic and other forms of assistance from an established guarantor group; and "negative assurances" involving pledges against the use of certain weapons types by guarantor states in favor of renouncing states, as for example are connected with certain nuclear-weapon free zones.

*Consultative mechanisms*: Another major aspect of CBMs, but also useful as a bridge from information exchange and consensus building to the possibility of joint action and the conceptualization of practical instruments. The MTCR plays this role for its members and also engages in structured dialogue of various kinds with non-member states. Other mechanisms or potential mechanisms include both established general fora such as the Conference on Disarmament (CD) and the UNGA First Committee, or new specialized bodies such as the Russian Global Control System (GCS) proposal or the UN experts group to be established under a recent UNGA resolution. At this stage, a multiplicity of consultative fora is probably both inevitable and desirable, to encourage familiarity with the problem and to generate cooperative engagement in seeking solutions.

*Negotiating mechanisms*: By contrast, when the time comes to get down to creating practical instruments, experience demonstrates that there needs to be consensus on one negotiating forum (or one for each agreement under consideration). No existing specialized body has a sufficiently broad mandate or membership to be credible *prima facie*. The CD would be the most logical negotiating body, but its effectiveness has recently been affected by ongoing internal disagreements. There are UN bodies dealing with outer space but their mandates are not entirely pertinent. The UN First Committee could be a useful vehicle to generate an inclusive and authoritative mandate for the negotiations, but is not in itself a negotiating body. Another option would be a special body set up to deal with missile proliferation and related agreements, such as is currently engaged for example in the negotiation of the BTWC verification protocol. Such a body would however need a credible mandate and representative membership.

Any or all of these various approaches can be incorporated in an eventual broad multilateral regime on missiles and should be considered in developing an overall strategy. Some will however clearly be easier to negotiate and implement in the short term. Export controls are already in force and an unwritten norm on missile non-proliferation, if not universal, is already accepted by a significant number of states. CBMs and consultative mechanisms also seem comparatively straightforward to create (if only because they are largely non-restrictive in nature). Negotiating multilateral arms control and disarmament instruments on missiles would however unquestionably be more difficult to conclude. General agreement on some of the tougher elements would clearly be reached only by trade-offs between parties of unequal bargaining power and differing goals, as was the case for the NPT (which itself reflects a complex bargain involving non-proliferation, disarmament, practical support for peaceful uses and acceptance of intrusive verification).

## SOME PRACTICAL PRINCIPLES

To look at the situation from a different perspective, if a broader multilateral strategy is to be articulated and new initiatives successfully implemented, the process will need to reflect certain principles and respect certain realities. Some of these principles and realities are suggested below.

*Ensure that initiatives maintain or enhance the security of those expected to join*. To be realistic, no state is going to take part in an initiative by restricting its present or anticipated missile-related activities, the effect of which is to derogate significantly from its security. There are however possible mitigating factors. Security concerns should be less problematic on the less binding or intrusive approaches among those outlined above. Broadly, it will be important to reinforce awareness that reduction and restraint in missile development and deployment represent a net increase in security at the global and/or regional level. Reciprocity and universal (or broad regional) adherence will be important concepts in persuading the reluctant. It should also be possible to create multi-aspect initiatives or packages of initiatives that *on balance* improve the security of each state party or in some

mutually satisfactory way compensate the parties for their self-restraint.

*Respect regional imperatives.* With the exception of ICBMs, which are held by only a few countries and whose restriction tends to be addressed bilaterally, most of the missiles that new initiatives would address are essentially regional in application. Each region will have a different cast of actors and different circumstances. Implementation of any global initiative would therefore need to ensure that regional efforts were enhanced rather than undercut as a result. In some cases, it may be possible to articulate regional approaches into a global approach, as long as they are consistent. Missile-free zones may also be an approach worth considering.

*Support bilateral arrangements.* Bilateral arrangements in the security field inevitably reflect specific historical realities and special circumstances. A broad missile initiative should reinforce rather than conflict with such arrangements. This would apply with special force in the earlier stages of developing any broad new multilateral initiatives on missile proliferation, when thornier issues would best be avoided. On the other hand, while it may be possible to multilateralize bilateral agreements in some areas, other potential parties may well object based on exclusion from the original negotiations.

*Avoid a "one size fits all" approach.* While overall norms and commitments must be global in scope, regional and national characteristics should where possible be reflected in terms of practical cooperative activities such as incentive programs. Consistency of principle is vital, but flexibility of application can also be important. That being said, such flexibility must not be taken so far as to undermine the integrity of the process as a whole.

*Adopt a "building block" approach to the overall initiative.* As argued above, taking too ambitious and comprehensive an initiative from the start is likely to scare off potential parties on all sides. This problem derives from the sensitive national security issues involved, from the wide range of disparate national attitudes and from the under-developed normative structures in play. A better approach might well therefore be to advance less ambitious initiatives *ad seriatim*. In discussing proposals for concrete action as opposed to simple consultation, it will however be important to ensure that separate initiatives are in fact mutually reinforcing. It will also be important that they reflect a coherent strategic approach.

*Base priorities on a careful analysis of problems and potentials.* The goal at any given point should be to address the most important issues on which a significant initiative can reasonably be expected to be concluded in the short term. As previously suggested, this will mean a close analysis *inter alia* of types/characteristics of missiles and missile-related activity to be covered in the initiative, the countries whose participation will be necessary and the anticipated negotiating difficulties. It will also mean addressing the issues of balance and trade-off, and of the ways by which participation can be effectively encouraged.

*Focus on norm-building as an overall goal.* Perhaps the key underlying objective of the exercise should be to develop an international norm on missile-related activities, whether that norm is expressed eventually in a formal treaty or as a series of codes and other CBMs. A clear idea of "good" and "bad" missile behavior is vital to giving coherent and logical underpinnings to the broader process, and is particularly important in addressing the legitimization problem. Development of norms should be an implicit part of all initiatives and an explicit initiative on the issue might usefully be developed at an early date. Such an initial normative initiative could start as a simple non-binding set of guidelines, to which countries could voluntarily subscribe.

*Don't undermine existing successes.* In moving ahead on such initiatives, care should be taken to ensure that existing successful approaches are not weakened. Rather, they should be reinforced as part of the overall strategy. This would include for example the MTCR`s work on export controls and

its country-specific contact programs. A broader strategy should seek to build on restraint measures, not replace them. This caution would also apply to maintaining and enhancing UNCAR's inclusion of missiles in its reporting (even if other transparency measures were agreed).

*Protect/use existing institutions to the fullest extent.* Similarly, every use should be made of existing fora in advancing the broader approach. Existing bodies have the advantage of established legitimacy and membership, so avoiding some of the procedural problems of establishing new bodies, and there is no advantage in encouraging competition between new and existing bodies. For various types of initiatives, useful existing fora could for example include the MTCR itself, the CD or various UN bodies involved in space activities. That being said, where no appropriate body exists or where such a body is not proving effective, recourse could be made to new bodies, perhaps loosely linked to existing structures.

*Take a strategic and balanced approach to inclusiveness.* Optimal participation may depend on what initiatives are involved and what stage in their development has been reached. Some approaches may be handled profitably in groups with a comparatively restricted membership. As a rule, however, the broader initiatives will require participation by a wide range of states to be meaningful. At the consultations stage, inclusive participation makes sense, since the goal is to engage as many as possible. As matters move toward negotiation, key countries must be motivated to participate constructively. Here the key will be the participation of regionally important states with concerns about missile proliferation. In other words, the step-by-step approach should apply to participation as well as to initiatives.

*Focus on the timing of initiatives and the process of their consideration.* Since both the growth of missile proliferation and the response from the international community are progressing apace, it will be important to establish at least an informal international workplan and timetable. In this regard, attention will need to be paid to a logical sequence of consideration, negotiation and implementation. Sequencing of the different initiatives is another part of this planning process, including progression from simple to more ambitious ones. It will also be important to consider how and when to integrate consideration in various fora, including the CD, the Russian GCS process and the planned UN experts group.

## THE WAY AHEAD

At Helsinki, as noted above, the MTCR indicated that it was adopting a code of conduct approach reflecting such elements as "principles, commitments, confidence-building measures and incentives". Moving such a draft code of conduct from an MTCR project to an independent multilateral initiative will be crucial to its success. A code that extends no farther than MTCR members and a few like-minded partners will be largely pointless. On the other hand, a negotiating process that is indefinitely prolonged or yields a watered-down result is also to be avoided. The need therefore is to ensure maximum meaningful substantive content in an eventual code while achieving full buy-in from the important players.

From this point, a series of steps can be envisaged, if they gain the necessary support from all sides. Drawing from the considerations raised in previous sections, there are several possible paths in this regard, one of which follows.

The first stage would be to promote a multi-layered consultative process. Such a process would seek to include all the key players and to make use of all available and suitable fora, including existing international organizations, specially-created and specialized bodies and eventually public fora. A key aspect early in the process would be to ensure that all countries understood the intention of the process to be the production of a truly multilateral instrument, not an MTCR product. The "broader common effort" must seek genuine engagement from all sides, both on the substance of an initial

politically-binding code and on the process by which it is elaborated, transformed and adopted.

A multilateral negotiating process would then need to be engaged on the basis of equality, again either within an existing framework or as part of a new dedicated body, to allow all parties the opportunity to examine and discuss the proposal in detail and to negotiate improvements. This stage of the process would logically be capped by the holding of an international conference of all parties interested in subscribing to the text resulting from the negotiating process.

As part of its work, in addition to substantive elements, the process could also discuss and as decided create mechanisms to carry out the provisions of the eventual code. Such mechanisms could for example cover such aspects as periodic consultation, information exchange and dispute resolution. These mechanisms need not necessarily be costly or excessively bureaucratic, but could be kept simple and/or make use of existing bodies.

The process could also embody and articulate a conception of the code as only the first step in a longer-term and potentially more ambitious program of action on missiles. In the short term, it should certainly allow for the incorporation of new subscribing states and for amendment and improvement of the code itself. In the longer term, the code process could also become a prominent source (among others) of further new initiatives in the field, with the possibility of an eventual comprehensive and legally-binding treaty.

If realized in the long run, such a treaty could only be built on a consensus gradually established through realization of CBMs and the concurrent evolution of global norms. Even if achieving the goal of a full treaty was delayed, adoption of the incremental approach beginning with a code of conduct would mean that the international community had achieved useful results.

To reiterate one final key element, it will be of first importance to convince the international community as a whole that the ballistic missile proliferation represents a problem, and that a global reduction in missile development and deployment will ultimately yield an increase in net security for all. Much analysis and advocacy will be needed to demonstrate these points convincingly at the practical level, while further care and creativity will be needed to ensure that the sort of multilateral approaches under consideration achieve the desired net increase in security for both major players and the rest of the international community.

# Technological Aspects of Ballistic Missile Defence

by Michael Rance
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## INTRODUCTION

My paper is partly a factual description of BMD technologies and partly an assessment of the pros and cons of the different techniques being developed for defeating ballistic missiles in flight. It certainly is not comprehensive, nor does it address the many other ways of dealing with the threat of ballistic missile proliferation. It does not consider the credibility of the ballistic missile threat to the West from the so-called "states of concern". It sticks to the problem of how to prevent a missile, once it has been launched, from completing its mission.

The technology for ballistic missile defence in the West has developed in three distinct areas: from "traditional" air defence weapons systems; from the Strategic Defence Initiative (SDI) since 1984; and from relevant parts of strategic offensive ballistic missile programmes. This paper explains how these strands have come together in various ballistic missile defence development programmes, from PATRIOT systems to deal with short range systems of the SCUD class through to attempts like the U.S. NMD to defeat intercontinental range ballistic missiles. It also discusses countermeasures, and deals with the many options for attempting to defeat ballistic missiles in their boost phase.

Throughout the paper I consider only conventional BMD warheads, not nuclear devices such as Russia uses in its Anti-Ballistic Missile (ABM) system for the defence of Moscow.

## BALLISTIC MISSILES

Ballistic missiles (BMs) come in many shapes, sizes and levels of sophistication. It follows that BMD systems are similarly varied. I shall use the following categorisation of BM ranges: short range (SRBM) - up to 800km; medium range (MRBM) - 800 to 2400km; intermediate range (IRBM) - 2400 to 5500km; and intercontinental range (ICBM) 5500 to 15000km. The United States and Russia have agreed missile defence definitions for Theatre and Strategic systems which put a limit for testing of 3500km. The phrase Theatre Missile Defence is taken to include defence against missiles up to 3500km, but this is an arbitrary and, to the world beyond the United States and Russia, a meaningless figure. To nations under threat from ballistic missiles in neighbouring states, the threat is strategic or national whatever the range of the missile.

The important thing to remember is that BMs can be built for use at any range between about 100km and 15,000km, and that different defensive technologies tend to be effective only in a limited range band. For instance, the PATRIOT PAC-3 system is not likely to be effective against IRBMs, whereas the U.S. NMD is likely to have little effectiveness against MRBMs. Each BMD system is designed to deal with a particular threat type, although all systems can be stretched or evolved to a certain extent.

There are of course many types of ballistic missile — with different rocket motor types (liquid or solid propellant), number of stages, types of warhead, separating or non-separating re-entry vehicles, post-boost vehicles (with or without), numbers of re-entry vehicles, and so on, but the

features of a BM that most affect the design of a BMD system are essentially in three groups:

(1) The *range* and therefore the *time of flight* of the missile. For a SRBM, this can be as short as 3 or 4 minutes, whereas an ICBM can be in flight for 25 minutes or more. Also determined by the range is the *speed* of the missile, which can be as low as 2 km/s and as high as 15 km/s. The higher the speed, the higher the *closing speed* of the BM and the interceptor.

(2) The *signature* of the missile, or, simply, *what it looks like* to sensors such as satellites, radars and interceptor seekers. This group includes countermeasures such as decoys, and the inevitable debris associated, for instance, with separation events.

(3) The contents of the *warhead.* If the defender knows precisely what the warhead contains (for instance, a nuclear device, not chemical submunitions) then the defeat mechanism can be optimised. Of course, in general, he does not know, and must compromise by designing his defence to neutralise a range of possible warhead types.

## MISSILE DEFENCE

Whether a BMD system is designed to deal with SCUDs or ICBMs, there are certain functions which simply have to be performed; if any one of them fails, the likelihood is that the total BMD system will fail. Postponing for a moment discussion of boost-phase alternatives, the essential functions are:

(1) *Initial detection***.** Somehow, when a BM has been launched, the defender must find out as soon as possible. The two main options are to use infra-red sensing satellites, and/or surface radars. Satellites can be limited by cloud cover to detecting the rocket plume only after "cloud break". If radars are far away, they are limited by the earth's curvature to "line of sight", which for long distances can be after the rocket has stopped burning.

(2) *Tracking and trajectory prediction.* Accurate tracking is important to determine where the missile would land, and to predict a launch time and rendezvous point for the interceptor. Radars are the usual source of tracking data.

(3) *Discrimination*. This is the crucial process of locating the lethal object, the warhead, within the group of objects that may be around it. There may be very few, or there may be many. Some may be deliberately placed decoys, but if not, it is still necessary to identify the warhead to avoid having to "waste" interceptors on non-threatening objects. The discrimination function can be "distributed", using all the sensors that are available to the defence, from satellites to seekers.

(4) *Command and control.* Someone, or a computer, must decide whether to launch an interceptor, what to launch it at, when to launch and how many to launch. With the short times involved, this has to be largely an automatic process, but most experts agree that, somewhere, there has to be a "human-in-the-loop".

(5) *The interceptor*. The rocket, which may have more than one stage, must be launched and guided to the right place, at the right time, for the rendezvous with the warhead. System effectiveness can be improved by launching more than one interceptor at each threatening missile, in a "salvo".

(6) *Terminal guidance and control.* More discrimination may be possible using the on-board sensors, and terminal homing must be achieved. For hit-to-kill, this must be to within a few centimetres of the aim point on the warhead, for optimal "lethality". For fragmenting warheads, the interceptor needs a very high performance fuze. The higher the closing speed, the better the interceptor's fuze/warhead performance has to be.

(7) *Lethality.* This is a term widely used to describe the problem of neutralising the warhead, whether it is nuclear, conventional high explosive, chemical, biological, in "bulk" form, or as

submunitions. An enormous amount of simulation and testing is needed to understand just what happens when objects collide at speeds up to 25,000 miles per hour! The physics is not well understood.

(8) *Kill assessment.* Knowing whether the intercept was successful is important for deciding whether a follow-up missile should be launched, or where to direct a follow-up missile that has already been launched. Kill assessment may well not be possible in first generation BMD systems.

By any standards, this is a complex set of functions for a system to fulfil successfully. Getting it right first time, every time, on time is a massive technical and operational challenge. The technical challenge of BMD boils down to finding reliable solutions to the above functions, at least the first seven in the list.

Since no single system can ever be 100% effective, a costly remedy is to build up a total system from two or more layers, each layer attacking the BM trajectory at a different point; for instance, in mid-course and in the terminal phase, or in boost phase and in mid-course. In a layered defence, the command and control system will have to perform kill assessment after each layer has attempted to intercept.

## THEATRE MISSILE DEFENCE (TMD)

At the lower end of the ballistic missile range spectrum, missiles like SCUDs hardly leave the atmosphere and fall almost within the category of air targets for which traditional air defence weapons were designed. This is why both the U.S. Army and the U.S. Navy naturally decided to develop further their existing systems, known respectively as PATRIOT and Aegis/Standard Missile (SM). These will be the first BMD systems into U.S. service. France is considering similarly how it might evolve its SAMP-T weapon system, including the ASTER missile, to provide TMD against short range BMs.

The changes required to existing air defence systems are significant. The missile itself may require a major upgrade involving the booster rocket, guidance, seeker, fuze and warhead, as for SM2 Block IVA; in the case of PATRIOT, the completely new PAC-3 missile employs new *hit-to-kill* techniques derived from the Extended Range Interceptor (ERINT) demonstrator. These two systems are convenient examples of two particular attempts to solve the so-called lethality problem - how to neutralise the various types of warhead. PAC-3 does it by direct impact ("hit-to-kill"), whereas SM2 Block IVA and the Israeli ARROW rely on a fragmenting warhead (in case a direct hit is not achieved). PAC-3 needs no fuze or warhead; SM2 Block IVA and ARROW need both.

PAC-3 has a trickier terminal guidance problem, since a miss of a few centimetres is as good as a mile, but both guidance systems leave little room for error. Generally, these first generation TMD systems need a relatively unsophisticated system to identify the warhead, since at the point of intercept (around 10 -15 km altitude) it is assumed that the warhead will be well separated from all other objects (likely to have been "stripped away" in the upper atmosphere) and relatively easily recognised using simple *discrimination* algorithms. These interceptions are of course in the late phase, low altitude part of the BM trajectory and such systems have been termed Lower Tier. Major changes are also needed to radar systems, system software and command and control systems.

One problem with attempting to intercept within the atmosphere is the sometimes unpredictable warhead trajectory. It takes little physical asymmetry for a warhead to veer from an in-atmosphere ballistic trajectory, which itself is characterised by varying longitudinal deceleration. If the warhead wobbles or spirals, the interceptor's terminal guidance task is significantly complicated. In principle though, it can be done. (The wobble will also have an adverse effect on the BM's impact accuracy).

Longer range ballistic missiles — such as the North Korean Nodong — spend considerable time outside the atmosphere. Interceptions there do not have to cope with wobbles and spirals. Having identified the body and its trajectory, the defence has a relatively simple *intercept-point prediction* task. However, the interceptor has to be faster, the decision making or command and control has to be completed in good time, and the system has a more complex discrimination job, since any decoys or debris are likely to be closer to the warhead — there will not have been any "aerodynamic sorting". For so-called Upper Tier systems such as the U.S. Army's Theater High Altitude Area Defense system (THAAD) or the Aegis/SM-3, designed to intercept missiles in the 1000 to 3500km range bracket, largely outside the atmosphere, the technology was developed within the SDI programme.

*SDI* was a wide-ranging programme encompassing many innovative technologies. Those which got public attention tended to be the lasers and other directed energy devices and the space-based elements such as Brilliant Eyes and Brilliant Pebbles. But SDI also put effort into hit-to-kill concepts such as LEAP (Lightweight Exo-Atmospheric Projectile). Evolved versions of the LEAP concept for Exo-Atmospheric Kill Vehicles (EKVs) are now being developed for SM-3 on the ship-launched Navy Theatre Wide system, and for NMD. These can be employed anywhere in the exo-atmospheric, mid-course phase of flight, as long as appropriate end-game conditions — essentially the relative velocities of warhead and interceptor — can be satisfied. Some relative trajectories do not work, so there will be constraints on the location of the interceptor launch, such as the ship in the case of SM-3, relative to the BM trajectory. And so, in some scenarios it would not be possible to intercept *anywhere* in the mid-course phase, because a suitable launch point could not be found.

BMD systems can be more operationally flexible if they can be moved from one threatened area to another. Whether or not a system can be moved around the battlefield or the ocean (the system's *mobility)* depends on its size, which is largely a function of the range of the ballistic missiles it is designed to defeat. Very large BMD systems, such as U.S. NMD — see below — can only be moved with major difficulty; the radars and the interceptors could conceivably be carried on special purpose ships, but at great expense. Down the size range, the U.S. Army's THAAD is *transportable*, but not truly battlefield mobile. PATRIOT is truly mobile and can be set up or moved quickly. Naval systems are inherently mobile, but large NMD-scale systems may need special purpose ships, larger than Aegis. The Russian systems that are being offered in the recent paper submitted to NATO are also mobile but deal only with SRBMs. (The Russian proposal has nothing to do with NMD or defence against ICBMs).

There is fundamentally little difference between the operations and technologies required to defeat a 3500km ballistic missile and those required to defend against an ICBM. NMD can be seen simply as a scaled-up Upper Tier TMD. *In principle,* the task is similar, but the scaling-up brings its own problems.

## NATIONAL MISSILE DEFENCE

NMD is the U.S. name for a BMD system to defend all 50 states of the USA against a limited number of ICBMs from "states of concern".

