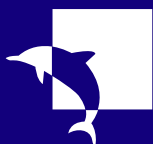


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FOREWORD

by **William C. Potter**

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The Center for Nonproliferation Studies (CNS) of the Monterey Institute of International Studies and the Mountbatten Centre for International Studies (MCIS) at the University of Southampton are very pleased to initiate a new Occasional Paper series devoted to the topic of ballistic missile proliferation. The focus of this series reflects the concern of both centers that the spread of ballistic missiles constitutes one of the most serious and complex nonproliferation challenges today. This problem was highlighted in an extensive study on the future of nuclear weapons conducted by MCIS between 1997-99. 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 to simultaneously limit nuclear disarmament and stimulate nuclear proliferation, as well as 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 political and technical issues. One of its aims is to move the debate over missile defenses into an international context. A second is to assist in international efforts to develop mechanisms for multilateral control of ballistic missiles.

The strategy chosen by MCIS was to engage states by requesting the preparation of short papers setting out national perceptions of the challenges facing the international community in the areas of missile proliferation and missile defense. An international workshop that included leading research organizations and individuals working in the field followed. Its purpose was to identify both the main policy issues emerging from the national papers and the evolving international debate, and to prepare the agenda for a larger seminar bringing together a broader range of specialists and those who had attended the first research workshop. The first workshop took place in December 2000, and the seminar will occur in March 2001. The aim of the seminar is to initiate a process of "Track-2" international dialogue on these issues, as well as agree the formation of an international consortium of research institutes to pursue this work.

The contributions to this Occasional Paper were initially prepared as presentations for the December 2000 workshop. At that meeting, it was suggested that an early volume offering an overview of the missile defense issue and emerging challenges would be a useful contribution to the international debate on the control of missile proliferation and defenses, and serve as the first product of the new venture, to be known as the Mountbatten Centre International Missile Forum (MCIMF). Initial partner organizations in this Forum are the publishers of this occasional paper, the Monterey Institute for International Studies (MIIS); the Institut Français des Relations Internationales (IFRI); the Japanese Institute of International Affairs (JIIA); the Moscow Center of the Carnegie Endowment; and the Peace Research Institute, Frankfurt (PRIF). We would also like to take this opportunity to acknowledge the generous financial support of the John D. and Catherine T. MacArthur Foundation, which has enabled the project to move forward on a secure financial basis, and to thank the editorial staff of CNS for their work in producing this publication.

ABBREVIATIONS

ABM	anti-ballistic missile
BMD	ballistic missile defense
BWC	Biological Weapons Convention
C ³ I	command, control, communication and intelligence
CBM	confidence-building measure
CBW	chemical and biological weapon
CD	Conference on Disarmament
CEP	circular-error-probable
CIA	Central Intelligence Agency
CIS	Commonwealth of Independent States
CTBT	Comprehensive Test Ban Treaty
CTR	Cooperative Threat Reduction
CWC	Chemical Weapons Convention
DF	Dong Feng
DOD	U.S. Department of Defense
DPRK	Democratic People's Republic of Korea
FMCT	fissile-material cutoff treaty
IAEA	International Atomic Energy Agency
ICBM	intercontinental ballistic missile
INF	Intermediate-range nuclear forces
IRBM	Intermediate-range ballistic missile
KEW	kinetic energy weapon
kt	kiloton
MEL	mobile erector-launcher
MIRV	multiple independently targetable reentry vehicle
MPC&A	materials protection, control, and accounting
MRBM	medium-range ballistic missile

MRV	multiple reentry vehicles
mt	megaton
MTCR	Missile Technology Control Regime
N-5	five nuclear-weapon states (of the NPT)
NATO	North Atlantic Treaty Organization
NBC	nuclear, biological, and chemical
NBC/M	nuclear, biological, chemical, and ballistic missile
NFU	no-first-use
NMD	national missile defense
NNWS	non-nuclear-weapon states (of the NPT)
NPT	Nuclear Non-Proliferation Treaty
NSG	Nuclear Suppliers Group
P-5	permanent five (members of UN Security Council)
NWS	nuclear weapon states (of the NPT)
PAL	permissive action link
PAROS	prevention of an arms race in outer space
R&D	research and development
SALT	Strategic Arms Limitation Treaty
SLV	satellite launch vehicle
SLBM	submarine-launched ballistic missile
START	Strategic Arms Reduction Treaty
SSM	surface-to-surface missile
TEL	transporter-erector-launcher
TMD	theater missile defense
TNW	theater nuclear weapon
UNGA	United Nations General Assembly
UNSC	United Nations Security Council
UNSCOM	United Nations Special Commission (on Iraq)
USSR	Union of Soviet Socialist Republics
WMD	weapons of mass destruction