In the NMD architecture studied so far by the United States, interceptions by the ground-based interceptor would be in the late mid-course, generally well after BM apogee, high above the atmosphere. Launch detection uses the Defense Support Project (DSP) satellite system, and in future the Space-Based Infra-Red System (SBIRS). Tracking and discrimination from the ground would use data from Early Warning Radars (such as at Fylingdales but also many other locations) and new X-band Radars (XBR). XBR technology development for BMD was begun under SDI, and is also being used in the THAAD radar. SDI also funded the technology in the EKV: the Divert and

Attitude Control Systems, the infra-red, and optical sensors, the discrimination algorithms and the guidance software.

The fundamental technical problems facing NMD are in two principal areas: *discrimination* — how to identify a warhead from deliberate and incidental countermeasures; and *system complexity* — how to make it work first time, every time against a target and scenario that it may not have been tested against, either in practical or simulated tests. The need for much higher speeds means high accelerations and more *severe environments* for the interceptor to withstand. NMD developers also face the problem of not being able to *test* the system in realistic conditions, near the edges of the performance envelope. Major investments in ground test and simulation facilities are needed, but these cannot fully cover all possible scenarios.

The "failures" so far in the NMD testing programme perhaps deserve a comment. All complex weapon system programmes face test failures in the early stages of their development. NMD's special problems are its high public visibility and the high cost of the flight tests. It is also clear that too much optimism was forced on the developers, and that insufficient ground testing and simulation was being done. These weaknesses are now being put right, but the result will be a longer development, and inevitably more expensive. Test failures are not in themselves "a bad thing", indeed they are useful for identifying weaknesses in design or manufacture. If the programme is ultimately to be successful, it should be allowed to run its course, and not be judged on the success or failure of each individual test.

Many alternative architectures for NMD are currently being considered by the Bush administration; whatever system is chosen, it will be complex. A vast array of sensors, computers, software, rockets, communications links and command systems is required, spread across the globe, time zones and oceans. All must operate faultlessly, without delay or glitch on a timetable dictated by the enemy.

## THE COUNTERMEASURES PROBLEM

Defensive systems ("shields") are usually at a disadvantage to offensive systems ("swords"), as noted recently by President Chirac of France. Surprise and carefully thought-out tactics are important offensive advantages. Some experts say that it is all but impossible for the defender to second guess *every* aspect of the offence plan. After all, they say, this is not a game with rules.

A recent critique by the Union of Concerned Scientists (an advocacy group based in MIT at Cambridge, Massachusetts) claims that NMD will not work and that quite simple countermeasures will defeat it. The UCS argues that any country which can develop ballistic missiles and nuclear weapons could also develop countermeasures to defeat NMD. A variety of countermeasures concepts has been put forward, with technical arguments to support the view that the NMD sensors would be fooled. In response, the U.S. DoD has been unable fully to defend NMD's capability, partly through an understandable unwillingness to give away precisely how it works. It is clear that the UCS has not been given access to all the techniques that are being incorporated, and seems to be unwilling to accept that the system design will evolve during development. In a complex battle of wits between offence and defence, both sides will want to keep their intentions to themselves and to release information — or disinformation — only when it is to their advantage.

To quote the current Director of the Ballistic Missile Defense Organisation in the Pentagon:

> In my view, credible, sophisticated countermeasures are costly and difficult to develop and make effective… whereas simple, cheap attempts can be readily countered… Given our extensive toolbox and the 40 years of experience the U.S. has with offensive and

defensive weapon systems, we know how to play the countermeasures/counter-countermeasures game. And we know how to win.

So, in this game, it should not be assumed that the offence has *all* the cards. Though there may be no rules, the laws of physics do apply and certain limits, some quite constraining, are inevitably placed on the offence. Countermeasures use up space, mass and volume in a missile which otherwise can be used by the warhead; or they simply add weight and so reduce the missile's range. Proponents of NMD maintain that such practical constraints (learnt by the West over 40 years of strategic weapon developments) mean that a financially and technically limited enemy is unlikely to be able to implement measures which the defence has not thought through also. The West is continually researching counters to all the countermeasures that they can conceive and is unlikely to be surprised. This means that BMD systems can incorporate a number of discrimination techniques to deal with possible counters. One advantage that NMD has is the use of a number of frequency bands in the electromagnetic spectrum, and the possibility of enhancing the number yet further. The precise frequencies will remain confidential. Earlier generations of countermeasures had to spoof a limited sensor suite — say just one frequency band.

Critics of NMD suggest that countermeasures development programmes can be hidden completely from spying eyes. Possibly. They also say that if you can build a nuclear weapon and a system to deliver it, you can certainly build countermeasures. Possibly. But truly credible countermeasures to defeat a defence which is inevitably thinking ahead may not be as simple as some make out. This is not an argument that either side of the public debate is likely to win, although the critics have the current high ground. The proponents will try to keep their heads down, relying on security classification to "win the game", at the risk of losing the public debate.

It is my view that, in all but one respect, NMD developers probably have credible counters to the UCS criticisms and to most of the proposed countermeasures. The exception is "early release submunitions". If the ballistic missile can deploy a number of submunitions soon after exit from the atmosphere on ascent, NMD would not be able to identify and intercept all of them. This offensive tactic is really only relevant to biological agents carried in submunitions — it does not apply of course to nuclear warheads; and chemical agents on ballistic missiles are not, in my view, a serious weapon of mass destruction — casualties would be comparable to those from high explosive warheads and therefore hardly worth the expense of using an ICBM. (It is a different matter "in theatre".) The engineering for releasing submunitions early is difficult, but *if* it were feasible, *and* developed out of sight of the West's "spying eyes", *if* the submunitions were filled with biological agent, and *if* they could survive atmospheric re-entry *and* be effectively dispersed near ground level — this is a lot of "*if*s" — they might defeat the NMD system. In my view, it is extremely unlikely that "states of concern" will be capable of developing this countermeasure successfully.

## BOOST PHASE INTERCEPT

However, it is such considerations — and there are others — which suggest to some analysts that the best defensive technique is to hit the missile on the way up, in the ascent phase, and even better in the so-called boost phase when the rocket stages are still burning. Not only are countermeasures techniques such as early-release-submunitions rendered useless but if the rocket is destroyed long before burn out the pieces may fall back on the launch territory. They would certainly fall short of the target area. It is argued that boost phase intercept (BPI) is less technically challenging than the mid-course or terminal-phase methods discussed so far. It is also suggested that BPI would be less threatening to Russia and China (because one could not get close enough to their rockets in boost phase) and would not contravene the 1972 Anti-Ballistic

Missile Treaty (ABMT), although Russia's view may be different. It is also argued that Russia might be willing to co-operate with the West on developing a BPI system, although Russia's recent offer to the NATO Secretary General is of a quite different sort.

In my view, the technical and operational challenges of BPI are certainly *not* less daunting than NMD. Few of the elements of such a system are being developed, and there are many fundamental difficulties. One exception may be the United States Air Force's Air-Borne Laser (ABL) project. ABL is being developed as a Theatre Defence weapon but in principle could be used against some ICBM threats. The high power chemical laser is being developed and integrated on a Boeing 747 aircraft by the U.S. Air Force. The aircraft in operation must be airborne and within a few hundred kilometres of a BM launch area. It could be a self-contained weapon incorporating all the necessary detection, tracking, pointing and shooting functions. The challenge is to maintain accurate track, to compensate for atmospheric effects which potentially defocus the laser beam and to hit the right spot on the rocket or front end for long enough to destroy it; it's no good shooting the laser at the rocket's exhaust plume! The ABL aircraft itself must be protected from air defence systems.

Some of the difficulties of boost phase systems are political and operational. Remember that until the boost phase is complete it is not possible to predict precisely where the warhead would have landed. The military operator, in the field, must have pre-arranged clearance to fire at any target he sees — there would be no time for political command decisions (even for ICBMs the boost phase only lasts for 3 to 6 minutes). A defender would need to be at a high state of operational readiness for BPI to be effective. The scope for error is potentially enormous — he will not know precisely where the rocket is going, or might shoot down an innocent test vehicle or satellite space launcher.

There are ways other than lasers for BPI. Richard Garwin has proposed locating ground-based interceptors like those of NMD close to potential launch areas and shooting them at the boosting missiles. Other options include launching interceptors from patrolling fighter/bomber aircraft. The problem with these rocket-based systems is the pressing timeline, which means that the interceptor must be fast and highly accelerating, which imposes challenging demands on the rocket motor technology. Interceptors must be launched long before the destination of the missile is known. Also such systems probably rely on space-based launch detection which only can begin once the missile breaks cloud cover — vital time thereby being lost.

Another option for BPI is to evolve the sea-based systems that are currently based on Aegis and the Standard Missile family of interceptors. Again, a new rocket booster is needed to achieve the required acceleration and speed. And such systems may need new radars on new types of ship. For any interceptor based solution, new terminal guidance laws and software must be developed to achieve the accuracy to hit the "hard body" while it is accelerating and in the presence of the enormous rocket exhaust plume. And geography may not allow a suitable launch area to be found.

Finally, BPI might be achieved from space with lasers or other directed energy systems. All solutions are long term but spaced-based systems would require an enormous investment and 20 years to develop.

None of the proposed BPI systems - except perhaps ABL - could be developed in less than 10 years. Many technical, political and operational challenges must be overcome before BPI becomes a credible element of a BMD system. It would be insufficient on its own, but would be a useful supplementary layer to a ground based NMD.

## FINAL COMMENTS ON NMD

The design and construction of reliable, effective ICBMs, even those which might only be used *in extremis* or in small numbers, in the face of a well resourced, technologically advanced and well prepared defence, is difficult and costly. In spite of the sword/shield analogy, it is, in my view, likely that the developers of NMD are capable of staying a jump or two ahead of the states of concern in the offence/defence struggle.

The defence has access to much more technology and investment than the offence, which for many years to come will remain financially and technologically limited. Resources are a major constraint on the ability of any developing state to develop and deploy a credible, reliable, effective ballistic missile system. The resource issue, in my view, might be sufficient to convince the potential attacker that this project — for the purpose of attacking the West — was not viable in the long term. However, it is also recognised that no defensive shield can ever be leak-proof or 100% effective. A determined offence may be willing to afford and risk a number of missiles in the expectation that one may get through, however good the defence is advertised to be. Or that his tactics or countermeasures will spoof the defence. He may also be able to launch a surprise attack before the defender has a complete and fully operational system; the development and deployment of defences will take many years yet.

It remains to be seen what architectures the Bush administration will propose for NMD — he may even change the name to Euro MD, or Alliance MD — but it will certainly **not** be less complex than the Clinton-era NMD, nor will it cost less. It will not be in place before 2007 at the earliest, and may not be in service before January 2009.

# Missile Defenses:
# The Political Implications of the Choice of Technology

by Camille Grand *
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Missile defenses (MD) offer an interesting example of a technological debate with major political implications, which, in many ways, recalls the "old days" of Cold War nuclear theology. Additionally, when the drivers of a strategic decision are in theory primarily political, we face technological choices with tremendous political and international implications.

The purpose of this paper is not to discuss the various missile defense technologies, and their maturity, feasibility, efficiency or cost. The paper assumes that all known technological options are already available or could be available in the forthcoming decades. It tries to assess these possible technologies only through one single factor: their political consequences.

The fact that missile defenses have a political impact, long before having a military effect, justifies such an approach, since we are likely to face numerous debates about missile defense choices before most of the possible technologies are even ready to be deployed.

The paper will primarily focus on the interceptor technologies, since the rest of the BMD architecture (sensors, radars, etc.) is likely to be deployed whatever interception method is chosen. This part of the architecture is, of course, strategically just as important and meaningful. For instance, the early-warning radars have major political implications as the location, the technology and the capability identify the threat and will also have strategic consequences for hosting nations when they are not located on U.S. territory.

For each of the discussed MD options, it is necessary to keep in mind several issues:

- Does the technology offer the expected security benefits for the deploying country?
- Are the targeted "rogues states" convinced not to use ballistic missiles?
- What is the perception of the major powers in each regional framework and beyond, and in particular of Russia and China?
- What are the effects on U.S. alliances in East Asia, the Middle East, and Europe?
- Is the chosen technology undermining or strengthening arms control and non-proliferation regimes?

As we will fully realize in the course of the paper, no option emerges as the single best solution, as each offers benefits and pitfalls. This is probably the reason why the Bush administration intends to pursue several programs in order to address various strategic situations. For the proponents of missile defenses, a multi-layer system is not only a strategic choice for efficiency; it is also a political imperative to address the numerous missions assigned to MD.

Missile defense technological choices nevertheless need to be handled with care, especially when it comes to the most ambitious technologies. No choice is innocent or, at least, none will be perceived as such.

In order to try to offer a useful typology, the paper will first review the various strategic and

* *The views expressed in this paper are solely those of the author*

political frameworks in which missile defenses will play a role, before going through the various technological options in the field of ballistic missile defense and test them against the issues raised above.

## THE VARIOUS STRATEGIC FRAMEWORKS IN WHICH MISSILE DEFENSES ARE LIKELY TO ENTER INTO PLAY

In the course of the following brief review of the politics of MD technology in various strategic frameworks, we will underline how different is each regional framework involving MD.

### The U.S.-Russian Bilateral Framework: Missile Defense and Strategic Stability

The U.S.-Russian framework is the only framework in which ballistic missile defenses have been deployed in the long term. They played a role during the Cold War. It is also the only framework in which legal constraints currently exist on MD deployments through the Anti-Ballistic Missile Treaty (ABMT).

As far as technology is concerned, the core issue in the bilateral framework is likely to be the future of strategic stability, not only because Russian diplomacy insists on this concept. The number of nuclear weapons involved also make strategic stability an absolute necessity in this context for the global environment. Strategic stability can not be assessed in a theological approach identifying it with the ABMT, as is still too often the case.[1]

In the U.S.-Russia framework, the core issue for a MD deployment is therefore to preserve a form of strategic stability in the bilateral relationship. In his May 1st National Defense University speech[2], President Bush outlined a "new framework" involving the development of missile defenses and offered Russia an active partnership in the definition of this framework. As no technological options are currently ruled out, his proposal does certainly not, at this stage, offer adequate guarantees from a Russian perspective. Looking at technology, two issues are likely to be crucial in this particular context.

Even though most Russians would agree that the Russian nuclear deterrent would not be threatened by any foreseeable U.S. MD deployment, a logic of reassurance needs to influence technological choices. The more expanded and capable the MD system will be, the more Russia will need to retain a large nuclear deterrent in order to achieve a worse case scenario credibility (*i.e.* assured Russian second-strike capability, even in the event of a U.S. nuclear first-strike combined with an expanded multi-layer MD). In this regard, the Russians are likely to welcome limitations to the system in terms of the number of interceptors deployed, and of the capabilities of U.S. early-warning systems (SBIRS-Low and land-based sensors in particular). A certain degree of technological transparency on the U.S. part is likely

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[1] For a critical reading, refer to two papers by Thérèse Delpech, "Les défenses antimissiles et la sécurité internationale au XXIe siècle", *Les notes de l'ifri*, n°32, Mars 2001, and "Ballistic Missile Defense and Strategic Stability," paper presented at the forum "The Missile Threat and Plans for Ballistic Missile Defenses: Impact on Global Security," Rome, Italy, January 18-19, 2001, http://www.mi.infn.it/~landnet/NMD .
See also my own paper in the previous issue of this MIIS/Mountbatten Centre Occasional Paper series: Camille Grand, "Ballistic Missile Threats, Missile Defense, Deterrence, and Strategic Stability" in *International Perspectives on Missile Proliferation and Defenses*, Special Joint Series on Missile Issues with Mountbatten Centre for International Studies, Center for Nonproliferation Studies, Monterey Institute of International Studies, Monterey, CA, March 2001.

[2] See *Remarks by the President to students and faculty at National Defense University*, May 1, 2001 available at http://www.whitehouse.gov/news/releases/2001/05/20010501-10.html .

to make the system more politically acceptable to Moscow. Space-based assets could in this context create a major issue between the two countries.

Bilateral technical cooperation can help solving some of the political mismatches created by technological choices. The Russians have no opposition whatsoever to TMD systems. As long as these systems respect the 1997 Demarcation Agreement, they have even offered to cooperate in this field with the Europeans and the Americans. Even though this proposal has not been structured yet, it deserves a serious assessment, as technological cooperation could in this case prove politically stabilizing. Exchanges about MD technology could therefore help achieve the political objective of demonstrating the unthreatening nature of the MD deployment for the Russians and therefore strengthen a renewed strategic stability.

**Asia: Is There an Acceptable MD Scenario?**

Given Chinese vocal opposition to both NMD and TMD, it seems virtually impossible to design a MD system that would be politically acceptable while achieving a minimal technological efficiency. In practice, this might prove less of a challenge than at first sight. In its open-ended nuclear modernization process, China has decided to be in a position to defeat any U.S. missile defense. Unless both countries are willing to enter a costly arms race - and this is seriously considered by hawks both in Washington and Beijing - the problem could end being partly similar to the Russian one with two core differences:

- In the Russian case, the issue is how far down can Moscow go, in the Chinese case, it is how far up should Beijing go.
- While Moscow is involved and interested in TMD programs, China views them as even more threatening.

Most of the answers to these issues are, of course, primarily political, but technology can add to the problem or offer some strategic benefits. A reliance primarily on boost-phase intercept to handle the North Korean threat is obviously less threatening from a Chinese perspective. The degree of interconnections amongst the TMD systems envisaged for Japan or Taiwan and the U.S. home defense is also a core issue. Once again, the transparency of the technological choices made will be critical in alleviating Chinese concerns.

**Other Areas: TMD for Homeland Defense?**

In the rest of the world, especially the Middle East and Europe, the likely development of MD is likely to rely primarily on TMD technology (see below for more details). The core politico-technological issue becomes, in this context, the degree of interconnection of the various systems. In this regard the United States faces a strategic choice with major political implications:

1. The United States government decides to rebuild its alliance network around MD sub-systems as part of a global architecture to counter the missile threat. Through an integrated MD network, it hopes to strengthen its security ties with several key countries in Asia, the Middle East, and Europe. It also runs the risk of provoking adverse reactions (including asymmetric military responses) from potential adversaries (much beyond the so-called "rogue states") and from some friends and allies less enthusiastic about MD.
2. The United States accepts the existence of the various approaches of its friends and allies to MD, ranging from enthusiastic involvement (Israel and Taiwan) to a form of cautiousness close to reluctance (many Western Europeans, South Korea).

From a technological perspective the core issue is, in this case, not to transform the MD debate into a global new security paradigm and to accept a certain degree of discrepancy in the MD choices in the various regions where deployment is envisaged. A technological sub-question would, of course, be whether the various MD sub-systems remain entirely

dependent on U.S. assets or can work autonomously.

To a certain extent, MD can be a technological fix to the challenge created by WMD and missile proliferation. The technological options can, however, sometimes create more problems than they offer strategic benefits. It is therefore necessary to assess precisely the political implications of every technological choice, since the best or most efficient technology can in some cases prove the most destabilizing in the political realm.

## THE VARIOUS MD TECHNOLOGIES AND THEIR POSSIBLE POLITICAL IMPLICATIONS

### The TMD Family

Theater missile defenses already cover a wide range of technological possibilities. They range from air-defense systems with very limited anti-missile capabilities to upper-tier systems that can cover wide areas.

The only thing they definitely have in common is compatibility with the ABMT, since the United States and Russia signed in 1997 a Demarcation Agreement (though not ratified by the United States) that draws a technical line between TMD and NMD systems. It allows research, development and deployment of the first category of interceptors, as long as certain criteria are respected. TMD systems' capabilities are accordingly supposed to be limited and should only allow them to handle missiles with a range below 3500km. They are therefore not designed to handle ICBMs, and cannot accordingly provide a homeland defense against such threats.

TMD can also offer some non-proliferation benefits in regions where proliferation occurs. They are a disincentive to acquire WMD as they provide a military response. Many countries in various regions have expressed an interest for such deployments either on a national basis or through a U.S. deployment. They nevertheless do not alter strategic stability among major powers as they only have a limited capability. They are therefore widely regarded as politically stabilizing in most cases.

### Lower-Tier TMD Systems

The PATRIOT-like systems are the most mature BMD systems, as they are already deployed. They only have a very limited capability, even though one can assume that some progress has been achieved since the Gulf War.

They can offer a reassurance for a force deployed abroad or for allies in regions of concern. They politically can foster alliances and the ability of to intervene in regions where missile technologies have spread. Their limited capability makes them in most cases unthreatening to countries possessing missiles that go beyond the SCUD-like missiles.

Even though China has expressed dissatisfaction with the deployment of PATRIOT PAC-3 in East Asia, such systems do not raise the same level of concern as any other more efficient BMD capabilities, as they can easily be saturated or overcome by larger and faster missiles.

The spread of such systems raises the issue of compliance with existing regulations of missile technology export controls, as they can provide technologies usable in offensive weapons.

### Upper-Tier TMD Systems

Compared to lower-tier, although these systems fall in the same TMD category, and have wider capabilities, they tend to raise more problems. They are coming closer to the limits between TMD and NMD set by the Demarcation Agreement and they can lead to diplomatic debates about their compatibility with the provisions of the ABMT.

As a very flexible tool, Navy upper-tier systems such as Navy Theater Wide are an ideal tool for power projection, and are therefore criticized as an

instrument of U.S. hegemony. They nevertheless remain TMD systems with inherent limitations.

Altogether, TMD systems have the greatest degree of political acceptability. They nevertheless raise concerns on the part of China for two main reasons: they can be used in the Taiwanese context and offer to the "rebel island" a tool to counter Chinese SRBMs and MRBMs. What China fears the most is the interconnection between regional systems and a NMD. TMD systems are more or less acceptable, if they do not appear as the first step of a much larger integrated architecture. Except for China, most other countries have no opposition to TMD, and often expressed a clear interest in acquiring the technology in the mid-term.

If TMD starts to spread, the reaction of countries pursuing missile programmes remains to be seen. Possibilities are: build-up to saturate defenses; search for increased penetration capabilities; shift to alternative delivery means; or abandonment of missile programs. This last point demonstrates, if needed, that even a benign TMD deployment can have heavy political consequences.

**Strategic Missile Defense: Just Another Story**

Technologies aimed at intercepting long-range ballistic missiles are much more demanding as speed and range change.

**The Clinton NMD**

The option envisaged by Clinton focuses on terminal defenses covering the entire territory of the Unites States. They raise complex political issues.

First of all, they necessitate an abrogation or a major restructuring of the ABMT, as no nation-wide missile defense can be ABMT-compliant.

Secondly, they are currently viewed as threatening by the Russians, and, to a much larger extent, by the Chinese. Both countries are therefore likely to react diplomatically and possibly to use various response ranging from arms control treaty withdrawal to missile build-up, or technology transfers.

The key issue is in this case to demonstrate the inner-limitations of the proposed system in order to reassure Beijing, and Moscow. It yet unclear whether such an effort will be sufficient to circumvent Chinese and Russian anxieties and whether the United States is ready to accept any binding limitation on its missile defense program.

Two tools can be used to demonstrate such limited capabilities: the number of interceptors and the network of sensors. The trouble is that Chinese experts and officials argue that even the Clinton NMD could have had a neutralizing effect on their deterrent in its so-called "expanded-C3" capability (20 warheads with penetration aids). In this regard, geography is not of much help since monitoring North Korea or Iran involves sensors that are, *de facto*, useful against China and Russia. Under these conditions, the perceptions in Beijing and Washington are just as important as technical realities.

**Nuclear Interception**

This is worthy of mention at this stage for two reasons. It the only Anti-Ballistic Missile (ABM) defense deployed today (by Russia for the defense of the Moscow area), and it is considered by many experts as the most efficient defense against an intercontinental missile attack. Nuclear defenses are nevertheless very much a non-starter, as their nuclear nature makes them unpopular. They would require the same amendments to the ABMT to act nation-wide. They can accordingly not solve any political issue and are only likely to raise more objections.

**Is Boost-Phase Intercept a Panacea?**

Many renowned U.S. experts have argued in favor of BPI as the best and most efficient and

acceptable form of MD.[3] President Bush insisted on that particular option in his already quoted National Defense University speech. It resolves technical problems with the discrimination capabilities of the EKV. It is also described as much less threatening for large continental powers such as China or Russia. BPI is likely to have no capabilities against these two countries, except in the case of Chinese medium-range missiles located on the Southern shore.

BPI nevertheless must overcome serious technical problems if it is to be efficient even vis-à-vis North Korea, not to mention countries with more strategic depth. It needs a permissive environment to be deployed at sea and, of course, to be land-based in the vicinity of missile-armed countries. Another major political problem with BPI, is that the interception occurs early, making mistakes possible such a destroying a satellite-launcher, or firing at a regular missile test.

If BPI moves into laser technologies, as the Air Borne Laser (ABL) becomes operational, some of the political benefits are likely to disappear as the technical limits perceived by the Russians and the Chinese will partially disappear. This all the more true for the Space-Based Laser (SBL).

### Outer Space: The New Frontier

The use of space to deploy MD assets is likely to be a crucial debate politically and could raise major criticism internationally, as it is very difficult to identify any limit if this threshold is crossed. Rightly or wrongly, a space-based system is perceived as challenging the whole international security framework, mainly because it is virtually impossible to offer assurances about the limited nature of such defenses. Ironically, the United States might be the great loser of an arms race in outer space.[4] For all these reasons, it is therefore, in my view, the most sensitive issue in the future.

## CONCLUSION

From our review of the various possible frameworks and MD technologies, it is clear that some options are more politically acceptable than others. Non-technological choices that will, of course, also play a major role in the political acceptability of missile defenses include:

- Evolution of the threat;
- Date of deployment;
- Relative transparency of the deployment choices;
- Accompanying arms control and reduction measures; and
- Relationship to deterrence.

Since MD are likely to associate different sub-systems in a system of systems, a key issue will also be the degree of interconnection between all sub-systems. If the systems are fully integrated, even limited TMD capabilities will be perceived as threatening by some. The number of interceptors announced will also be a major element driving political reactions. Nevertheless, the key issue is likely to be the way the United States decides to proceed.

The more cooperative the approach to deployment, the more likely is a de-dramatized political debate in forthcoming years. The United States administration has a specific responsibility in this framework. Whatever technology it chooses to pursue, they will need to be convincing about the limits of the deployed systems, to be transparent on their final objectives, and to act cooperatively with all states concerned in order to diminish opposition. In spite of President Bush's proposals, it is not clear

[3] See in particular Richard Garwin, "Boost-Phase Intercept : A Better Alternative", *Arms Control Today*, September 2000, Volume 30, Number 7

[4] See Michael Krepon, "Lost in Space: The Misguided Drive Toward Antisatellite Weapons", *Foreign Affairs*, May-June 2001

at this stage that the United States government is truly ready to engage in such an open approach, *i.e.* to accept constraints on the system to meet international concerns. The key is, therefore, not so much the technology chosen as the desire to associate other countries and to alleviate some of their concerns.

# The Domestic Politics of National Missile Defense Under the Bush Administration

by David P. Auerswald
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The debate over National Missile Defense (NMD) went quiet on September 1, 2000, when President Clinton announced that he would delay deployment of NMD in favor of further research and testing. With the election of George W. Bush, the debate over missile defense is about to begin again in earnest. The outcome has important implications for U.S. security, strategic stability, and global non-proliferation efforts.

Given the stakes, it is vitally important to understand the political dynamics behind American missile defense decisions. This is particularly the case given the close partisan divisions in the U.S. government. Consider that President Bush enters office with a commitment to move ahead swiftly with a robust NMD system but faces an evenly divided Congress and substantial Democratic resistance to deployment schemes that violate the Anti-Ballistic Missile Treaty (ABMT). Too often, however, media and scholarly commentary has been preoccupied with missile defense costs, technological readiness, threat assessment, alliance relations, and treaty compatibility, and as a result has overlooked U.S. politics. This paper will help rectify that omission by explicitly considering the role politics has played, and is likely to play, in the missile defense debate. At the least, understanding the politics of missile defense can help policy advocates focus on *where* in government to direct their strategic arguments on the impact of missile defenses. This paper makes four points with that in mind:

- First, *the Bush administration is very hawkish on missile defense deployment*. This should come as no surprise to anyone who has reviewed recent administration statements.

- The second and slightly more controversial point is that *the President alone cannot decide long-term U.S. missile defense policy*. Congressional support is crucial to the long-term viability of the administration's desired robust missile defense system. Thirty five years of American missile defense policy supports this contention.

- The third point focuses on congressional behavior. *Congress has a history of supporting incremental, rather than dramatic, changes in missile defense policy*. This was particularly true when Congress debated the Clinton administration's NMD system.

- The fourth and final point is that while a number of domestic and international developments could influence future American decisions, the Bush administration has already taken steps to influence *international* developments in ways that may bolster *domestic* support for missile defense deployment.

## BUSH ADMINISTRATION PREFERENCES

There is little secret that the Bush administration favors the deployment of some form of national missile defense. Bush made that clear several times during the presidential campaign, and

in doing so set out some of the parameters of his desired U.S. system. For instance, Bush stated a preference for a multiple site system that would protect both the United States and American allies. "Our missile defense must be designed to protect all 50 states and our friends and allies and deployed forces overseas from missile attacks by rogue nations, or accidental launches. (…) The [Clinton administrations' approach] is flawed — a system initially based on a single site, when experts say that more is needed."[1] Furthermore, candidate Bush argued for early deployment even should that violate the ABMT. "At the earliest possible date, my administration will deploy missile defenses to guard against attack and blackmail. Now is the time, not to defend outdated treaties, but to defend the American people."[2]

Since winning office, President Bush has surrounded himself with strong missile defense proponents. Secretary of Defense Donald Rumsfeld and his special assistant for missile defense and space policy, Stephen Cambone, are vocal proponents of robust, multi-layered missile defenses. Secretary Rumsfeld testified during his confirmation hearings that the administration might decide to deploy a missile defense system even if it suffered from technical problems or violated the ABMT.[3] In a recent trip to Germany, Rumsfeld showed little flexibility when confronted with European concerns regarding missile defense deployment, and went so far as to return to Washington rather than hear Russian or Chinese opposition to U.S. plans.[4]

Condoleezza Rice, Bush's National Security Advisor, and Stephen Hadley, the National Security Council (NSC) official responsible for missile defense policy, have argued that neither the ABMT nor other states should be given a veto over U.S. defensive actions.[5]

Secretary of State Colin Powell is the most moderate Bush official on missile defense, yet even he supports deployment. Powell has noted that the United States would hold lengthy discussions with U.S. allies and with Russia and China before deployment.[6] That said, Powell's relative caution is unlikely to prevail in future bureaucratic debates. Not only is he confronted with powerful officials from Defense and the NSC, but John Bolton, the newly named Undersecretary of State for Arms Control and International Security Affairs, is a vocal supporter of a robust missile defense capability.[7] Barring the Secretary himself, Bolton is the State Department official with the most direct influence over missile defense policy.

In short, while the administration has yet to propose a system architecture or deployment schedule, the administration team, both individually and collectively, represents some of the most ardent supporters of missile defenses in the U.S. government.

## PRESIDENTIAL-CONGRESSIONAL RELATIONS AND MISSILE DEFENSES

The preceding section notwithstanding, one cannot assume that Bush administration desires will translate directly into American policy. One reason is that there is little public consensus on missile defense deployment. Though a majority of Americans believe that the United States should be

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[1] Statement by Governor George W. Bush, May 23, 2000.
[2] Statement by Governor George W. Bush, August 3, 2000.
[3] "Rumsfeld Makes His Case for Building Missile Defense," *Knight Ridder Newspapers*, January 12, 2001, downloaded from http://www.fas.org/spp/starwars/program/news01/bmd-010112.htm; also *New York Times*, January 27, 2001.
[4] Secretary Rumsfeld spoke at the Wehrkunde Strategic Policy Conference in Munich, Germany on February 3, 2001. See: *Los Angeles Times*, February 5, 2001, p. A1.
[5] *Los Angeles Times*, February 5, 2001, p. A1; *New York Times*, December 18, 2000; and *Los Angeles Times*, May 8, 2000, p. A1.
[6] Wade Boese, "Bush Assembles Pro-Missile Defense National Security Team," *Arms Control Today* vol. 31, no. 1 (January/February 2001), p. 29.
[7] *Boston Globe*, January 15, 2001, p. A1.

protected from ballistic missile attack, public support declines precipitously when additional information is included in survey questions, such as the cost of a missile defense system, its technical difficulties, or the possible negative impact its deployment might have on arms control and proliferation.[8] As a result, President Bush lacks a public mandate with which to pressure Congress into supporting a robust deployment scheme. Instead, public apathy, or at worst volatility, leaves open the possibility of significant congressional-presidential debate over future American missile defenses.

This is a crucial point. A lack of public consensus has allowed the Congress to insert itself into past missile defense debates, to great effect. The empirical record demonstrates that Congress has exercised considerable influence over the fate of every major missile defense system considered by the U.S. government. Previous deployment decisions during the Johnson, Nixon, and Reagan presidencies reflected congressional preferences, often in contradiction to the President's wishes.[9]

*Sentinel*: The Johnson administration was never an advocate of missile defenses, believing that defenses would degrade the Soviet's second strike capability and lead to nuclear preemption. The administration was under significant pressure, however, from congressional Democratic leaders to match the Soviet Galosh Anti-Ballistic Missile (ABM) system, if for no other reason than to insulate the Democrats from Republican attack during the 1968 election. After much budget maneuvering and the failure of the Johnson-Kosygin summit, the administration reluctantly agreed to deploy the Sentinel system during its final year in office, as it had promised congressional Democrats. Though money was appropriated for Sentinel's deployment, the system never achieved operational status because the public objected to defending American cities using nuclear-armed interceptors.

*Safeguard*: Missile defenses were high on the incoming Nixon administrations' priority list. To defuse public and congressional opposition to Sentinel, the administration changed the system's name to Safeguard and its mission to defending American ICBM silos. The administration initially desired a twelve site system. Congress, however, was now deeply ambivalent as to the wisdom of the Safeguard program. As a result, the administration barely succeeded in winning the necessary approval for an initial deployment around two ICBM fields. Furthermore, in July 1970, Congress denied the administration the money or authority to deploy Safeguard around four American cities. Realizing that a two-site system would be ineffective against a Soviet attack, the administration decided to bargain away Safeguard in exchange for Soviet concessions during the SALT negotiations. Congress essentially had curtailed a missile defense system over the objections of the President.

*SDI*: Missile defenses again topped the national agenda with the 1983 unveiling of the Strategic Defense Initiative (SDI) by President Ronald Reagan. There was little initial objection to SDI from the Congress. That changed in 1985, when the Congress imposed the so-called Nitze deployment criteria on the program. The Nitze criteria requiring that SDI be survivable and cost effective before moving to deployment, and that funding for deployment be specifically authorized by Congress for that purpose. The administration countered these moves in late 1985 by arguing that the ABMT allowed for space-based research and development, and followed that with a 1986 refusal to acknowledge the Nitze criteria. After fierce debate and congressional threats to curtail all SDI funds from the fiscal year 1988 budget, the administration agreed not to reinterpret the ABMT and to forego deployments that might violate the Nitze criteria. In sum, SDI never moved beyond research and

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[8] Mark Mellman, "No Pressure from the People," *Arms Control Today* vol. 30, no. 8 (Oct. 2000), pp. 19-20.

[9] For details, see: David Auerswald, "Domestic Politics, Deterrence, and Missile Defenses," a paper presented at the International Studies Association annual meeting in Los Angeles, CA, March 14-18, 2000.

development in part due to congressional opposition.

*NMD*: Congressional actions over the last eight years reinforce this pattern. The Clinton administration was never a proponent of missile defenses. The administration worried that any deployment capable of negating even a limited attack might jeopardize its arms control agenda. Yet beginning in 1995, congressional Republicans introduced one legislative initiative after another to force the administration to deploy NMD. In response, the administration engaged in a series of partial measures aimed to defeat these bills and forestall being labeled as weak on defense. Administration efforts included: (1) allocating significant resources to theater missile defenses, (2) creation of the 3+3 plan, where the United States would conduct three years of NMD research and development from 1997 to June 2000, when the President would decide whether to deploy an initial system in 2003, and finally (3), significantly increasing NMD research and development funds. These measures failed to prevent passage of the 1999 National Missile Defense Act (PL 106-38), mandating the deployment of an effective national missile defense as soon as technologically possible while at the same time encouraging Russian arms control reductions. The administration relied on this last clause in its September 1, 2000 decision to defer NMD deployment. Nonetheless, the administration was pushed very close to an affirmative deployment decision by Congress.

**TABLE ONE – ABM DEPLOYMENT DECISIONS**

| **President** | **Presidential Preference** | **Congressional Preference** | **Outcome** |
|---|---|---|---|
| Johnson | *Sentinel* research and development. | Full deployment. | Funding appropriated to deploy *Sentinel.* |
| Nixon | *Safeguard* deployment. | Limited deployment. | *Safeguard* deployment limited, then curtailed. |
| Reagan | *SDI* deployment. | Prevent deployment. | *SDI* limited to research and development. |
| Clinton | *NMD* research and development. | Deployment subject to conditions. | Funding appropriated for *NMD* deployment, but deployment deferred. |

This brief historic review is consistent with Congress having significant influence over long-term ABM deployment decisions. The Nixon and Reagan administrations desired missile defenses but were resisted by congresses that championed strategic deterrence. The Johnson and Clinton administrations faced the reverse situation. Both presidents were pushed toward ABM deployments by Congress. Despite both administrations' resistance, the Sentinel and NMD systems were on track to being deployed by the end of each presidency.

## RECENT CONGRESSIONAL BEHAVIOR

If congressional behavior is crucial to the long-term viability of American missile defense programs, the question becomes whether the current Congress will support deployment of a robust missile defense system as desired by the Bush administration. An

initial answer lies in reviewing Senate actions during the Clinton administration. I focus on the Senate because it generated the push for NMD deployment.

Between 1995 and 1999, the Senate considered five major initiatives to mandate NMD deployment. There is an inverse relationship between the scope of each initiative and its eventual success or failure. The more a Senate initiative tried to do, the less likely it was to become law.

In 1995, Senate proponents of NMD included language in the FY 1996 Defense Authorization Act (S. 1206) ending U.S. compliance with the ABMT, mandating an initial NMD deployment by 2003 with a specific system architecture, and specifying complementary TMD systems for future deployment. The legislation was vetoed by Clinton, and only signed into law when all but the TMD provisions were deleted from the bill.

A year later, Senator Robert Dole (Republican, Kansas) introduced the Defend America Act (S. 1635). Dole's bill also would have mandated an initial NMD deployment by 2003 with a specific system architecture. Dole's bill then specified that the President should attempt to amend the ABMT to allow for NMD deployment, but ultimately should withdraw from the treaty should amendments prove impossible. Dole eventually withdrew his initiative after estimates put the deployment cost of a system with the specified characteristics at $60 billion. In 1997, Senate Majority Leader Trent Lott (Republican, Mississippi) introduced identical legislation (S. 7). This time the legislation was defeated by a Democratic filibuster.

NMD supporters, led by Senator Thad Cochran (Republican, Mississippi), used different tactics in 1998. His American Missile Defense Act (S. 1873) simply said that it was the policy of the United States to deploy a limited national missile defense as soon as technologically possible. At the same time, Cochran focused attention on the ballistic missile threat by helping create the now-famous Rumsfeld Commission. The Cochran bill had 50 co-sponsors, but NMD supporters could only garner 59 of the 60 votes needed to proceed to debate, effectively killing the initiative for the remainder of the 105th Congress.[10]

Cochran's strategy of focusing on a deployment decision, but not system architecture or the ABMT, succeeded in 1999. Congress passed his 1999 National Missile Defense Act (S. 257, PL 106-38) with broad bipartisan support (97-3 in the Senate and 345-71 in the House). The 1999 bill again specified that it was U.S. policy to deploy an effective NMD system as soon as technologically possible.

These vote totals do not signify a dramatic shift in congressional preferences. Indeed, the votes are deceptively lopsided. Most Democrats supported the legislation only after it specified that U.S. policy was "to seek continued negotiated reductions in Russian nuclear forces," as well as NMD deployment. Democrats argued that the arms control language negated the NMD deployment clause, in that the United States could not deploy NMD without irreparably harming the prospects for future Russian arms reductions.[11]

We also should keep in mind that most Senate Democrats supported the Cochran bill out of the political necessities of the moment rather than from a newfound desire to deploy missile defenses. The 1999 Senate held 45 Democrats and 55 Republicans. The Republicans had enough votes to pass their bill

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[10] The failed votes occurred on May 13, 1998, and again on September 9, 1998, despite the latter vote following the release of the Rumsfeld Report, the North Korean Taepo Dong-1 missile test, and the Indian and Pakistani nuclear tests.

[11] "State Argues Loophole Exists in Missile Defense Bill," *Washington Times*, March 26, 1999; "Cochran, Weldon Disagree with Administration Take on NMD Legislation," *Inside the Army*, March 29, 1999; "House, Senate Appear to Have a Deal on Missile Defense," *Congressional Quarterly Weekly Report*, May 18, 1999; White House Office of the Press Secretary, "Statement by the President on National Missile Defense," July 23, 1999.

by a simple majority but not enough to begin debating the bill (which requires 60 votes in the Senate). If the Democrats had held ranks, they could have defeated the bill just as they had done twice in 1998. It soon was apparent, however, that five Democrats were going to vote for the bill. Debate and passage were now certain. As a result, the Democrats attached the aforementioned arms control language, which they argued made the bill meaningless, rather than put the Clinton-Gore administration in the difficult situation of having to veto a politically charged bill before an election in which Vice President Gore was the Democratic Party candidate.

**TABLE TWO – MISSILE DEFENSE LEGISLATION**

| Year | Legislative Intent | Result |
|---|---|---|
| 1995 | S. 1206 – Mandated deployment in 2003; established system architecture; ended compliance with the ABMT; and specified core theater defense systems. | Initially filibustered; vetoed when passed; then signed into law (PL 104-106) when all NMD language was deleted. |
| 1996 | S. 1635 – As above, except would amend the ABMT if possible, otherwise withdraw from the treaty. | Withdrawn as a result of an estimated $60 billion minimum price. |
| 1997 | S. 7 – Same as S. 1635. | Dropped after filibuster threat. |
| 1998 | S. 1873 – Mandated limited NMD deployment as soon as technologically possible. | Dropped after cloture motion (to prevent a filibuster) was defeated twice. |
| 1999 | S. 257 – Same as S. 1873, plus affirmed goal of Russian nuclear arms reductions. | Signed into law (PL 106-38). |

In sum, recent congresses have shown little inclination to support a robust NMD system as envisioned by the Bush administration. Instead, Congress has shied away from taking action that would threaten the ABMT or mandate a layered system architecture. Congress did pass legislation in 1999 making it U.S. policy to deploy missile defenses, but only when the legislation was couched in very general terms and only after it was significantly weakened by language reaffirming arms control.

## INFLUENCES ON THE COMING DEBATE

The domestic situation has changed during the last year. President Bush supports rather than opposes some form of NMD deployment. Gains from the 2000 election and the recent defection of

Senator James Jeffords (Independent, Vermont) from the Republican party have given Democrats a one seat majority in the Senate.[12] As a result, Senate Democrats can now block NMD-related legislation at the committee stage – i.e. before it reaches the Senate floor – if they can maintain party discipline in committee. If Senate Democrats can hold ranks on the Senate floor they can defeat or significantly delay a Bush request for additional NMD deployment funds.[13] At the least, the Democrats now have 47 relatively solid votes with which to oppose a robust NMD system, six more votes than are needed to filibuster legislation.[14] In theory, this allows them to condition passage of important but unrelated legislation on the President restricting NMD deployment to levels or systems that Democrats find acceptable.

Of course, accurately predicting future political developments on an issue as complex as this is as likely as being struck by lightning. Yet two things could generate Senate Democratic support for a multi-layered missile defense system:

- Most importantly, Democrats would be hard pressed to hold ranks if the ballistic missile threat dramatically increased, either due to renewed North Korean missile tests or to significant Chinese or Russian sales of missile technology to so-called rogue states.

- A boost-phase, sea-based system coupled with a limited, single site, land-based deployment also would be difficult for the Democrats to oppose. Such a system avoids expensive, vulnerable, and potentially destabilizing space-based components. The combined system also would not threaten Russian or even Chinese retaliatory capabilities. As a result, amending the ABMT might be easier with this system than with alternative systems. Moreover, a sea and ground based system has the potential to be much more effective against rogue-state missiles than the two site hit-to-kill system envisioned by the Clinton administration. Finally, the land-based component would be particularly appealing to Democratic Senators were it located in North Dakota rather than in Alaska, given that four Senate Democrats hail from the Dakotas, three of them leaders on foreign policy.[15]

A number of actions could decrease congressional support for a robust missile defense system:

- A dramatic decline in the ballistic missile threat would undercut the main argument used by missile defense proponents. Particularly important would be a verifiable agreement terminating the North Korean ballistic missile testing, production, and export programs.

- Budgetary constraints from the Bush tax cut could also limit support for a robust and expensive missile defense system, particularly if the American economy continues to slow.

- Continued technical failures and delays could weaken support for early deployment.

[12] The Senate now contains 50 Democrats, 49 Republicans, and one Independent. Internal procedures in the House of Representatives give the Republican majority nearly total control of legislative outcomes in that chamber, just as was the case in the 106th Congress.

[13] Roughly a year's worth of funds have already been appropriated, though not yet spent, for NMD deployment.

[14] I calculate this number based on the following: Of the 50 Democrats now in the Senate, four cosponsored the 1999 Cochran bill, casting doubts on their willingness to hold with their caucus on missile defense policy. Senator Jeffords, the Senate's lone Independent, has stated his opposition to the Bush administrations' missile defense plans. Senator Bob Kerrey (Democrat, Nebraska), a supporter of the Cochran bill, retired in 2000.

[15] These Senators are: Kent Conrad (Democrat, North Dakota), Byron Dorgan (Democrat, North Dakota), Senate Minority Leader Tom Daschle (Democrat, South Dakota), and freshman Tim Johnson (Democrat, South Dakota).

- Finally, Democratic control of both congressional chambers by more than a handful of seats could allow NMD opponents to determine NMD-related appropriations and thus the prospects for a robust deployment. Bicameral Democratic control could well occur in the 2002 congressional elections, in that presidential partisans have traditionally lost seats in mid-term elections.

# The Implications for Postures and Capabilities in South Asia

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## INTRODUCTION

When United States President George W. Bush outlined his grandiose, but short on details, missile defence plan on 1 May 2001, the impact on South Asia was immediate.[1] China warned that the plan, and the implicit threat that it posed to the Anti-Ballistic Missile Treaty (ABMT), would break the current nuclear balance and stability and would impede international arms control and non-proliferation.[2] Pakistan's General Pervez Musharraf, speaking in the presence of the visiting Chinese Prime Minister, Zhu Rongji, expressed concern that ballistic missile defence could "jeopardise strategic stability, trigger a new arms race and undermine international efforts aimed at arms control and disarmament."[3] In sharp contrast India was laudatory and endorsed parts of the plan and appreciated the "U.S. resolve to seek dialogue, consultation and cooperation" on the issue.[4]

Given these dramatic developments, this paper will study the existing and evolving missile and missile defence capabilities of China, India and Pakistan and examine the related "official" postures on ballistic missiles and ballistic missile defence. Based on these twin variables, the paper will postulate the likely future trajectories, both in terms of policy and capability, of these three key players at the regional and global level.

The paper will argue that ballistic missile defence will be a key, but not the only, determinant in the future course of the missiles programmes of China, India and Pakistan. Both China and India are likely to pursue their own missile defence options, initially at the theatre level, which would be an attempt to preserve their second strike capabilities and would be in line with their "no-first-use" postures. In this context, both China and India may also be amenable to enter into negotiations with the United States either bilaterally or multilaterally and may even accept some form of missile defence deployment. In contrast, Pakistan is presently unlikely to develop even limited missile defences but may go in for a "one more missile than the number of interceptors" approach. This would also be in line with its tacit first-use posture. Islamabad also appears to be unwilling to accept even a limited form of missile defence and may be less amenable to participate in negotiations that could validate some form of missile defence.

## THE IMPLICATIONS OF BUSH'S MISSILE DEFENCE INITIATIVE

Although the central theme of Bush's speech was missile defence it also called for "a broad strategy of active non-proliferation, counter proliferation and defenses" as well as a reduction in

[1] For the text of the speech, see *Remarks by the President to Students and Faculty at National Defense University*, May 1, 2001, at http://www.whitehouse.gov/news/releases/2001/05/20010501-10.html.
[2] "China Warns of Arms Race", *Associated Press*, May 3, 2001.
[3] B. Muralidhar Reddy, "Musharraf opposes NMD", The Hindu, May 13, 2001.
[4] *Press Release*, May 2, 2001, Ministry of External Affairs, External Publicity Division, New Delhi at http://www.meadev.gov.in/news/pressrelease.htm.

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the size of the strategic arsenal.[5] It reiterated that missile defence was specifically aimed at "rogue states". The speech also called for "real consultations" with friends, allies and "interested states" including Russia and China. Thus at its most benign the speech promised not to present friends and allies, or even interested parties, with a *fait accompli*. However, Washington's choice of countries selected (and excluded) for consultations, as well as the tone of the consultations, was revealing.

Thus, in South Asia Islamabad was not on the itinerary of U.S. Deputy Secretary of State Richard Armitage, who visited Tokyo, Seoul and New Delhi. In New Delhi, where the tone of the meeting was uncharacteristically friendly, Armitage insisted that the missile shield was aimed at "rogue states" which, according to him, included Iran, Iraq, Libya, North Korea and "some in India's neighbourhood".[6] He admitted that there were "questions about Pakistan" and called these states "hard cases". While he ruled out a role for India in the missile plan at present, he did not dismiss a future role. Armitage also asserted that the United States "want India to understand what our thinking is and we will allow them to characterise their views on this". During the course of the interaction New Delhi suggested "the Indian approach of no first use and non-use against non-nuclear weapon states and de-alert" as alternatives to Armitage. In contrast the visit by U.S. Assistant Secretary of State James A. Kelly to Beijing to begin a "dialogue with China on security and stability that reflects today's world"[7] was far more acrimonious as it took place in the aftermath of the spy plane incident and Washington's declaration that it would redefine its military relations with Beijing on a "case-by-case" basis. China maintained its opposition to the plan and said that it would respond if Washington deployed the system, but did not elaborate.[8] The tones notwithstanding, what is clear is that the United States is likely to be engaged in consultations with both China and India on this issue in the coming days. However, any such consultation appears to be unlikely between the United States and Pakistan at the moment.

## CHINA'S MISSILE CAPABILITIES

China has had great confidence in its missile programme, which dates back to at least the late 1950s and has always been associated with the country's nuclear weapon capability. Indeed, so high was the level of confidence in the missile capability even in the early days that in 1966 China conducted its fourth nuclear test by arming a first generation *Dong Feng* (*DF*) 3 missile with a live nuclear warhead and launching it over densely populated parts of the country to land at the Lop Nor test site. It was the first and, perhaps, the only country to test a nuclear weapon in this fashion. Today China has an extensive and sophisticated ballistic missile programme and, according to at least one expert, may be in a position to deploy cruise missiles by 2010.[9] It is already modernising its strategic rocket forces through MIRV capabilities and improved guidance systems. These developments are evident in the 8,000km range *DF* 31 and the 13,000km *DF* 41. The latter can strike parts of the United States. China is also replacing the aging *DF* 3 with the 1,800-km range *DF* 21, which can strike targets deep

[5] *Remarks by the President to Students and Faculty at National Defense University*.

[6] Sonia Trikha, "We have questions about Pakistan: Armitage", *Indian Express*, May 12, 2001.

[7] Eric Eckholm, "U.S. Diplomat in Beijing to Calm Fears on Antimissile Project", *New York Times*, May 15, 2001, p. A 10.

[8] See Rebecca MacKinnon, "China warns U.S. over missile plans", May 15, 2001 at CNN.com and Eric Eckholm, "U.S. Envoy Stymied at China Missile Talks", *New York Times*, May 16, 2001, p. A6.

[9] According to Robert Manning "Russian and Israeli assistance could help China develop and deploy cruise missiles before 2010". See Gerrit Gong, Selig Harrison, Robert Manning and David Wright "China/ Japan /Korea", roundtable discussion for the Rumsfeld Commission in *Commission to Assess the Ballistic Missile Threat to the United States*, Appendix III: Unclassified Working Papers at http://www.fas.org/irp/threat/missile/rumsfeld/pt1_china.htm. See also Bill Gertz, *The China Threat: How the People's Republic Targets America* (Washington D.C.: Regnery Publishing, 2000).

within India. These capabilities could counter U.S. naval power in the region and, with adequate numbers, could also punch a hole into the missile defence system proposed to protect the U.S. mainland.

China has also exported its expertise and complete systems to other countries, which are of concern to both the United States and India. Apart from its well-documented transfer of the 350-kilometer range M-11s to Pakistan, it has also sold the nuclear capable and 3,100-km long-range *DF* 3s to Saudi Arabia. China's reported transfer of "enabling technologies" for "Iran's solid-fueled ballistic missile program" is also a cause of concern to Washington.[10]

Although currently China does not have any missile defence system, it is reported to be seeking the Russian-made SA-300 air defence system, which is designed to provide protection against ballistic missiles at the theatre level. Given China's growing missile capability, however, it is only a matter of time before it will be in a position to field its own version of a national missile defence system. Thus China appears to be developing capabilities to both overwhelm the U.S. shield and also to provide limited defence for its own second strike capability.

## INDIA'S MISSILE CAPABILITIES

The Indian missile programme, set up in 1958, actually pre-dates the civil space programme by at least four years. Although the two programmes compete for resources, there is also some co-operation. This co-operation is best exemplified in the transfer of personnel and technology from the successful civilian Satellite Launch Vehicle (SLV) programme to the fledgling Integrated Guided Missile Development Programme (IGMDP) which was launched in 1983 to develop the nuclear-capable *Prithvi* and *Agni* missiles.[11] The latter was to provide a strategic deterrent vis-à-vis China, while the former was seen as a Pakistan specific missile. Nearly 20 years later, the programme has partially achieved its objective. Two versions of the liquid-fuelled *Prithvi* (the SS-150 for the army and the SS-250 for the air force) have been developed and flight-tested. The SS-150, with a range of 150km and a throw weight of 1000 kilograms has been inducted into the 333rd Missile Regiment but has not been deployed. These missiles have been stored well away from the border, which "suggests that the service does not intend to use the missiles in anything but an emergency".[12] These missiles, coupled with the 2000km range *Agni*-II provide New Delhi with adequate deterrence capability vis-à-vis Islamabad. However, the same solid-fuelled *Agni*-II, which was flight-tested to a distance beyond 2,100km in January 2001, is still considered inadequate to deter China. With its present range the missile "can at best cover Chinese territory till the western cities of Chengdu and Kunming" and cannot strike either Shanghai or Beijing.[13] Hence, India is developing the 3,500km range *Agni*-III, with new first and second stages, which is likely to be flight-tested later this year.

According to one expert, India's civilian space launch programme, which has now matured to loft multiple satellites into polar and geo-synchronous orbits, may also provide crucial technology and expertise for both ICBM and MIRV capabilities for the missile programme.[14] While India may validate

[10] *Commission to Assess the Ballistic Missile Threat to the United States*, Executive Summary at http://www.fas.org/irp/threat/missile/rumsfeld/execsum.htm, better known as the "Rumsfeld Commission Report".

[11] Waheguru Pal Singh Sidhu and Chris Smith, *Indian Defence and Security – Industry, Forces and Future Trends* (Coulsdon: Jane's Information Group, June 2000) p. 83.

[12] Andrew Koch, "Nuclear Friction – Nuclear Policy in India and Pakistan", *Jane's Defence Weekly*, December 6, 2000. See also "Prithvi SRBM" at http://www.bharat-rakshak.com/MISSILES/Prithvi.html.

[13] Dinesh Kumar and Manoj Joshi, "Agni-II adds fuel to India's N-arms policy", *Times of India*, January 18, 2001. See also "AGNI-II IRBM" at http://www.bharat-rakshak.com/MISSILES/Agni.html.

[14] David R. Tanks, "Ballistic Missiles in South Asia: Are ICBMs a Future Possibility?" in *Commission to Assess the Ballistic Missile Threat to the United States*, Appendix III:

both capabilities through a technology demonstrator, it is unlikely to field an ICBM in the foreseeable future, although it may use this capability as a bargaining chip. [15]

Like China, India is exploring both the possibility of developing cruise missiles and also acquiring a limited missile defence system to secure its limited second-strike capability. For the latter objective India too is likely to procure the SA-300 system from Russia.[16] India has already acquired a significant sea launch missile capability with the induction of a Kilo-class submarine armed with the "Klub" class missile, which is reported to have a range of close to 300km.[17] Thus, India too appears to be developing capabilities that could, if required, overcome theatre defences and protect its own second strike capability.

## PAKISTAN'S MISSILE CAPABILITIES

The Pakistani missile programme and infrastructure, which was set up in the early 1980s, is "now more advanced than that of North Korea. It will support development of a missile of 2,500km range" which "will put all of India within range of Pakistani missiles".[18] While the programme remains India centred, this capability, however, will also give Islamabad the technical base for developing much longer-range missiles.

As with the nuclear weapons programme, Islamabad appears to have opted for two, often competing, missile programmes. One programme, possibly based on North Korean missile technology, led to the liquid-fuelled *Ghauri* series of missiles, which are produced by the Khan Research Laboratories led by Dr. A. Q. Khan. According to U.S. intelligence officials, however, the *Ghauri*-I, with a 1,500km range and the 2,000km range *Ghauri*-II bear a striking resemblance to the North Korean *No-Dong* I and II. The second programme, based on Chinese assistance, led to the solid-fuelled *Shaheen* missile series built by the National Development Complex, headed by Dr. Samar Mubarak Mand. The 600km range *Shaheen*-I, first tested in April 1999, is reported to have been inducted into service. The first test-flight of the 2,500km range *Shaheen*–II is expected later this year. According to senior Pakistani military officers the *Ghauri* series are earmarked for first-strike "offensive" operations while the *Shaheen* series would be reserved for "defensive" second-strike purposes.[19] Senior Pakistani scientists claim that once *Shaheen*-II meets its design requirements and becomes operational,

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Unclassified Working Papers at http://www.fas.org/irp/threat/missile/rumsfeld/pt2_tanks.htm. See also "India poised to test-launch ICBM: Report" at http://www.timesofindia.com/050501/05indi9.htm and "GSLV had launched India into ICBM club" at http://www.timesofindia.com/050501/05indi22.htm.

[15] Michael Krepon of the Stimson Centre made these observations. See David Goure, Michael Krepon and David Tanks, "India/Pakistan", roundtable discussion for the Rumsfeld Commission in *Commission to Assess the Ballistic Missile Threat to the United States*, Appendix III: Unclassified Working Papers at http://www.fas.org/irp/threat/missile/rumsfeld/pt1_india.htm. See also "India denies plans to launch ICBM" at http://www.timesofindia.com/060501/06indi12.htm.

[16] In the long run India may also try and develop its own missile defence system based on the *Akash* SAM system and other space based assets. See Group Captain R. G. Burli, "India's Option for Space - Based BMD", *Indian Air Force 2000*, pp.40-42.

[17] Vladimir Radyuhin, "INS Sindhushastra commissioned", *Hindu*, July 20, 2000.

[18] Executive Summary of the Rumsfeld Commission Report at http://www.fas.org/irp/threat/missile/rumsfeld/execsum.htm. See also *Pakistan's Missile System* report by the Pakistan Institute for Air Defence Studies at http://www.piads.com.pk/users/piads/pmsintro.html and Lt. General (Retd.) Sardar F.S. Lodi, "Pakistan's Missile Technology", *Defence Journal*, May 1998 at http://www.defencejournal.com/may98/pakmissiletech.htm.

[19] Koch, "Nuclear Friction – Nuclear Policy in India and Pakistan".

they would not be developing any other longer-range systems at this time.[20]

At present Pakistan, which has a tacit first-use posture, is not seeking any form of missile defence and there are no indications of an indigenous programme to develop such a capability. Similarly, there are also no reports of Islamabad's attempts to acquire such a system from abroad. However, such acquisitions cannot be entirely ruled out for the future. Thus, for the moment the Pakistani response to the possibility of missile defence becoming operational with its adversaries is to either challenge such move diplomatically or through a unilateral build up of missiles to saturate a theatre based system.[21]

## CONVERGENCE AND DIVERGENCE OF POSTURES

While it would be logical to assume a direct correlation between the capabilities of China, India and Pakistan and their "official" postures on ballistic missiles and ballistic missile defence, it is important to note that such an examination would be limited in that it does not take into account domestic political considerations as well as bureaucratic compulsions or inter-service rivalry. Nonetheless, even such a limited exercise of correlating capabilities to "official" positions would be useful to explore the extent of convergence and divergence between the three main players in South Asia.[22]

## CHINA'S POSTURE

Beijing's posture, based on statements by senior Chinese officials, has four essential elements. First, is the centrality of the ABMT. Although this treaty is essentially a bilateral treaty Beijing considers it crucial in maintaining "strategic balance" not only between the superpowers but also amongst the second-tier powers. Second, is the fear that Missile Defence poses a "grave threat" to international security on at least two grounds: it threatens the ABMT but also strategic stability and promises to unleash a new arms race. Third, China is also opposed to a unilateral approach to these issues and argues in favour of multilateral negotiations. Finally, China also makes a point of expressing its opposition to "discriminatory" regimes, including some (such as the MTCR) that it is compelled to adhere to.

Interestingly, while China cautions that "offensive and defensive capabilities are closely intertwined", it makes a distinction between National Missile Defence (NMD) and Theatre Missile Defence (TMD) and is relatively open to negotiating on TMD. Beijing does not categorically oppose limited theatre missile defences and, in fact, has indicated its willingness to discuss it with the United States.[23] This position could be rationalised on three grounds. First, that since China itself may be seeking similar capabilities to protect its own second-strike capability it may not want to close this option. Second, it may be confident that it will be able to overwhelm a limited theatre missile defence. However, it is not clear whether it would be willing to reach a bilateral agreement with Washington or whether it would insist on a multilateral

[20] This is also the view of U.S. analysts who say that Pakistan would be unable to construct an ICBM by 2015 because Islamabad does not have the finances, production base and technical know-how for the endeavour. Michael Krepon of the Stimson Centre made these observations; David Goure, Michael Krepon and David Tanks, "India/Pakistan", roundtable discussion for the Rumsfeld Commission in *Commission to Assess the Ballistic Missile Threat to the United States*, Appendix III: Unclassified Working Papers at http://www.fas.org/irp/threat/missile/rumsfeld/pt1_india.htm.

[21] For indications of this see "Foreign Secretary of Pakistan [Inam ul Haque] Addresses Conference on Disarmament", *Press Release* at http://www.unog.ch/news2/documents/newsen/dc0103e.html.

[22] One of the best sources for "official" positions has been the *Newsbrief* put out by the Programme for Promoting Nuclear Non-Proliferation. See *Newsbrief* Number 52, 4th Quarter 2000 for the last word.

[23] Craig S. Smith, "China Willing to Talk About Missile Defenses", *New York Times*, March 15, 2001, p. A10.

arrangement. The indications are that for Beijing the NMD issue provides an opportunity to embark on discussions with the United States at a new strategic plane. However, the ongoing tensions between Beijing and Washington, coupled with the acrimonious tone of their deliberations over the Bush missile defence initiative, are likely to make the outcome of this dialogue uncertain. In all probability, it may push both sides even further apart. In this context, and depending on the Russian response to the Bush initiative, a Sino-Soviet anti-missile alliance cannot be ruled out.

## INDIA'S POSTURE

New Delhi's posture, based on the statements of Indian officials, consists of four "D's": deterrence (which is premised on the possession of a "minimum credible deterrent"); disarmament (which seeks the eventual elimination of all nuclear weapons); diplomacy (based on "genuine multilateralism") and de-alerting (which seeks to keep missiles off high-trigger alert and under divided control). In addition the Indian position also includes two other "D's" - deference to some aspects of the Nuclear Non-Proliferation Treaty (NPT) (particularly those related to the export of sensitive material and technology to countries of concern) and some provisions of its "Draft" Nuclear Doctrine, particularly those related to no-first-use. Moreover India, like China, is categorically opposed to the MTCR on the grounds that it has evolved from an export control regime to a missile control regime.

Significantly, while there is no reference to defence, it has not been ruled out either. In fact, it is likely that India is well on the way to acquiring some limited form of theatre missile defence for itself but does not want to highlight this particular capability yet. This, perhaps, was the reason behind the low-key Indian reaction to the NMD debate and the initiation of a dialogue between New Delhi and Washington. This dialogue, according to one leading analyst, would be premised on four elements: first, that the deployment of an NMD be accompanied by deep cuts in existing nuclear arsenals; second, that the transition to defence-oriented nuclear regime be negotiated among those countries possessing nuclear weapons to ensure stability; third, there should be greater political and technological cooperation among key powers to promote a defensive nuclear regime; and finally, India should be treated as part of the solution in creating a more effective international non-proliferation regime.[24] The Armitage visit indicated that premise was accurate and that both sides could find common ground. In fact, there is even a possibility that India might acquire some elements of the U.S. missile shield to protect it against limited attacks from Pakistan and, perhaps, even China.

## PAKISTAN'S POSTURE

Islamabad's posture, based upon the statements of senior officials, also comprises a series of "D's": a negotiated "de-alert"; a progressive "dismantlement" (disarmament) of all delivery vehicles; "diplomacy" - both at global and regional level (a "multilateral dialogue" to develop a system of "international security" at the global level and a regional dialogue to negotiate a Strategic Restraint Regime for South Asia[25]); a qualified "deterrence" where "credible minimum deterrence" is pegged at the "lowest level" of deployment but is linked to other measures, such as Confidence Building Measures and conventional arms restraint. In addition, while Pakistan has not articulated a use doctrine it has moved quickly to effectively deploy and command and control its modest nuclear arsenal. Indeed, Islamabad's reluctance to provide a "no-first-use" pledge,

[24] C. Raja Mohan, "Indo-U.S. Dialogue on NMD", *Hindu*, March 14, 2001.

[25] Such a regime would include: non-deployment of ballistic missiles; non-operationalization of nuclear capable missile systems; formalizing prior notification of missile tests; and moratorium on the development, acquisition or deployment of ABMT systems. For details see "Foreign Secretary of Pakistan [Inam ul Haque] Addresses Conference on Disarmament", *Press Release* at http://www.unog.ch/news2/documents/newsen/dc0103e.html.

coupled with statements made by senior officials, indicates a preference for a first and early use posture of the nuclear missiles.

Significantly, while both China and India have been somewhat circumspect in their criticism of any form of missile defence and make a distinction between NMD and TMD, Pakistan has been categorical in its opposition to each and every kind of missile defence. According to Islamabad both NMD and TMD pose the "most serious contemporary challenge to disarmament and non-proliferation", particularly in the Middle East. However, it is not clear whether Pakistan has completely ruled out acquiring some form of "missile defence system" to maintain its "credible minimum deterrent" vis-à-vis India. Also, were Pakistan to get access to or develop such a system indigenously, would it modify its position accordingly and make a distinction between TMD and NMD? Or would it continue to oppose every form of missile defence?

From the above analysis several areas of convergence between China, India and Pakistan are evident. First, although neither is a member nor has a legitimate say in the bilateral ABMT, in principle all three countries remain opposed to a unilateral abrogation of this treaty by the United States. Second, for a variety of different reasons, there is also a broad agreement over the discriminatory nature of non-proliferation regimes in general and the MTCR in particular. While India and Pakistan feel that the MTCR curtails their legitimate right to seek dual-technology, for China the arrangement restricts its ability to supply what it considers appropriate technology for commercial purposes. Third, while all favour some form of multilateral negotiations to discuss and eventually resolve this issue, they are not averse to conducting bilateral talks with the United States if given a chance. This has less to do with concerns over the emerging missile defence capabilities and more with the political opportunity of engaging with an increasingly determined and unilateralist United States.

While the areas of divergence between them are few, they are also more intractable. Although both China and India make a distinction between NMD and TMD and appear to be willing to discuss the issue of a limited TMD at the bilateral level with the United States, Pakistan appears to be opposed to all forms of missile defence and is reluctant to accept even a limited form of TMD. This is probably on account of two factors. First, that the presence of such a system in the India-Pakistan context could neutralize Islamabad's deterrent capability. Second, while both China and India appear to have made some investment in both cruise technology and limited missile defence capability, it is unclear whether Islamabad has made some attempts to acquire these capabilities and failed or not even bothered to acquire them at all. Pakistan's inability to acquire a similar system either from within or abroad also leaves its missile force vulnerable. Hence, this approach could be an attempt to make a virtue out of a necessity.

## FUTURE TRAJECTORIES

There are two extreme views about the implications of ballistic missile defences on South Asia. One argument is that the emerging ballistic missile defence capability is the single most important determinant in the future course of missile proliferation in the region. At the other end is the view that ballistic missile defence capability is unlikely to have any effect whatsoever on the trajectories of missile proliferation in China, India and Pakistan. Clearly, neither extreme is accurate and the implications remain far more complex.[26] The future course of missile developments in the region are also likely to be determined by other factors, such as the economic and technological capabilities, the domestic political will as well as bureaucratic drivers within these countries as well as in the United States.

[26] For a good historical perspective on previous attempts to build missile defences and the global response to them, see Christophe Carle, "Fighting fire with fire: missiles against missiles", *Disarmament Forum* "NMD: Jumping the Gun?", One 2001.

However, at the very least China, India and Pakistan would have to take note of these new developments and attempt to adjust their own programmes accordingly. Both China and India have already indicated that they are likely to pursue their own missile defence options, initially at the theatre level, which would be a logical approach to preserve their second strike capabilities and would be consistent with their "no-first-use" postures. Both New Delhi and Beijing are already actively considering the acquisition of the Russian SA- 300 anti-missile system, which provides some defence capabilities against ballistic missiles. In the Indian case there is also a distinct possibility that if Washington and New Delhi can find common ground and reach a mutually acceptable position regarding missile defence, then India may buy in to some form of the U.S. theatre missile defence architecture, which could provide a shield against limited missile attacks.

Simultaneously, both China and India may embark on a qualitative (improving guidance and deploying countermeasures) and quantitative enlargement of their existing missile arsenals as such an increment would be a logical way to effectively saturate the proposed missile shield. In this context there is a direct co-relation between the emergence of the NMD and TMD capability and the desire to build sophisticated missiles that can counter these systems. The extent and sophistication of the countermeasures on-board missiles would depend on technological and economic capabilities; the U.S. posture already provides a convenient political rationale. There also appears to be a direct linkage between the emerging technological capability in China and India and their desire to both enter into negotiations with the United States either bilaterally or multilaterally and also accept some form of missile defence deployment. Here, it would be interesting to ask what would be the possible Chinese and Indian approach both to the ABMT and the NMD were they also to acquire NMD capability?

In contrast, Pakistan is presently unlikely to develop even limited missile defences but may go in for a more traditional quantitative build up with the objective of overwhelming the proposed missile defences. This would also be consistent with its tacit first-use posture, which aims for a first and early use of its nuclear capable missiles. Perhaps for this reason Islamabad also presently appears to be unwilling to accept even a limited form of missile defence and may not be as enthusiastic to participate in negotiations that could validate some form of missile defence. Again, it would be interesting to ask whether there could be any change in Islamabad's position were it also to acquire a missile defence shield?

# East Asian Regional Implications of Ballistic Missile Proliferation and Ballistic Missile Defense

by Toshiro Ozawa
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In an article in the previous paper in this joint series[1], the author described the basic factors affecting the thinking of military experts on the issue of Ballistic Missile Defense (BMD) in Japan, China, Taiwan, Democratic People's Republic of Korea (DPRK) and Republic of Korea (ROK). The article gave an overview of the regional implications of ballistic missile proliferation and BMD at the end of the Clinton presidency.

Today, a new Republican administration has come to power, and with it, the possibility of an expanded BMD, in comparison to a limited BMD as proposed by President Clinton. Expectations for and perceptions about such BMD are evolving throughout the region. The Bush administration has shown a clear commitment to pursuing BMD, both national and theater, but has not yet defined the concrete parameters of such BMD architectures. These parameters may be decided unilaterally by the United States, or they may be worked out in agreement with Russia, and possibly even with China. Different scenarios will have different impacts on the region, but, needless to say, what can be worked out between the United States and Russia for amendments to the Anti-Ballistic Missile Treaty (ABMT) will have the most profound impact.

[1] Toshiro Ozawa, "Regional Perspectives: Northeast Asia" in *International Perspectives on Missile Proliferation and Defenses*, (Special Joint Series on Missile Issues with the Mountbatten Centre for International Studies, Center for Nonproliferation Studies, Monterey Institute for InternationalStudies, Monterey, CA, March 2001) pp. 71-75

The author will pursue a different format from the earlier article, written in December 2000. First, some major questions regarding the BMD architectures of the United States will be analyzed. Next, the regional implications (and possibly global implications in some cases) for China, Taiwan, DPRK and the ROK, together with some recent developments that are taking place in their relations with the United States will be looked into.

## WHAT WILL THE U.S. BMD ARCHITECTURE BE ?

### Space-Based Weapons ?

In January 2001, the *Report of the Commission to Assess United States National Security, Space Management and Organization* (the second Rumsfeld panel) was released. The report warns that the United States is an attractive candidate for a "Space Pearl Harbor", and points out that a deterrence strategy for space is needed, where "power projection in, from and through space" is required.

This report seems to be arguing that the United States should develop and deploy anti-satellite weapons (ASATs) in space. What the Bush administration will decide on this matter is of course unknown, although we do know that Mr. Rumsfeld has now become the Secretary of Defense. Also, the possible deployment of ASATs in space will become another controversial issue with regard to the ABMT, which prohibits interference with monitoring satellites.

What then would be the Russian response to this new argument for ASATs? Will Russia seek to preclude the possibility of the deployment of ASATs in space? In negotiations with the United States on possible amendments to the ABMT, could this point become the deal-breaker? Since almost all nations are committed to "peaceful use of space", and placing weapons in space would seem to be a breach of this commitment, could such nations accept the deployment of ASATs in space?

Space-based weapons were an important component of the SDI and Global Protection Against Limited Strikes (GPALS) concepts. However, in the recent arguments for National Missile Defense (NMD), the "Brilliant Pebbles" and Space-Based Lasers (SBL) were rarely discussed, the emphasis being on "kinetic kill" interceptors. The second Rumsfeld report seems to be opening a new chapter in the debates regarding BMD, by urging funding for research on space-based weapons

**Boost-Phase Intercept (BPI)?**

There are no known funded programs for BPI research in the Pentagon. Yet, arguments in favor of BPI remain popular, possibly because it may enable evasion of the constraints imposed by the ABMT. However, the technological challenges and also the command and control challenges for the scheme where an interceptor missile overtakes and actually kills a target missile in its boost-phase seem tremendous. It would only be in ideal situations that a Ground-Based Interceptor (GBI) or a Sea-Based Interceptor (SBI) could be effective in any way.

This being the case, contrary to the intent of those arguing for BPI, support for BPI is likely to lead to renewed interest for Air-Borne Laser (ABL) and SBL. The latter would be much more cost effective, but would precipitate a new round of debate on space-based weapons.

**Negating China's first strike capability?**

In September 2000, Presidential candidate George Bush argued in his speech at the Citadel in Charleston, South Carolina, that the United States needed to counter missile threats from such countries as DPRK and Iraq. This was nothing new, but he also pointed out that the United States should worry about missile threats from China. This was a direct challenge to President Clinton's concept of a "limited NMD", no doubt reflecting the sentiments of conservative Republicans.

The number of Chinese ICBMs is small, with the estimate often referred to being 20 liquid-fueled, single warhead ICBMs. China pursues a "minimum deterrence strategy", with a declaratory policy of "no first use". The United States has co-existed with this first strike capability of China, but deployment of even a limited NMD could negate this first strike capability. The Clinton administration stressed that its missile defense plans were not directed against China, and tried to work out some schemes to assure China's deterrence capabilities.

How the Bush administration is going to address this issue is unclear. Secretary of State Colin Powell has mentioned in his Senate confirmation hearings that BMD would not be directed against China. However, it is well known that conservative Republicans (especially the so-called Blue Team) do not wish to provide China with the right of a nuclear deterrent.

**CHINA**

Vice Minister Qian Qichen's scheduled meeting with President Bush on March 22 will provide the first insight into how U.S.-China relations are likely to develop under the new U.S. administration. The fact that Chinese officials have already indicated a willingness to have dialogue on the issue of NMD despite their adamant opposition to it may be an encouraging sign for future stability of the bilateral relations.

Together with Russia, China has been strongly opposed to U.S. NMD, arguing that it "will undermine the global strategic balance, severely hamper the disarmament process and international non-proliferation efforts, jeopardize global peace and regional security, and may even touch off a new round of arms race". However, not being party to the ABMT, China must rely on Russia for the legal means to constrain U.S. efforts to develop NMD. In this regard, China may be sensing that the Russian position is gradually shifting, leading perhaps to a compromise deal with the United States on deeper cuts for strategic weapons and an amendment of the ABMT. Were this to be the case, China would be left in an awkward situation regarding NMD. Perhaps more importantly, the question of how China positions itself in such a new strategic environment will affect the entire region and beyond.

China has a number of ongoing programs for modernizing and increasing its missile arsenals. The 17.7% increase in its military budgets announced in March 2001 suggests that although the national priority is economic growth, modernization of the People's Liberation Army (PLA) is also a priority. However, many questions need to be asked. Will China adopt a policy of building "one more ICBM" than the number of NMD interceptors? Would such a policy lead to a "Cool War" between the United States and China in the 21st Century? Could such a policy be sustainable in light of the huge demands for resources needed for its modernization? If China were to acquiesce to a situation where its first strike capability is negated, what are the implications for Taiwan? These are all huge questions with no answers, but with gut instinct, the author is inclined to argue that the Taiwan issue is at the heart of the matter, and much depends on how U.S.-China-Taiwan relations develop in an overall context.

As was vaguely hinted in the earlier article, China's objections to Japan's interest in TMD/BMD seems to be changing subtly. It is reported that Chinese authorities have indicated to the U.S. experts a readiness to accept TMD for the protection of American troops in Japan. Confirmation of this point is pending.

## TAIWAN

The author has argued in the earlier article that the proximity of Taiwan to the Fujian Province where 200 (estimates now have gone higher to 300) short-range missiles are deployed negates the usefulness of any upper-tier TMD. For lower-tier TMD, it seems more than likely that the United States would provide PAC 3 systems in the future.

Interest is focused on whether the United States will agree to Taiwan's request to acquire Aegis cruisers. Aegis provides the launch pad for the Navy Theater-Wide (NTW) TMD. China's opposition to the possible sale of the Aegis to Taiwan is passionate. Indeed, it seems that China is becoming more flexible on other points regarding BMD with the exception of this matter on the Aegis. However, it should be understood that this is a political issue, because upper-tier TMD would make little sense militarily.

## NORTH KOREA (DPRK)

On March 5, 2001, Michael Gordon of the *New York Times* wrote an exposé article on the content of the negotiations on missile proliferation between the United States and the DPRK towards the end of the Clinton administration. In the deal that was not reached, the DPRK agreed to "forego" missiles with a range of more than 300 miles if the United States agreed to provide satellite-launching services, together with a commitment for providing several hundred million dollars worth of goods over a certain period. According to the report, the United States initially sought a ban on the production, testing and deployment of all missiles with a range of more than 180 miles that could carry a 1,000-pound payload, and verification provisions including a declaration by the DPRK on the numbers and types of missiles in their arsenals, together with a commitment to destroy their existing stocks.

On March 7, in the press conference following his talks with President Kim Dae Jung, President Bush mentioned that he has "some skepticism" about the leader of North Korea, and that "any negotiations would require complete verification of the terms". While these remarks seem to indicate a disassociation with the negotiations that were ongoing during the Clinton administration, his DPRK policies are yet to be articulated.

Meanwhile, the DPRK has been sending mixed messages in its official media, hinting that its self-imposed test ban of missiles is not indefinite, criticizing the Bush administration on its policies toward the DPRK, and also stating that the DPRK wishes to end confrontation with the United States and improve ties.

**SOUTH KOREA (ROK)**

In a joint declaration issued after talks between Presidents Kim Dae Jung and Vladimir Putin on February 27 2001, language endorsing the ABMT as "the cornerstone of strategic stability" was inserted. This was reported in the media as the ROK's concurrence with Russia on its stance against NMD because President Bush's position is to seek major amendments for the ABMT with Russia, if not its abrogation. The following day, ROK officials were eagerly explaining that the language was picked out of a G-8 communique, and that although Russia wanted to put the two countries' anti-NMD stance in the joint declaration, the ROK steered away from it, and that the ROK is neither against the United States nor in favor of Russia regarding NMD. As was mentioned in the earlier article, the ROK Ministry of Defense announced in March 1999 that the ROK military did not plan to participate in the U.S. TMD program. This disinterest in BMD may have been one factor for its seeming naivety in the drafting of the joint declaration with Russia.

The ROK is focused on preparations for the yet to be announced visit by General Kim Jong Il to Seoul. After talks with President Bush, President Kim Dae Jung has stated that the 1992 inter-Korea Basic Agreement on non-aggression should be the basis for building peace on the peninsula. The sudden cancellation of North-South Ministerial talks scheduled for March 13 is making the ROK side anxious about the future of North-South talks.

This short article is an attempt to capture some of the complexities relating to the BMD issues in East Asia. Much will depend on how the United States defines the parameters of the BMD architectures that it seeks, and much will depend on how U.S.-Russia talks unfold. Once again, other relevant players such as India have been neglected. More questions are raised than answered in this article, but this should be regarded as a reflection of the evolving nature of the BMD concept.

# European Perspectives on Ballistic Missile Proliferation and Missile Defences

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When President Clinton announced that he was putting off deployment of his planned NMD system pending further tests, the decision was greeted with undisguised relief by European NATO partners, who were quick to praise the decision as wise, prudent, and sensitive to allied opinion.[1] It had been no secret that the allies regarded the NMD plan as technologically, strategically and politically suspect, regardless of the apparent U.S. determination to pursue it and the occasional vague hints from Washington that an extension of the defence to Europe might be on the cards.[2] More recently, there have been indications that such schemes for a European ballistic missile defence (EBMD) could become a more genuine prospect. Firstly, the new Bush Administration has suggested that it might be prepared to assist in such a scheme, although the exact nature of the offer has yet to become clear.[3] Second, Russia has followed up on proposals floated by President Putin last year, and handed a comparatively detailed plan for a co-operative NATO-Russian missile defence.[4]

Whilst the European NATO members have been careful not to publicly tread on Washington's toes regarding the new Administration's NMD plans, they have so far expressed little more than polite interest in U.S. and Russian proposals for a missile defence of their own.[5] It is therefore timely to examine the common factors involved in European assessments of missile defence, to obtain some picture of what might lead them to pursue a defence system of the continent.[6] I have decided to do this by applying the Clinton criteria for making his own decision on NMD:

1. Is there a threat from missiles?
2. Is defence technologically feasible?
3. Is defence cost-effective?
4. Are the implications of defence for strategic stability acceptable?

The Bush Administration appears to have answered all four in the affirmative, but European states have yet to make any public commitment to even examining them, although they are investigating TMD. Therefore, this paper will attempt to apply Clinton's criteria to a European perspective.

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[1] "Clinton NMD Deferral Decision Lessens Immediate Sense of Crisis", *Disarmament Diplomacy* 50, September 2000.
[2] "Europe Gropes for Response to U.S. Missile Plan", Reuters May 11, 2000. "Looking Out for Europe: Pentagon Envisions a Missile Shield for Wary Allies", *U.S. News and World Report*, June 12, 2000.
[3] "U.S. Tries Defusing Allies' Opposition to NMD", *New York Times*, February 4, 2001.
[4] Nikolai Sokov, "Russian Missile Defense for Europe: The February 20 Proposal Is More Serious Than It Seems", Centre for Nonproliferation Studies Report, http://cns.miis.edu/pubs/reports/sokrmd.htm.
[5] "Europe Warms to Missile Defense", *Washington Times* February 6, 2001; "Allies Mood on Star Wars Shifts", *New York Times* February 5, 2001;
[6] Ian R. Kenyon, Michael Rance, John Simpson and Mark Smith, *The Prospects for a European Ballistic Missile Defence*, Southampton Papers in International Policy No. 4, Mountbatten Centre for International Studies, University of Southampton, U.K, June 2001.

## EUROPEAN THREAT PERCEPTIONS AND STRATEGIC STABILITY

It is safe to say that, thus far, European concerns over missile proliferation on its south-eastern periphery have yet to produce any clear constituency in favour of homeland defence. In fact, it often appears that, rhetorically at least, European states have as much concern about the effects of missile proliferation on the United States as they do about the proliferation issue itself. It is not that the spread of long-range missile technology to the Middle East is not regarded as a problem, but that Europeans seem to have a qualitatively different approach to the issue, when compared with that of the United States.

The commonalities in European threat assessments appear to be a function of both history and commitments. In historical terms, their long track record of living with acute security vulnerabilities has produced a tendency to emphasise hostile intent, as well as capabilities, in assessing threats from potential adversaries.[7] This was highlighted in a report published by the British Parliamentary Foreign Affairs Committee, which probably spoke for most NATO members in stating that, "We are concerned that the United States over-emphasises the capability component of the threat equation, when it comes to assessing the threat it faces, and attaches too little importance to intention".[8] It went on to argue that any tangible benefits that might accrue from NMD would be outweighed by the negative impact upon strategic stability and arms control, and consequently urged the Government to "encourage the USA to seek other ways of reducing the threat it perceives".

In short, the first and fourth of Clintons criteria were answered firmly in the negative, but it is the first criterion — the existence of threat — which seems to be the most firmly-rooted contrast between European states and the United States. The strategic stability criterion is much more contingent than the first: it is quite feasible for a way to be found to ameliorate or negate the effects of NMD on strategic stability. In short, this criterion is about *how* to pursue NMD; the threat criterion is more concerned with whether to do it at all. The French Foreign Minister Hubert Vedrine remarked last year that he did not see the missile threat as "dire enough" to warrant deployment of a defence system, and extensive research by the Atlantic Council of the United States concluded that "the most pervasive differences in threat perception across the Atlantic derive from a different weighting of technological capabilities as opposed to political intentions".[9]

This greater reliance on political intent also generates a preference for deploying political and diplomatic, rather than military, responses when threats are seen to exist. European states have tended to view nuclear deterrence as inherently political, involving the manipulation of choices, and have placed greater faith in its continued efficacy, and that of international regimes, than the United States sometimes seems to do. This difference was highlighted in a 1999 North Atlantic Assembly report which argued that: "it is not clear why deterrence, which proved so effective at deterring the Soviet Union, is not applicable to lesser powers whose own capability to strike the United States is in doubt and who would not survive a retaliatory attack by the United States".[10] This is particularly marked in Britain and France, the European NWS, both of whom continue to place greater faith in the deterrent power of nuclear weapons against small "rogue states" than the United States appears to do.

The European approach is thus a cultural response, but it is also driven by commitments. To

[7] See, for example, Camille Grand, "Missile Defense: The View From the Other Side of the Atlantic", *Arms Control Today*, September 2000, p. 14.
[8] Eighth Report of Parliamentary Select Committee on Foreign Affairs, *Weapons of Mass Destruction*, July 25, 2000.
[9] Stephen Cambone, Ivo Daalder, Stephen J. Hadley, and Christopher J. Makins, *European Views of National Missile Defence*, ACUS Policy Paper, September 2000.
[10] North Atlantic Assembly Political Sub-Committee on Transatlantic Relations, *NMD and Implications for the Alliance*, November 2000, p. 10.

put it simply, the United States is a globally-engaged superpower, and therefore practises extended deterrence and power projection in a way that its European allies do not. The deterrent relationships of the European states are confined to general, central deterrence, and for this reason their military activities with "states of concern" in the Middle East are issue-driven rather than alliance-driven, and conducted through ad hoc "coalitions of the willing" such as the anti-Iraq coalition in 1990. Britain and France have used their substantial intervention capability to participate in joint operations outside Europe in the Middle East, but none of the other European NATO members have a well-developed culture of force projection as a core task for their military forces.

All NATO members are clearly concerned over the implications of missile proliferation along the south-eastern tier of the Alliance. In 1994 the WEU published a paper which argued that missile proliferation among "regional adversaries" in North Africa and the Middle East posed a genuine threat to Europe, and advocated a European missile defence as a way to combat this.[11] If the proliferation of long-range missiles follows the path forecast in the 1999 National Intellegence Estimate, demands for defences against short- and medium-range missiles seem likely to increase in the southern-tier NATO states. NATO has opened its Mediterranean Dialogue as an outreach to states of strategic interest who are ineligible for NATO membership, and Turkey and Israel, both active participants in this dialogue, have informally indicated that they might be interested in extending their existing military co-operation to include ballistic missile defences.

The southern tier states have, however, made little or no public comment on NMD, but some information can be obtained from their academic and NGO communities. Italy remains the only NATO member to have come under direct ballistic missile attack in the post-war era. The attack was very small (a couple of Libyan missiles unsuccessfully aimed at Lampedusa in 1986), but possessed all the motifs of contemporary NMD: a limited attack with unsophisticated missiles on U.S. facilities, from the original "rogue state". One Italian analyst has defined Libyan missile capabilities in terms of their "scare value" as political terror weapons, and concluded than in this sense they are "serious enough to cause unease among its neighbours (Italy included)".[12] Strikingly, however, there appears to be little Italian interest in missile defence beyond the MEADS system.

Turkish security policy, in contrast to that of some of its NATO partners, does perceive a more immediate missile threat, largely focused on WMD delivered by short-to-intermediate range missiles from its southern borders.[13] Thus it is possible that Turkey may be interested in some missile defence for its more vulnerable spots: the line between TMD and NMD in this part of the world is blurred and perhaps meaningless, and thus Turkey's prime interest would probably be in TMD technology with some area defence capability.[14]

However, Turkey's security policy contains a strong interest in the preservation of the integrity of non-proliferation regimes, the U.S.-Russian arms control relationship, and the cohesion of NATO. All three, in the Turkish perspective, may be jeopardised by over-hasty deployment of missile defences, particularly by the United States. In the first place, if NMD rides roughshod over Russian and Chinese strategic concerns, those states are seen

[11] Sumner Benson, "Middle Eastern Missiles, NATO Missile Defenses and Mediterranean Security", in *Mediterranean Quarterly* 8 (4) pp. 13-31.

[12] Stefano Silvestri, "Libya and Transatlantic Relations: An Italian View", in Richard N. Haass (ed.), *Transatlantic Relations: The United States, Europe, and the Problem Countries* (Washington DC: Brookings Institution, 1999), p. 170.

[13] Iran, Iraq and Syria can all reach parts of Turkish territory with SCUD-based missiles. The Iranian Shahab-3 INF missile, currently in development, would potentially be able reach Ankara. See *Proliferation: Threat and Response*, Department of Defense, January 2001.

[14] "Turkey Approaches USA for Patriot System", *Janes Defence Weekly*, June 9, 1999.

as likely to withdraw their support for global non-proliferation regimes, in particular the MTCR. The increased circulation of missile technology is likely to benefit the "states of concern" on Turkey's strategic periphery, and in this way the United States might unintentionally exacerbate Turkey's security problems in the act of alleviating its own.

Second, the deterioration of the U.S.-Russian arms control regime, especially the INF Treaty, would also be a real concern for Turkey. This would be particularly the case in the event that the INF ban was abrogated, coterminous with a Russian withdrawal from the missile non-proliferation regime. This may sound like worst-case forecasting, but should not necessarily be written off.[15] In 2000, some forbidding changes were made to Russian security policy: the new National Security Concept stated that "the West led by the United States, and multipolarity" were becoming "mutually exclusive tendencies". The concept clearly saw military power as the key to global hegemony by the former, giving a clear hint that it would be necessary to find ways to counter this. In short, the two key themes seemed to be a new emphasis on military power on world politics, and an emergent sense of conflict with the global presence of the United States. An overtly hawkish U.S. approach to NMD may thus induce a similarly hawkish Russian reaction, with serious consequences for Turkish security.

To summarise so far, European NATO members tend to answer criteria 1 and 4 in the negative. The near-term threat is not seen as sufficiently severe to require anything beyond a theatre missile defence capability. It is striking that differing circles of vulnerability — current and forecast — among European states do not seem to produce significantly different answers to the question of whether the threat justifies missile defence. Where the threat is taken seriously as a medium to long-term possibility, such as in France, Germany and the UK, it appears that the first preference would be for deterrence and arms control, rather than missile defences.

The fourth criterion, that of the effect on strategic stability, is usually answered in the negative, but current responses are almost exclusively focused on the strategic implications of U.S. NMD. A missile defence of Europe, outside of TMD and area defence of "missile-dangerous" areas, does not yet figure on the strategic horizon of NATO members — a revealing fact in itself. The effect of a homeland defence upon strategic stability and arms control is currently very difficult to predict, largely because the system technology would need to be transferred from the United States or Russia; it can be largely taken for granted that European states lack the financial and technical resources, not to mention the inclination, to embark upon a research and development programme of their own.

However, three factors which would impact upon assessments of strategic impact would be, firstly, the type of technology used (in particular its capabilities, real or potential, against strategic missiles), second, the source of technology transfer, and finally events in missile defence policy prior to deployment of a European BMD. In particular, the integrity of the Anti-Ballistic Missile Treaty (ABMT) and the nature of the U.S.-Russian relationship are likely to prove crucial. The European states are highly unlikely to make any serious attempt to force the United States not to deploy NMD, but they are similarly unlikely to follow the United States in an unacceptably hawkish policy towards Russia.

The first and fourth criteria are questions for which the European states would need to provide their own answers: whether they felt sufficiently threatened on their own terms of reference, and whether they were prepared to pay the likely strategic price for deployment. The second and third criteria — whether defence is technically

[15] A Moscow-based analyst recently stated that "a decision by the U.S. to unilaterally abrogate the ABM Treaty will trigger a Russian response to not only withdraw from START II but also the MTCR and the INF Treaty". See *Arms Trade News*, June 2000. It should be noted, however, that there is thus far no evidence that this is more than a rhetorical threat.

feasible, and whether it is cost-effective — would in large part be answered for them. The U.S. and Russian research and development programmes will ascertain the workability of the system, and their governments will decide the terms of transfer to other states. As things stand, these are imponderable factors, and consequently this paper will limit discussion to those factors that would be left to European states to decide.

## FEASIBILITY ISSUES IN EUROPEAN MISSILE DEFENCE

A European missile defence would need to be layered both horizontally and vertically. That is to say, it would be horizontally layered to cover a wide geographical area and several individual states, and vertically layered to intercept missiles with ranges from SCUD up to ICBM. This is in sharp contrast to the U.S. NMD system, which would be configured to protect a single state from a single type of missile (ICBM).

The system would thus need to be a multinational, but also genuinely multilateral system. It would in effect be a super-system: "a group of autonomous systems reliant upon the achievement of interoperability for their successful integration".[16] Interoperability would be the real challenge here: in fact NATO has already conducted some preliminary exercises on the requirements of a cooperative defence system for air and tactical missile defence.[17] These exercises, named Optic Windmill and Central Enterprise, have simulated SS-21, Scud B, Scud C and Al Hussein TBM attacks to assess command and control requirements. The problems of a multinational system would be formidable, and thus the real technological challenge for European homeland BMD is not intercepting the missile, but integrating the system architecture on multilateral lines.

[16] "Interoperability and Cooperative Requirements on Anti-Missile Defence", WEU Symposium on Anti-Missile Defence for Europe (II), April 21, 1993.
[17] "Optic Windmill Tests U.S., Dutch, German NMD Skills", *Janes Defence Weekly*, March 12, 1997, p. 19.

## TECHNOLOGY TRANSFER ISSUES IN EUROPEAN MISSILE DEFENCE

To restate an earlier point, I am assuming that European missile defence technology would need to be transferred from either the United States or Russia. To date, the recent Russian proposal, despite its vagueness, is the most detailed scheme on the table, although it was received with indifference in the Alliance.[18] Despite the cool reception, the plan is in fact close to some of the current technical and strategic priorities of European NATO members: a limited system based around theatre threats rather than homeland defence, with little or no capability (current or potential) against strategic-range missiles.

Whilst the Russian proposal has, on the face of it, some clear strategic appeal to European NATO members, it contains little or nothing to indicate costing. I will therefore leave this issue to one side for the purposes of this paper. In which case, we can turn to the other central issue involved in technology transfer for European ballistic missile defence: that of compatibility of transfer with the ABMT.

Currently, Article 9 expressly states that "each party undertakes not to transfer to other states, and not to deploy outside its own territory, ABM systems or their components". The operative part of Article 9 is "ABM systems", with ABM being defined as strategic missile defence. It is difficult to foresee how the ABMT might eventually be amended or re-interpreted by the United States and Russia, but the 1997 Demarcation Agreement specified that a TMD with interceptor speed of up to 3km/sec (e.g. THAAD) was permissible, whilst TMD with interceptor speeds over that limit (e.g. NTW) was also permissible provided it did not "threaten" the strategic deterrents of Russia or the United States. This was clearly intended to allow the

[18] "Russia's Skeletal Missile Plan", *Washington Post*, April 3, 2001; "West Sees Putin's Shield Plan as Dud", *International Herald Tribune*, April 4, 2001.

United States to proceed with the development of upper-tier systems, despite THAADs potential capability (albeit limited) against strategic missiles.[19]

There are broad and narrow interpretations of how this impacts upon whether the United States can transfer missile defence technology to the European NATO states. A broad interpretation would state that anything within the technical limits of the Demarcation Agreement is permitted, including THAAD and similar TMD systems. A narrow interpretation would state that any system having national defence purposes is a strategic system and therefore non-compliant with the ABMT. Thus, a point defence of some cities, forces, and some border areas might be permissible as a nucleus of EBMD. A more comprehensive system, but one still based on upper-tier technology such as THAAD and NTW, would be on the boundary between compliance and non-compliance, and would probably be seen as the thin end of a long wedge by Russia and China. A comprehensive EBMD by contrast, would contradict the letter and the spirit of the ABMT.

## CONCLUDING REMARKS

To summarise, cultural, strategic and technological influences on European threat assessments generate qualitatively different responses to Clinton's criteria. But this brief examination has given some indications of those factors that might lead European NATO members to favour a territorial missile defence.

To an extent, they are moving in this direction already. There is currently a clear interest in developing a TMD system to intercept missiles with a sub-intermediate range, and it may be that, in accepting the existence of a threat to their forces, European states are at least part of the way to accepting the possibility of longer-range threats.

Current evidence does indicate that where such threats exist the general European preference is for deterrence and arms control to deal with them. This suggests that an emerging missile threat might not, automatically and by itself, lead European states to favour a ballistic missile defence system of their own. Rather, there would need to be either a decline in faith in deterrence and/or arms control, or a reconfiguration of them to allow for a new deterrence-defence strategic posture.

Restructuring of the strategic posture to incorporate defence into the deterrence-arms control equation would hinge on developments in U.S. and Russian strategic posture, and particularly on developments between the United States and Russia. It is thus the shape of policy here, rather than in the Middle East, that is likely to exert the most significant effect on what European states are willing and able to do on European ballistic missile defence.

[19] Lisbeth Gronlund, George Lewis, Theodore Postol and David Wright, "Highly Capable Theater Ballistic Missile Defenses and the ABMT", *Arms Control Today* 24 (3) April 1994. THAAD can intercept ICBMs at 40-80km altitude, when all countermeasures will have burned away in re-entry, but would need a much faster flying speed. *National Missile Defense: Policy Issues and Technological Capabilities*, Institute for Foreign Policy Analysis Report, July 2000, p. 3:6.

# The Middle East in Strategic Transition: from Offense to Defense Dominance?

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## INTRODUCTION

While the rest of the world debates the possibility of missile defense, the Middle East already is in the midst of a transition from security based on conventional capabilities and WMD deterrents. For over a decade the region has witnessed the steady accumulation of consistently more capable missile defenses. This process took an important step forward in March of last year when the Israeli Arrow system was declared operational. Other systems being created in the United States and Russia seem likely to enter the Middle East balance within the next few years as well.

As defenses become more capable, the strategic situation becomes progressively more complicated and obscure. The transition from an increasingly stable conventional balance and an increasingly unstable non-conventional balance will be neither straightforward nor easily predictable. The progressive introduction of missile defenses is creating a third axis in the region's strategic equation. Whether the result will be greater over all stability between the countries of the Middle East is impossible to determine. What is certain is that the spread of missile defenses is an ineluctable part of the process of military modernization and adaptation.

This essay examines the rise of Middle Eastern missile defenses in four parts. First, it examines how defenses are entering the region. While this process is often presented as something novel and dramatic, this section stresses the theme that this a gradual process, one that has been going on for some time and will continue for decades to come. It is a process that arises partially from inevitable improvements in military technology and partially as matter a strategic choice.

The second part of the essay examines attitudes within the region toward the spread of ballistic missiles and the rise of missile defenses, attempting to illuminate regional — especially Arab and Iranian — expectations.

The third section examines the strategic implications of these capabilities from the perspective of strategic theory. The implications, it concludes, will vary from country to country, if not from situation to situation The most important problem to be managed is the unpredictable combination of new missile defense capabilities and the acquisition of nuclear armed ballistic missiles by Iran, Iraq and possibly other regional actors. These problems, it is argued, may be manageable, especially if more is done to develop strategic reassurance in the region. The greatest dangers of missile defense may come from other scenarios. Examined in part four, these include pressures culminating in nuclear-armed defensive interceptors and boost-phase intercept.

## THREE GENERATIONS OF MISSILE DEFENSE IN THE MIDDLE EAST

It would be mistaken to suggest that the Middle East is unique in its proliferation of defensive systems. It is the United States that catalysed renewed strategic debate through its

decision in 1999 to deploy a system of National Missile Defense. Meanwhile America is beginning deployment of a regional system (PATRIOT PAC-3) and preparing to complete development of three more (the collaborative MEADS, the U.S. Army's THAAD and the U.S. Navy's Theater Wide). Russia inherited the world's only operational system of national missile defenses and deploys a variety of dual-use tactical systems, including the ageing S-200 (SA-5) and the more advanced S-300 (SA-10), as well as the dedicated S-300V (SA-12).

What distinguishes the Middle East is the intensity of defensive activity, as countries throughout the region are acquiring missile defenses of their own.[1] Already, three generations of defensive technology have been procured. This makes the Middle East not only one of the world's most proliferated regions in terms of spreading offensive capability, but also the most heavily defended.

The first generation of defensive weapons in the Middle East was the *S-200*, a Soviet system that began entering Arab arsenals in the mid-1980s. Regarded as something of a dinosaur in the West, the SA-5, as it is better known, was conceived in the late-1950s to intercept high-altitude supersonic bombers like the unsuccessful American B-70.[2] As the United States and NATO shifted to aerial tactics stressing low-altitude attack, the SA-5 was rendered largely irrelevant. Ironically, though, it found a niche against tactical ballistic missiles. Although its lack of mobility leaves it vulnerable to preemptive attack, the weapon's exceptional size (10.6 meters) and long range (150 km) create its own appeal.

Although little analysed, the export of this massive interceptor and its accompanying fire control systems to the Middle East were anything but routine. This can be seen in the fact that transfers did not begin until some twenty years after its initial deployment by the Soviet Union. It was the unique circumstances of the mid-1980s that provoked sales. Moscow's desperation for hard currency coincided with the strategic weakness of Arab states, something made graphic in the June 1982 Beka'a Valley war. Middle Eastern recipients include Iran, Libya and Syria. In Libyan hands, the system proved useless against American countermeasures used in the April 1986 raid. But with fuzing and fire control upgrades (culminating in the S-200D version, with twice the original intercept range, first marketed in 1992) it retains greater potential against cruise and ballistic missiles attacking at speeds up to roughly Mach 5.

The second generation of Middle East missile defenses began with American transfer to Israel of the PATRIOT system in 1990. Although it was conceived in the 1960s and became operational in the late 1970s as an anti-aircraft weapon, the PATRIOT's potential against tactical ballistic missiles was apparent from the start. Formal upgrades began in 1984 and flight tests in 1987. The changes initially stressed relatively minor alterations to fire control software (PAC-1) and fuzing (PAC-2). During the Gulf War some 160 improved PATRIOTs were fired against Iraqi al-Husseins. The initial euphoria over their apparent success subsequently evaporated as careful assessments revealed ambiguous intercepts, at best. Instead, the PATRIOT became a poignant illustration of the inherent problems of missile defense.

Although costly to buy and maintain, the PATRIOT is widely seen as the best and most tactically adaptable air defense weapon available today. Washington's initial reluctance to share the

[1] Unless otherwise indicated, this section is based on Duncan Lennox, ed., *Jane's Strategic Weapons Systems, Issue 33* (Coulsdon, Surrey: Jane's Publishing, 2000); and *The Military Balance, 2000-2001* (London: International Institute for Strategic Studies, October 2000).

[2] The SA-5 is described at length in Steve Zaloga, *Soviet Air Defence Missiles: Design, Development, and Tactics* (Coulsdon, Surrey: Jane's Information Group, 1989)

PATRIOT crumbled in the 1990s as recipients came to view it as a symbol of American political support. It has been transferred widely, with Middle Eastern recipients including Egypt, Israel and Saudi Arabia. Additional batteries are operated by American units in Kuwait. The United Arab Emirates are negotiating a purchase of their own.

Russia's *S-300* (SA-10) is often compared to the PATRIOT. The two are near-contemporaries, differing mostly in the way they have been optimized; the S-300 interceptor is almost twice as large, making it less mobile but improving its ability against high-altitude targets. Size alone gives the system significant advantages for long-term development as well. Designers at Almaz NPO in Moscow and Fakel in Khimy have developed these aspects with the S-300D and -E versions, designed with ballistic missile defense in mind. Representing the remaining strengths of the once-mighty Russian defense industries, the S-300 is one of the country's most popular military exports. Recipients of earlier versions in the Middle East include Syria and Greece (which stores on Crete several batteries purchased by Cyprus). Iran is negotiating to purchase more advanced versions in the near future. Iraq almost certainly will try to do the same as soon as United Nations military sanctions diminish.

The S-300 should not be confused with its stable-mate, the S-300V, a totally different system more easily distinguished as the *SA-12*. Apparently designed in the late-1970s as a replacement for the obsolescent SA-5, the SA-12 may have been developed with the threat of American Pershing-2 missiles in mind. One version, known in the West as the *SA-12B Giant*, appears to be the only dedicated interceptor of its generation against short and intermediate range ballistic missiles. Since the late 1980s it has been extensively tested, reportedly against various targets including SCUDs and banned INF missiles. Despite its size (8.5 meters) and limited mobility, there has been some interest by potential purchasers. But Moscow seems to discourage aggressive sales promotion. Considering the continuous pressure on Russia to release new military products in order to maintain foreign sales, though, this policy is unlikely to survive for long. The SA-12A almost certainly will find its way into Middle Eastern arsenals within the next few years.

A development that undoubtedly will lead to increased pressure to release the SA-12 for export is the appearance of a third generation of tactical missile defenses in the Middle East. This is happening already.

The first operational example of a third generation tactical missile defense is the Israeli *Arrow*. Conceived as a reaction to the ballistic missile revelations in 1987-88, the Arrow was designed and developed by Israeli Aircraft Industries and Lockheed-Martin, with 35 to 40% of the funding from the United States. With a maximum velocity of just under 3 km/sec, the Arrow is potentially effective against ballistic missiles with a maximum range up to roughly 1200 to 1500 km, like Iran's Shahab-III.

Israeli spokesmen tend to stress the system's domestically developed *Green Pine* fire control radar and *Citron Tree* battle management system as the greatest strengths of the system. The Arrow interceptor itself is relatively simple compared to others of its generation. Reliance on an explosive warhead (instead of a kinetic energy kill vehicle) greatly eased development, but ultimately limits the weapon's potential. It also is a large system, which limits mobility. Although government officials and Israeli Aircraft Industries spokesmen maintain that mobility is not important for a small country, they are sensitive to the problem; the latest version (the Arrow-2) weighs one-third less than its predecessor.

Since the system was declared operational in March 2000, Israel has been constructing three batteries, enough to cover the heavily inhabited

parts of the country.[3] If each battery operates 50 interceptors, the initial requirement is likely to be for 300 to 450 interceptors altogether. Like their Russian counterparts, Israeli defense industries are under pressure to export. Turkey — which already has a burgeoning defense relationship with Israel — has been examining the Arrow since 1996-97. Exports of the Arrow would present serious questions of compliance with the MTCR.[4]

Already the region has seen diplomatic and military planning for introduction of American third generation systems. The closest to operational capability is the PATRIOT PAC-3, based on the completely new ERINT hit-to-kill interceptor, and scheduled for deployment next year. The same interceptor is compatible with the American-German-Italian MEADS, a multi-purpose air defense system promising improved mobility. The more-capable THAAD probably will not be operational until 2007 and the in-service date for the highly versatile Navy Theater Wide is even less certain.

Of greatest relevance to the Middle East, all four theatre missile defense systems are designed to be readily mobile; the land-based systems are expected to be fully operational within two days of being dispatched. Equally important, they are intended to be effective against intermediate range ballistic missiles. Thus they do not have to be based in the region all the time, but there is the expectation that they will be rushed there in times of tension. None of these weapons are likely to be transferred directly to Middle East governments for many years to come. But trial deployments of U.S. Army PATRIOT PAC-3 and THAAD are likely to happen as soon as the hardware and diplomacy permit.

Finally, fourth generation tactical missile defenses are under development in Israel and the United States. These systems, which utilize innovative arrangements or different physical principles involve equally novel political considerations, which are examined below.

## DELICATE POSITIONS, LIMITED DEBATE

Missile defense has been part of the Middle East strategic balance for more than a decade, but this is not the impression one always gets from public discussion of the issue. Like most of the world, in the Middle East regional disputes over missile defense are subordinated to larger questions of American planning for National Missile Defense. This is not without reason; the Middle East continues to be — at least partially — a consumer of security processes that are created elsewhere. Not only most of its hardware, but much of its strategic thinking and tactical doctrine, is imported. In a more profound way, moreover, Middle Eastern security processes are influenced by greater global trends regarding the availability of technology, the nature of armed conflict, state sovereignty and individual human rights.

But to externalize the entire missile defense debate would be to lose contact with reality, which is driven largely — although certainly not exclusively — by local events and indigenous developments. Rather than trying to reconstruct what an idealized regional dialogue on missile defense and strategic stability ought to look like, it may be more illuminating to listen to what regional voices actually are saying. Although Israel has a serious and insightful strategic debate, a debate that includes missile defense issues, this section concentrates instead on the less known, but

[3] PATRIOT transfers are listed in Shlomo Brom and Yaftah Shapir, *The Middle East Military Balance, 1999-2000* (Cambridge, Massachusetts: MIT Press, 2000). Barbara Opall-Rome, "Israeli Arrow program exceeds cost estimates," *Defense News*, March 27, 2000; Steve Rodan, "Israel declares that Arrow 2 is operational," *Jane's Defence Weekly*, March 22, 2000, p. 2.

[4] Barbara Opall-Rome, "Israelis reject export concerns with Arrow missile system," *Defense News*, March 19, 2001.

potentially more important question of Arab and Iranian attitudes.

While outsiders undoubtedly would like to listen to local voices there is a distinct shortage of voices to be heard. This should come as no surprise. Throughout the Arab world, security remains a highly sensitive subject, rarely discussed except in private. Public statements and debates tend to be almost exclusively about Israel and the Palestinian struggle. These are important issues, to be sure, but they also are politically safe issues, portraying the Arab world and Islamic civilization exclusively as the victim, operating within boundaries of acceptable discourse that are well known to all. Other security policy and military issues are risky; the answers are not obvious and the outcome of any debate is obscure. There are exceptions, of which criticism of Israeli nuclear capabilities is most important. But even this is highly ritualized. The strategic implications of Israeli nuclear weapons for the Arab world and Iran, for example, almost always are left unsaid.

In lieu of official statements or parliamentary debate on the regional impact of missile proliferation and growing defensive capabilities, there are two obvious places to look for positions: the United Nations and the media. Both have sharp limits — the result of political pressure, editorial priorities and analytic discretion — but they are not without insights.

In the United Nations General Assembly, Middle Eastern governments are compelled to vote on resolutions that reveal to some degree their attitudes on these issues. The most relevant resolutions of recent years were passed in 1999 and 2000 when the General Assembly approved Russian-sponsored resolutions on the Anti-Ballistic Missile Treaty (ABMT) (A/54/54-A and A/55/33-B) and a novel Iranian initiative to authorize a study of government experts on "missiles" (A/54/54-F and A/55/33-A).

Debate on the former has been more divisive.[5] The resolution aims to help prevent American deployment of National Missile Defenses, maintaining pressure on the United States to adhere to the ABMT in its current form. While the ABMT is not of formal relevance to anyone besides the two parties, its has become a symbol of attitudes toward the American shift away from reliance on nuclear deterrence alone and toward missile defense in general. Voting reflects well-known patterns, with strongest support from countries committed to the strategic *status quo* like China, who co-sponsored it in 2000. For the past two years the greatest controversy has surrounds France. Instead of abstaining like virtually all other NATO-PfP countries, France supports the resolution. Only Israel consistently votes with the United States against the resolution, unambiguously in favor of strategic change.

For the outside observer, the votes of Middle East states sometimes correspond with national circumstances. Other times they are more enigmatic. Instead of automatically joining non-aligned support for a resolution critical of the United States, governments are divided. But the divisions do not reflect anything so simple as relations with Washington, their investment in missile forces of their own or the threats they face from others.

Over the past two years, a diverse group gives full support to the resolution in favor of strengthening the ABMT. Their ranks in the Middle East include Algeria, Egypt, Iran, Iraq, Lebanon, Libya and Syria. Last year they were joined by Oman and Yemen as well. These countries appear to agree that the introduction of more sophisticated missile defenses will strengthen

[5] "Preserving the ABM Treaty," *UN Press Release* GA/DIS/3171, (October 4, 2000); "First Committee approves texts calling for strengthened ABM Treaty," *UN Press Release* GA/DIS/3193 (November 1, 2000); and "General Assembly adopts 49 disarmament, international security texts," *UN Press Release* GA/9829.

the United States unacceptably and harm their own regional priorities. A few Middle East countries, however, prefer to abstain, including Bahrain, Morocco and Turkey. No less fascinating are those who usually manage to be absent when it comes time to vote, including Jordan, Kuwait, Qatar, Saudi Arabia, Tunisia and the United Arab Emirates.

The large number of Arab absences and the tendency for some to abstain when present illustrate the internal tensions the issue creates for many Arab governments. This is clearest among the Gulf Arabs. Most of them actively participate in American planning to introduce third generation missile defenses but simultaneously strive to minimize the visibility of their cooperation. As they have for most of the past thirty years, they are struggling to find ways to facilitate and strengthen American security assurances without appearing to sacrifice pan-Islamic interests. Voting in favor of the missile study is much more uniform, with almost complete support from the Arab world, for whom the resolution offers a safe way of demonstrating solidarity with Iran. Abstentions come mostly from the NATO-PfP community.

Further evidence comes in the form of Arab hesitance to publicly address the issue. In 1999 several delegations were animated by French amendments which linked support for the ABMT to attempts to restrain missile proliferation. In blunt debate, several rose to oppose the amendment, including Iran, Iraq, Jordan and Syria. Of these, though, only Iraq spoke of the connection between preserving the ABMT and strengthening their own missile forces.[6] In 2000, though, Middle Eastern contributions to the debate were more restrained, despite mounting global concern with issue. Among Islamic states, only Pakistani representatives regularly spoke out on Anti-Ballistic Missiles (ABM) issues, whether in high-level General Debate or mid-level debates in First Committee. This may reflect its own determination to perfect a ballistic missile-based nuclear deterrent, as well as its strategic cooperation with China. In 2000 the spokesman for the Arab League was Syria, whose delegate justified support for the resolution not in terms of Middle Eastern priorities, but as "an important part of bilateral and multilateral disarmament agreements." Syrian insistence was influencial, contributing to the First Committee's decision to drop the two paragraphs linking ABMT compliance and restraint of ballistic missile proliferation.[7]

A careful study of the Middle Eastern press is only somewhat more illuminating. Outside of Israel, there is a strong tendency to overlook strategic issues. Security discussions routinely adhere to the strongly felt but ritualized agenda concentrating on Israeli repression of Palestine and other actors and of dangerous provocation. Israeli acquisition of advanced weapons is portrayed as yet another example of potentially deadly arrogance. Much more can be learned about regional missile developments from Western sources like *Defense News* and *Jane's Defence Weekly*.[8]

Arab and Iranian sources are valuable mostly for a sense of priorities and the limits of allowable discourse. In the Saudi-supported, London-based *Arab News*, for example, missile defense is exclusively acknowledged as an issue under consideration; only once has it printed a feature

[6] "Draft resolution calling for compliance with 1972 ABM Treaty," *UN Press Release* GA/DIS/3161, (November 5, 1999).

[7] "First Committee approves texts calling for strengthened ABM Treaty," *UN Press Release* GA/DIS/3193 (November 1, 2000).

[8] Another limitation is the author of this paper, a non-expert on the Middle East who speaks none of its languages and has relied instead on the region's English-language press and FBIS translations.

article on the subject.[9] More space continues to be devoted to issues surrounding Israel's nuclear capability, such as Egypt's effort during the 2000 NPT Review to press for Israeli nuclear disarmament. Israel's Arrow system is not ignored, but only acknowledged.[10]

While one might expect caution on the part of a semi-official Saudi outlet, Iranian journalists behave much the same. The unifying theme in the *Tehran Times* is to demonstrate Iran's peaceful intentions, reassuring other Muslim countries that Iran's ballistic missiles are exclusively for use against Israel and to influence the United States.[11] Exactly what impact on Washington is intended is left unsaid. The Shahab-III is a source of palpable pride, but it is not nearly as politically prominent as ballistic missiles are in the public discourse of countries like India and Pakistan.[12] Israel's Arrow is mentioned exclusively in passing references. Its existence is acknowledged, but never evaluated. Iran clearly is unhappy with American plans for extending its missile defense capabilities in the region. But this criticism is made indirectly, usually by reprinting critical reports from the United States itself or from other countries.[13] Only when the issue is American support for Israeli military activity or actions directly aimed against Iran does the criticism become direct.[14]

Not surprisingly the least inhibited discussion of missile issues in the Arab world comes from Egypt. Not only is the political climate relatively open, but its healthy relationship with the United States gives it a much wider range of strategic options. Being at peace with Israel, moreover, means it does not feel compelled to react reflexively. Rather it can consider Israeli plans and expectations. The English edition of *Al-Ahram* is the home to the most open discussion of strategic issues among any source in the Arab World or Iran encountered in preparing this essay.

Israeli strategic forces are perceived as deterrents, but with the fear that they will be used as a shield permitting Israel to unleash a first strike on the order of June 1967 or the June 1981 Osirak raid.[15] Egyptian analysts appreciate the significance of Iranian ballistic missile capabilities for Israeli security, which will inhibit Israeli freedom of action. Indeed, Iranian forces often appear to be accepted as a virtual proxy for Egyptian intentions. Unlike Iranian spokesmen, moreover, they freely state that the Shahab-IV will introduce a new level of military capability.[16] Looking beyond the Israeli threat, however, remains difficult for Egyptian commentators, who still avoid assessment of Iraq or Libya.

The limits of Egyptian analysis become most evident as one looks closer to home. There still is no open discussion of Egyptian strategic capabilities, of Egyptian ballistic missiles, long-

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[9] "U.S. wants an Arab Gulf anti-missile defense system against Iraq and Iran," *Arab News*, 14 October 1998. A shorter reference appears in "Cohen, Qatar foreign minister discuss relations and regional issues," *ibid.*, April 7, 2000.

[10] "Egypt criticizes Israel's policy of nuclear ambiguity," *Arab News*, 26 April 2000, "Damascus: Israeli nuclear capability threats the Arab states," *ibid.*, July 15, 2000.

[11] For example, "High-ranking officials pay tribute to Imam Khomeini," *Tehran Times*, February 2, 1999, and "Shahab-III won't be used against Muslim states," *ibid.*, February 8, 1999.

[12] "Iran successfully tests first solid-liquid fuel missile," *Tehran Times*, September 23, 2000, "Iran not to ballyhoo," *ibid.*, March 15, 2001.

[13] "U.S. addicted to creating perceived enemies," *Tehran Times*, August 2, 2000; "Britain warns over U.S. missile defense system," *ibid.*, August 3, 2000; "China PLA think-tank slams U.S. missile defense," *ibid.*, August 17, 2000.

[14] "Open hypocrisy, American style," *Tehran Times*, February 9, 1998.

[15] On Israeli capabilities, see Galal Nassar, "The road to war," *Al-Ahram Weekly*, no. 391, August 20, 1998; Abdel-Azim Hammad, "A call to arms," *ibid.*, no. 400, October 20, 1998; and Amira Ibrahim, "Keeping the military balance skewed," *ibid*., no. 411, August 5, 1999.

[16] An insightful discussion of Iranian capabilities is Maye Ostowani, "Israel's nemesis?" *Al-Ahram Weekly*, no. 400, October 22, 1998.

range interdiction, or WMD potential. The closest are occasional calls, invariably by retired military, to "do something." Others note that even conventionally armed ballistic missiles will create an acceptable balance with Israel.[17] Egypt's own American connection is another source of anxiety and distrust. While American planning for National Missile Defense is treated sceptically (almost dismissively) and Arrow is taken very seriously, American planning for regional missile defense in the Gulf tends to be overlooked completely.

In private, foreign leaders and defense officials may receive clearer messages from their Arab and Iranian counterparts. Yet the basic problem remains: in lieu of incisive convictions about the nature of the regional strategic balance, the implications of missile proliferation and the growing capability of defensive technologies, foreign analysts have no alternative to reliance on their own assessments.

## IMPLICATIONS FOR DETERRENCE AND STABILITY

As missile defenses become fully integrated into Middle Eastern security, with systems of varying capability in the hands of virtually all major regional actors, we are entering a new strategic era. The original reliance on conventional armed forces gradually yielded to a mixed environment with the addition of Israeli nuclear forces and Arab and Iranian CBW on ballistic missiles and other delivery systems. While it had been widely expected that sooner or later these capabilities would be balanced in a third era by Arab or Iranian nuclear weapons, a different transition is occurring more quickly through the introduction of more sophisticated missile defenses. The change seems ineluctable, even if its consequences remain obscure.

Even so, it is still premature in some ways to offer a net assessment. The process of transformation is not over. Rather, we are witnessing mere leap-frogging, temporarily superseding several long-anticipated, still seemingly inevitable and equally important developments. We will be able to fully appreciate the characteristics of the new strategic situation in the Middle East only after missile defense is fully in place, and these other widely anticipated nuclear transitions come to a halt or to fruition. Above all, we are still waiting to fully appreciate the meaning of Arab or Iranian acquisition of nuclear weapons and long-range ballistic missile capabilities.

In the short-run — the next ten to fifteen years — while the threat is limited to conventional explosive- and CBW-armed ballistic missiles, the effect of missile defenses may be most pronounced. Once fairly reliable defensive systems are in the hands of Israel, United States forces in the region and their allies, they will dramatically reduce the credibility of threats to attack. Only enormous volleys can be certain to overwhelm defensive screens, while the prospect of retaliation remains clear. Even the apparent dangers of small numbers of nuclear-armed missiles will seem more manageable.

But missile defense alone will not revolutionize the region. Above all, it is only an adjunct to deterrence, partial insurance against deterrence failure. There is doubt about both, but defense still must climb very high before it matches the promise of even highly weakened deterrent threats. Indeed, the outlook for deterrence may even be improving. There is a growing consensus that deterrence still has great potential in the Middle East. It offers the most convincing explanation for Saddam's failure to use

[17] American plans for National Missile Defense are criticised directly in major articles by Lamis Andoni, "Pax Americana goes nukes," *Al-Ahram Weekly*, no. 481, May 11, 2000; and Mohamed Sid-Ahmed, "The new arms race," *ibid*., no. 497, August 31, 2000.

chemically armed ballistic missiles in 1991.[18] There also is a growing belief that a nuclear-armed Iran will use its new capabilities with restraint, emphasizing its own territorial security rather than revisionist goals.[19] The stronger deterrence can be made, the less the burden on defenses. Other analysts, though, remain unconvinced that countries like Iran can be deterred from expansionist goals, leading them to advocate reliance on defenses and even political subversion.[20]

Rather than replacing deterrence, missile defense will tend to strengthen it. Missile defense, after all, is no panacea. As even a vigorous advocate of missile defense notes, "Active missile defences cannot banish all menace of NBC weapons. But such defenses can carry a plausible promise to defeat a threat that typically would number only in the tens of vehicles at most."[21] The most immediate effect will be to encourage exactly the growth of missile forces long anticipated by critics of missile defense, as adversaries strive to overcome defenses through saturation.[22]

This argument may seem exaggerated in the Middle East, where many countries already appear to be pouring resources into their missile programs as liberally as they can. But if they can free themselves from reliance on foreign technology, faster deployments may indeed be possible. The question of how quickly Middle East states can accelerate their ballistic missile acquisition is an urgent one for further research. So is the question of whether or not they are willing to rely on alternative means of delivery, especially cruise missiles.

In the final analysis it may be warheads, not delivery vehicles, which are the biggest barrier to rapid expansion of their forces. Nuclear forces in particular cannot be expanded without considerable planning and effort. Whether through expanded nuclear programs or deliberate subterfuge--such as mixing conventional, CBW and nuclear warheads among their missile forces--the pressure on defenses will tend to grow with time.

While defenses may strengthen deterrence, they do so at the cost of encouraging nuclear proliferation as well as further missile proliferation This greatly aggravates the dangers should deterrence collapse. Because they are most effective against conventional or CBW armed ballistic missiles, a few of which can penetrate defenses without guaranteeing catastrophic results, defenses enhance the importance of nuclear warheads. Reducing the possibility of conventional deterrence further increases the salience of nuclear forces.

This should serve as a warning to advocates who hope that missile defenses will reduce the dangers of proliferation, convincing would-be

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[18] Gerald M. Steinberg, "Parameters of stable deterrence in a proliferated Middle East: lessons from the 1991 Gulf War," *The Nonproliferation Review*, Fall-Winter 2000, pp. 43-60.

[19] Shahram Chubin, "Iran's Strategic Predicament" in *Middle East Journal*, Winter 2000 (Vol. 54 no. 1) 10-24; and Michael Eisenstadt, "Living with a nuclear Iran?" *Survival*, v. 41, n. 3 (Autumn 1999) pp. 124-148.

[20] Stephen J. Cimbala, "Conclusion," in Cimbala ed., *Deterrence and Nuclear Proliferation in the Twenty-First Century* (Westport, Connecticut: Praeger, 2001) p. 168; Kenneth R. Timmerman, "Fighting proliferation through democracy: a competitive strategies approach toward Iran," in Henry Sokolsky, ed., *Prevailing in a Well-Armed World: Devising Competitive Strategies Against Weapons Proliferation* (Carlisle, Pennsylvania: Strategic Studies Institute, U.S. Army War College, 2000), pp. 111-131.

[21] Colin Gray, "To confuse ourselves: nuclear fallacies," in John Baylis and Robert O'Neill, eds., *Alternative Nuclear Futures: The Role of Nuclear Weapons in the Post-Cold War World* (Oxford: Oxford University Press, 2000) pp. 23-24.

[22] The classic statement is Richard L. Garwin and Hans A. Bethe, "Anti-ballistic missile systems," *Scientific American*, March 1968.

nuclear proliferators that there just is no point. To the contrary, it appears that nuclear-armed missiles are the most effective solution to overcoming defenses. For countries determined to redress the geostrategic *status quo*, moreover, the political advantages of going nuclear are simply too tempting. But above all, for countries like Iraq and possibly Iran, for whom nuclear capability appears to be part of their identity as great powers, no external development may be enough to dissuade them.[23]

In the long run, beyond the next ten to fifteen years, stability will increasingly tend to depend on perceptions of the offensive-defensive balance between nuclear-armed forces.[24] This raises frightening possibilities and fundamental questions. As nuclear missile capabilities become more evenly distributed through the region, will confidence in deterrence rise as well? Will the transition be sufficiently slow to allow all sides to familiarize themselves with the implications of the process? Will other issues — like Palestinian aspirations, territorial conflicts and disputes over water resources — be successfully de-linked from the nuclear relationship?

If the right answers can be supplied, the dangers of strategic transformation probably can be managed. If deterrence appears to be sufficient to deal with the threat of long-range weapons; if the process can be slowed down to minimize the risk of uncontrollable crises; if the temptation to link other issues to nuclear threats can be avoided; and if defenses remain an adjunct carrying the burden only of an increasingly unlikely risk of deterrence failure, a stable order dominated by offensive capabilities can evolve.

## THE BEST DEFENSES, THE GREATEST DANGER

Other technological developments could seriously complicate this scenario of nuclear stability. An important source of instability would be the enormous pressure on Israel after Iran, Iraq, or another Middle East country acquired nuclear weapons, compelling Israel to react not just strategically or politically, but technologically or even militarily.

One precedent already is well-known: in 1981 Israel felt compelled to launch a preemptive attack against the emerging nuclear capabilities of Iraq as they reached a crucial stage. This was partially successful in the short-run, buying time. In the long run, though, it did nothing to dissuade Saddam, only leading Iraq and perhaps Iran as well to carefully conceal their nuclear weapons endeavors. If preemption becomes impossible, Israel will face unprecedented risks. Deterrence may be sufficient but it is unlikely to provide enough assurance to a sceptical public and critical political voices. Unable to preempt, lacking confidence in deterrence, Israel could feel pressed to put even more emphasis on defense in ways much more likely to undermine deterrence.

The easiest way to radically improve defenses is arming them not with high explosives or kinetic energy kill-vehicles, but with nuclear warheads. Such a step would revolutionize the effectiveness of defenses, enormously improving the likelihood of successful intercepts. But there is a reason why the option of nuclear-armed interceptors has been out of favor for some twenty years. Aside from all the problems associated with high-altitude nuclear detonations, the political consequences are grave indeed.

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[23] The role of nuclear capability in Middle Eastern national identity is made by Efraim Karsh, "Nuclear weapons and the post-Cold War Middle East: business as usual", in Baylis and ONeill, *"Alternative Nuclear Futures"*, pp. 87-88. The same point is made more generally in Haider K. Nizamani, *"The Roots of Rhetoric: Politics of Nuclear Weapons in India and Pakistan"* (Westport, Connecticut: Praeger, 2000).

[24] James Scouras, "Post -Cold War nuclear scenarios: implications for a new strategic calculus," in Cimbala, *Deterrence and Nuclear Proliferation in the Twenty-First Century*, pp. 51-52.

Nuclear arming for defenses probably would require Israel to re-build its nuclear infrastructure, which reportedly has been allowed to deteriorate in recent years. It would create unprecedented pressure for nuclear testing, especially to perfect the enhanced radiation weapons most desirable for BMD applications. It also raises very unsettling strategic possibilities. The prospect of a highly effective defensive system would create serious pressure on would-be attackers to launch their own preemptive attacks. Once in place, it would open new possibilities to its owners for successful preemption against their enemies. A second technical issue is the possibility of boost-phase intercept. As promoted by Richard Garwin and Ted Postol, this is the technically elegant way to defend, intercepting missiles in the most vulnerable part of their flight.[25] Whether this would be achieved through land-based interceptor rockets based in countries bordering a likely attacker (Garwin and Postol's preference), by flying platforms like the U.S. Air Force's Air-Borne Laser (the current American program) or loitering, missile armed drones (the Israeli proposal), boost-phase intercept involves politically provocative arrangements.[26] In East Asia these problems may conceivably be manageable through cooperation with Russia or basing at sea. In the Middle East, however, the political problems are much more severe. Geography rules out basing at sea. It is hard to imagine critically located countries — like Kuwait, Jordan or Azerbaijan — permitting such a facility on their territory. Air-borne options would require continuous, long-term violations of a possible attacker's air-space, something almost as hard to imagine.

[25] Richard L Garwin, "Boost-Phase Intercept: A Better Alternative," *Arms Control Today*, September 2000, p. 8-12.

[26] Uzi Rubin, "The effectiveness of missile defense technologies," unpublished paper presented at the Wilton Park Conference on Missile Defence, Deterrence and Arms Control, February 2001.

# Space Arms Control and the International Missile Defense Debate

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An important yet inadequately studied element in the current international debate about missile proliferation, missile defenses, and options for multilateral arms control is the nexus provided by outer space. The shared environment of space — particularly low-Earth orbit — is a key meeting point for offensive and defensive activities due to unavoidable conditions linked to the physics of ballistic missiles: 1) even short-range ballistic missiles must travel through space in order to reach their targets on Earth; 2) early warning satellites, missile defense sensors, and tracking radars must be deployed in space in order to detect missile launches, determine missile speed and velocity, and provide cuing for defensive interceptors; and 3) space-based missile defenses have the potential to attack incoming ballistic missiles in their boost or mid-course phases with a high degree of effectiveness.

Beyond these characteristics, however, space plays a central role in the multilateral missile defense debate because of its unique *legal* status. A variety of U.N. documents and existing international treaties describe space as "the province of all mankind,"[1] meaning that space is recognized as beyond all national boundaries and therefore subject to internationally agreed upon rules of conduct. These and other factors have led to a *de facto* international norm against the placement of weapons in space, although not against the deployment of passive military systems, which are now widespread in space. To date, this norm has been supported by the fact that space is a region where defenses are extremely expensive to deploy and where weapons-related activities may threaten a number of other highly valued civilian and passive military missions. Today, for example, low-Earth orbit is a shared venue for international space science (including projects associated with the International Space Station [ISS]), space commerce (a rapidly growing sector whose health is crucial to the functioning of the Internet, global telecommunications, and remote sensing), and passive military activities (including treaty verification through satellite reconnaissance). For these reasons, space is uniquely suited to (and indeed requires) international negotiation to determine the future of acceptable military activities, including those related to missile defenses. To date, such efforts, including in the United Nations, have been half-hearted. In the United States, moreover, there has been virtually no debate on the future of weapons in space. Only a small community of missile defense enthusiasts in the Pentagon and in conservative circles in the U.S. Congress has been heard calling for the weaponization of space. Meanwhile, a large but silent majority — including the broader U.S. public, moderates in Congress, commercial space users, the space science community, and the intelligence community — has not yet been consulted about these issues.

[1] According to the Outer Space Treaty (1967), Article I, "The exploration and use of outer space…shall be carried out for the benefit and in the interests of all countries…and shall be the province of all mankind." (For a full text of the treaty, see http://www.oosa.unvienna.org/SpaceLaw/outersptxt.htm.)

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For these reasons, the process of initiating a broad-ranging international debate about the future of international activities in space may provide a critical opportunity to elaborate a more widely acceptable consensus on missile defenses. Fortunately, while last fall's campaign rhetoric mentioned space systems as part of a "layered" missile defense network, the Bush administration has not yet endorsed a specific architecture, nor has it developed any timetable. This spring, Pentagon officials have emphasized sea- and air-based systems in the near term, rather than space-based weapons. Thus, there is a window of opportunity. Such a process of consensus building may even find supporters within the Bush administration, where certain organizations — such as the State Department — are seeking to stake out areas of common ground with other countries on missile defenses.

The initiation of a broad-ranging international debate on the future of space activity would not only help to elaborate more formal rules for military missions in space, but may also provide a mechanism for reaching consensus on internationally *acceptable* forms of missile defense (something in U.S. interests). Such discussions could strengthen the framework for cooperative security, build consensus within NATO, and bolster flagging international non-proliferation norms. If progress in this area is neglected, however, and the United States moves forward to place weapons in space without prior international consensus being reached, its chances for reaching a cooperative solution on missile defenses will be lost altogether. At the same time, if other states continue to pursue a hard line on missile defenses and try to hold out for a ban on *all* forms of U.S. missile defense (including theater defenses), they may succeed only in pushing the United States into a corner, where it is more likely to proceed unilaterally. These factors suggest the sagacity of early negotiations to "build out" an arms control and non-proliferation framework from space to Earth aimed at stemming both missile proliferation and certain types of highly stabilizing missile defenses.

This paper is a preliminary effort to outline such a framework. It begins by examining briefly the existing range of arms control agreements regarding space. It then turns to the missile defense debate and analyzes the areas most susceptible to international consensus building and negotiation. In examining space options, the analysis considers particularly those actors who have the most at stake in safe access to space, particularly low-Earth orbit. After discussing the various areas where particular types of national missile defense (NMD) could cause problems and require reinterpretation or alteration of existing agreements, the analysis turns to new options for multilateral arms control in space that might be compatible with various types of NMD and theater missile defense (TMD) systems, as well as with continued use of space for space scientific, commercial, and passive military purposes.

## EXISTING ARMS CONTROL MEASURES IN SPACE

The current regime controlling weapons in space is significant and yet often overlooked. As one senior Canadian arms control official has pointed out, space is "unique because it is the only environment which is weapons-free."[2] In contrast to nearly all other areas of human activity (except the Antarctic, where military deployments are forbidden altogether), existing treaties ban a number of military activities in space that are commonly allowed on the Earth. This record indicates that space has been viewed differently than other environments since the inception of space flight in the 1950s: as a realm where international cooperation and the prevention of warfare between states might be possible.

A list of formal restrictions on military activities in space includes a number of bilateral (particularly

[2] Remarks by Senior Advisor for Verification in the Canadian Department of Foreign Affairs Ron Cleminson, United Nations, New York, at a panel cosponsored by the U.N. Department for Disarmament Affairs and the NGO Committee on Disarmament, April 14, 1998 http://www.igc.org/disam/outersp.html.

U.S.-Soviet/Russian) and multilateral bans that give space a special status among other environments[3]:

> 1. *The testing of nuclear weapons in space is prohibited.* ("Each of the Parties undertakes to prohibit, to prevent, and not to carry out any nuclear weapon test explosion, or any other nuclear explosion…in the atmosphere; beyond its limits, including outer space…." Article I, Limited Test Ban Treaty.)
>
> 2. *Deployment of WMD in orbit around the Earth or on the celestial bodies is forbidden.* ("States Parties…undertake not to place in orbit around the earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction, install such bodies on the celestial bodies, or station such weapons in outer space in any manner." Article IV, Outer Space Treaty.)
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> 3. *Deployment of any weapons or military installations on the Moon or celestial bodies is not permitted.* ("The moon and other celestial bodies shall be used…exclusively for peaceful purposes. The establishment of military bases, installations and fortifications, the testing of any type of weapons and the conduct of military manoeuvres on celestial bodies shall be forbidden." Article IV, Outer Space Treaty.)
>
> 4. *Interference with national technical means of verification is prohibited.* ("Each Party undertakes not to interfere with the national technical means of verification of the other Party…." Article V, Strategic Arms Limitation Treaty (SALT) I, and Article XII, Anti-Ballistic Missile Treaty (ABMT).
>
> 5. *Deployment and testing of NMD system elements in space are forbidden.* ("Each Party undertakes not to develop, test, or deploy Anti Ballistic Missile (ABM) systems or components which are sea-based, air-based, space-based, or mobile land-based." Article V, ABMT.)
>
> 6. *States are forbidden from conducting exercises that could be harmful to other countries' peaceful space activities without prior notification.* ("If a State Party to the Treaty has reason to believe that an activity or experiment planned by it or its nationals in outer space…would cause potentially harmful interference with activities of other States Parties in the peaceful exploration of outer space…it shall undertake appropriate international consultations before proceeding with any such activity or experiment." Article IX, Outer Space Treaty.)

These restrictions go further than those in any almost other environment towards creating a regime *unfavorable* to weapons deployment. Yet, there are loopholes waiting to be exploited by some sides. Aware of these gaps in current treaties, certain Pentagon planners—including now-Secretary of Defense Donald Rumsfeld in his report on U.S. space strategy (the so-called "Rumsfeld II" report[4]) in January 2001—have called for deployment of space weapons, both for missile defense and for satellite defense.

[3] For sources on existing space arms control measures, see F.R. Cleminson, "Banning the Stationing of Weapon in Space Through Arms Control: A Major Step in the Promotion of Strategic Stability in the 21st Century" and M. Lucy Stojak, "Recent Developments in Space Law" in J. Marshall Beier and Steven Mataija, eds., *Arms Control and the Rule of Law: A Framework for Peace and Security in Outer Space: Proceedings of the Fifteenth Annual Ottawa NACD Verification Symposium* (Toronto: Centre for International and Security Studies, York University, 1998). Also, Chapter 8, "Legal Aspects," in Yevgenii Velikhov, Roald Sagdeev, and Andrei Kokoshin, eds., *Weaponry in Space: The Dilemma of Security* (Moscow: Mir Publishers, 1986).

[4] "Report of the Commission to Assess United States National Security Space Management and Organization," Executive Summary, Pursuant to Public Law 106-65, January 11, 2001.

But several other factors are worth noting regarding the future security environment in space, unless the United States wants to dissolve the existing treaty structure (beyond the ABMT). First, many states are not bound by the anti-satellite restrictions implicit in the SALT treaty (including Iraq, Iran, India, Pakistan, China, and North Korea). Second, a few key states are not members of the Outer Space Treaty (Iran,[5] North Korea). Third, one important country remains outside the Limited Test Ban Treaty (China[6]). Thus, the United States may be opening itself to new problems in space if it begins to move unilaterally to weaponize this environment, since other countries will face fewer treaty restrictions. The alternative, a free-for-all in space without treaty restrictions, is rejected even by the January 2001 Rumsfeld II commission report on space. This is one reason why an effort to strengthen compliance and expand space treaty memberships is an alternative approach to weaponization that the United States might wish to consider more carefully.

## MISSILE DEFENSES: INTERNATIONAL OPPOSITION, ESPECIALLY IN SPACE

Given the various types of missile defenses being proposed in the existing debate, a logical starting point for consensus building would be to search for areas where defenses are causing the greatest dissonance with international norms and work from there. Clearly, there are a number of countries that oppose TMD systems, such as ground- and sea-based interceptors and associated support technologies. However, as long as the countries that are basing these weapons consent to their use, it is difficult from the perspective of international treaty law to oppose their deployment, particularly given the fact that they would be used in defensive action only. Testing such systems, moreover, does not violate any international treaties, and it violates the bilateral ABMT only if its speed and range parameters exceed those indicated in the U.S.-Russian "Demarcation Agreement" of September 1997.[7] Moreover, the use of these weapons from international waters, where weapons are commonly deployed in peacetime, or in international airspace, crosses no line in terms of norms governing acceptable deployments of weapons by states internationally. Finally, many states view short-range defensive systems against aircraft and missiles as perfectly legitimate. Thus, it would be difficult to rally an international consensus against all theater missile defenses. For these reasons, arms control efforts to limit land-, sea-, and air-based TMD systems face significant hurdles. While they might succeed in reaching agreement among a few states in particular regions, they are unlikely to forge a consensus that will be transferable to other parts of the world on the same principles. Trade-offs for restraint on missile defenses and missile deployments might be a more effective route for multilateral arms control regarding theater defenses.[8]

By contrast, the use of defenses in space raises a number of international concerns and runs up against the existing tacit norm against weaponization of space. The norm stems from the historical treatment of space as "the province of all mankind," as well as the forbearance to date among space-capable powers from crossing this weapons threshold. Space has also remained outside of the dynamics of terrestrial arms racing due to the high costs of placing weapons in orbit and the perceived limits of their utility. But space has also been used for passive military purposes, including for the

[5] Iran has signed but not ratified the Outer Space Treaty.

[6] While China has signed the Comprehensive Test Ban Treaty, which would subsume the Limited Test Ban Treaty provisions, it has not yet ratified this agreement. Thus, China is not officially bound by its restrictions.

[7] "First Agreed Statement Relating to the Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile Systems of May 26, 1972," signed in New York by U.S. and Russian representatives of the Standing Consultative Commission on September 26, 1997.

[8] On this issue, see James Clay Moltz, "Missile Proliferation in East Asia: Arms Control vs. TMD Responses," *The Nonproliferation Review* 4 (Spring-Summer 1997).

verification of arms control treaties. Thus, as the Canadian expert Ron Cleminson notes, space "has a dual purpose as far as arms control and disarmament is concerned"[9]: that is, to verify existing compliance and to provide an example to other realms of peaceful coexistence without weapons. One former U.S. Arms Control and Disarmament Agency expert agrees, arguing, "For the United States, strategic stability requires that those [verification] capabilities be sustained and advanced and certainly not damaged."[10] However, these assessments seem to be changing under the Bush administration, just as the missile defense debate is moving into a higher gear.

The logic of the Rumsfeld II report and recent Bush administration statements is that space weapons are both inevitable and legally acceptable. The Rumsfeld commission noted the absence of any "blanket prohibition in international law on placing or using weapons in space, applying force from space to earth or conducting military operations in and through space."[11] Thus, according to this interpretation, it could be considered appropriate for the United States to place weapons in space for possible defensive use against anti-satellite systems and ballistic missiles traveling through space as long as they were "non-aggressive." But there are questions about how far such an interpretation can go in light of the Outer Space Treaty's explicit ban on conducting activities that might endanger other space-faring nations' peaceful activities in space. The use and testing of weapons will inevitably create space debris that will be harmful to satellites and manned spacecraft.

There is also the question of international public opinion. Frederick Kagan, a professor at West Point, argues that although the United States may well have the *right* to deploy and use weapons in space, it may be prevented from acting upon this capability due to the widespread *perception* of a norm against their use.[12] Still another view is expressed by arms control specialist Mike Moore, who argues, "…the notion that the United States—or any country—might actually place weapons in space, as envisioned by Space Command, is so repugnant that the United States ought to clearly repudiate it."[13] Thus, despite the Rumsfeld II report and the plans of some Bush administration officials, considerable opposition may arise even within the United States. Foreign opinion on this score has been considerably more negative and nearly universal in its condemnation of space weapons options. A resolution in the United Nations in the fall of 1999 calling for the "prevention of an arms race in outer space" resulted in the isolation of the United States from all other countries except Israel in refusing to endorse the statement

As noted above, there are also other important actors in space that have yet to be brought into the domestic U.S. debate. A currently silent but possibly quite influential future voice in arms control negotiations regarding missile defense deployments in space is that of commercial users of space. If steps are made in the military realm that make the testing and use of weapons in low-Earth orbit a common occurrence, commercial users of space that require a weapons-free environment will be seriously threatened. The kind of economic disruption that has already occurred in the United States when satellites carrying cellular phone connections have malfunctioned could occur with

[9] Remarks by Senior Advisor for Verification in the Canadian Department of Foreign Affairs Ron Cleminson, United Nations, New York, at a panel cosponsored by the U.N. Department for Disarmament Affairs and the NGO Committee on Disarmament, April 14, 1998 http://www.igc.org/disam/outersp.html.

[10] Remarks by Pierce Corden, U.S. Arms Control and Disarmament Agency, United Nations, New York, at a panel cosponsored by the U.N. Department for Disarmament Affairs and the NGO Committee on Disarmament, April 14, 1998 http://www.igc.org/disam/outersp.html.

[11] *Ibid.*, p. 17.

[12] Frederick W. Kagan, "Star Wars in real life: Political limitations on space warfare," *Parameters* (Journal of the U.S. Army War College) 28 (Autumn 1998).

[13] Mike Moore, "Unintended Consequences," *The Bulletin of the Atomic Scientists* 56 (January/February 2000), p. 64.

far greater regularity in a low-Earth orbital environment characterized by significant clouds of space debris caused by weapons use or testing. Similarly, satellites that use low-Earth orbit to inform farmers of upcoming weather conditions and to warn whole regions of the paths of hurricanes and typhoons could be prevented from functioning.[14]

A related threat is that posed by weapons-generated space debris to the International Space Station (ISS) and to other manned spacecraft. The fact that the ISS recently had to be boosted to a higher orbit because a wrench had been left outside the station by one of the astronauts highlights the immediacy of this threat. A collision with multiple fragments from a weapons test could easily puncture such a vessel, leading to its instant depressurization and the death of all astronauts abroad. Such an event is clearly in no one's interests.

Finally, the powerful U.S. intelligence community may be another untapped but influential voice. The Central Intelligence Agency, the National Security Agency, and the Defense Intelligence Agency may clash with planners in the Ballistic Missile Defense Organization if weapons testing and deployments in space were to cause problems for electronic intelligence or photo-reconnaissance satellites. Indeed, such events could cause the U.S. government to lose its ability to verify crucial arms control agreements. Other states, such as Russia, India, or China, might be unable to maintain effective satellite reconnaissance in a debris-strewn space environment, possibly leading them to overestimate the stockpiles of their enemies and to engage in reactive military build-ups to address feared gaps. Thus, even Pentagon hard-liners might come around to seeing peaceful access to space via expanded treaties as being a desirable objective to pursue. As Vice-Admiral William E. Ramsey, deputy commander of NORAD's Space Command, remarked during the Reagan administration, "If we could outlaw weapons in space, it would be a damn worthy goal."[15]

For these reasons, space may be a particularly ripe environment for drawing the United States into eventual compromises on missile defenses.

## POSSIBLE MEANS OF USING SPACE ARMS CONTROL AS A CONSENSUS-BUILDING MECHANISM

The key to any arms control agreement is to craft an arrangement in which both sides believe that they are coming away with benefits to their security that outweigh the limitations they have agreed to. Thus, while some states may wish to negotiate a complete ban on military uses of space, even for passive purposes, such an agreement is simply not obtainable, nor is its pursuit productive if the goal is to create meaningful limitations on missile defenses and secure the peaceful use of space for all countries.

But a variety of realistic possibilities do exist. Although more complicated, the best approach may be to attempt a package of agreements that would both limit missile proliferation and prevent the weaponization of space, thus securing access to space for space commerce and the verification of arms control treaties. The following elements should be considered as part of such a package, although not all parts would necessarily be required:

1. *Negotiation of an international ban on the testing, use, or deployment of anti-satellite weapons, either in space or from Earth, seas, or airspace.* Such an agreement would protect commercial satellite operators as well as users of passive military reconnaissance satellites, thus supporting arms control verification, including for the purposes of detecting missile proliferation and verifying

[14] I am grateful to space analyst Lewis Franklin for a discussion of these issues in which he raised this point.

[15] Vice-Admiral William E. Ramsey, quoted in Frances Fitzgerald, *Way Out There in the Blue: Reagan, Star Wars and the End of the Cold War* (New York: Simon & Schuster, 2000), p. 447.

compliance with the Missile Technology Control Regime (MTCR).

2. *Negotiation of an international ban on deployment or testing of any other weapons in orbit that might be used against space-based, air-based, sea-based, or land-based targets.* This measure would provide additional assurances that other objects in space (such as manned vessels) would not be subject to attack, while eliminating the fear of many states that the U.S. intention in deploying missile defenses is actually to strike at ground-based targets on their territories.

3. *Reaffirmation at a multilateral level of the existing ABMT ban on testing and deployment of nation-wide defensive elements in space to prevent other states from acquiring these capabilities.* The extension of ABMT limitations to other states is a critical step to ensure that other countries not currently bound by the treaty do not move in the direction of space-based defenses, but instead remain confined to the same restrictions as the United States and Russia.[16]

4. *Strengthening of the Missile Technology Control Regime (MTCR) by providing space-launch access at a neutral site (with a non-intrusive payload inspection regime to prevent military tests) or a role in the ISS to countries that give up long-range missile programs.* Such measures could play a positive role in weaning "honest" missile proliferators away from offensive programs. Currently, the MTCR, unlike the NPT, offers no "carrots" for compliance and the acceptance of limitations on national missile programs. Hard cases like North Korea may require some additional incentives.

This slate of possible measures could be considered through a series of bilateral and multilateral talks among the key states interested and involved in space activities and the missile defense debate. A resulting draft document could then be finalized at a special U.N. conference on the future of missile defenses and peaceful space activities.

## CONCLUSION

The missile defense debate is now at an important crossroads. Will states allow the deployment of weapons into space — as called for in the recent Rumsfeld II report and a variety of Bush campaign material on "multi-layered" NMD and TMD plans? Or, alternatively, will a concerted international effort arise — in cooperation with interested U.S. actors — to use space as a focal point for negotiations to protect scientific, commercial, and passive military activities in this important and sensitive region? Notably, while space presents some of the most threatening scenarios to future international stability, it also offers international leaders some of the most promising options to prevent conflict over the current missile defense debate. With these thoughts in mind, how might a space arms control and missile defense consensus actually move forward?

Beyond contacts between governments and a more forceful articulation by U.S. NATO allies of their interests in peaceful access to space, the U.S. and international media could also play a major role in changing the terms of the existing debate. The populations of the United States and other countries have an obvious stake in future space activity, but they have not been presented with the choices in a clear and forthright manner. More coverage of the implications of space weapons and explanation of the trade-offs faced in the future of low-Earth orbital space could bring powerful forces to bear against current advocates of space weapons, if people begin to understand the reasons why peaceful use of space and active NMD/ASAT defenses are incompatible. Another essential group to engage in such an effort is that composed of commercial users of space, especially in the United States. These companies, including especially those whose

[16] Belarus, Kazakhstan, and Ukraine have already pledged themselves to adhere to ABMT restrictions as Soviet successor states, even though their membership in the treaty has not yet been approved by the U.S. Senate.

products (such as computers, cell phones, and pagers) require reliable access to satellites, are a crucial constituency in many of the world's leading economies. Their influence could be extremely effective in shifting the current tone of the space and missile defense debate away from weaponization. They could also have particular influence over national legislatures, where the power of defense lobbyists is otherwise hard to break. Finally, non-governmental organizations could also play a useful role in this effort by providing technical information to interested officials, the media, and the general public of the trade-offs involved and the threat unlimited missile defenses pose to other highly valued U.S. and international space activities. Efforts to develop and publicize workable treaty-based alternatives for space would be a particularly positive role for these groups.

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