Current Issues Concerning the Control of Ballistic Missile Proliferation and Ballistic Missile Defenses

by John Simpson
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Missile proliferation and defense are now key concerns on the global security agenda. Four issues are central to this agenda:

- the choice between unilateral and co-operative approaches to missile proliferation;
- whether nuclear deterrent postures can dissuade states from developing missile technology and deter attacks from those who do;
- the centrality of missiles and their conventional technology to the problem of proliferation of WMD; and
- the intimate relationship between defensive and offensive developments and deployments.

Merely highlighting these four issues, however, offers neither a complete nor a systematic account of the problems posed by ballistic missile proliferation and defenses. Ballistic missiles, especially longer range ones, are now the key issue confronting the international community because their primary purpose over the last four decades has been to carry WMD. As a result, ballistic missiles became the focus of the SALT, START, and INF negotiations; they also prompted the discussions and negotiations in the early 1980s that produced the MTCR.

At an early stage the international commu-

nity recognized that the problem posed by the proliferation of WMD had two distinct components: 1) the possession of WMD; and 2) the possession of WMD delivery systems. While the proliferation of WMD has been addressed multilaterally from the mid-1950s onwards on the basis of their elimination, missile delivery systems have not received similar attention. Why? Four explanations offer themselves:

- in the context of the Cold War, missiles were regarded as the key to strategic stability and were addressed bilaterally through the SALT, START, INF and ABM Treaties;
- the only missile defense technology regarded as credible during the Cold War involved the use of nuclear explosives, but now alternative non-nuclear technology *appears* available;
- there were no perceived threats from such missiles outside the Cold War rivalry; and
- the issue appeared intellectually and politically intractable, owing to the lack of any basis for restraint that was likely to acquire global support.

Changes in the first three areas now drive the need for both a multilateral framework of restraint and a new round of development and deployment of missile defenses. At the same time, the still intractable problem of controlling ballistic missile proliferation presents the

greatest challenge to the international community in this area.

Strikingly, at the 2000 NPT Review Conference, the Chinese and Russian delegations, but not the other NWS, insisted on continued strategic stability as a precondition for disarmament. This insistence illuminated a key divide among the NWS: both Russia and China see the prime threat to their security as stemming from the United States, while the United States sees the primary near-term threat as missile proliferation in “countries of concern.” By contrast, Great Britain and France focus on residual threats from Russia and long-term threats from WMD proliferators neither of which are immediate or pressing. Consequently, although some sections of opinion in the United States appear to attach little value to international arms control agreements, the other four NWS now see them as an essential element in their security policies. In addition, the relationship among the NWS has also changed. What was previously a core bilateral relationship with three associated peripheral actors is now variously described as a unipolar, trilateral, or even multilateral relationship.

Unfortunately, we have no well developed intellectual tools or mechanisms to help define what strategic stability means in the current context, other than possibly combining the minimal capabilities required to guarantee a limited level of mass destruction with a condition of mutual vulnerability. The still unresolved Cold War contradictions between policies of mutual vulnerability at the declaratory level and war fighting at the operational one only magnify the difficulty of coming to grips with the current situation. So what are the alternative bases for developing consensual declaratory policies among the NWS in this area, in order to move forward in limiting missile proliferation, restraining missile arsenals and reducing nuclear warhead stockpiles? This key

issue now needs to be addressed.

The rise of perceived threats outside of the bilateral U.S.-Russian relationship has partly stemmed from the disappearance of the previously overwhelming threat of an apocalyptic war between the two superpowers, but also reflects two other factors:

- the (apparently) indigenous development and international dissemination of missile and WMD technologies; and
- the emergence of increasingly violent and indiscriminate terrorist groups that are alleged by some to have links to specific states, and in some cases, direct state sponsorship.

The 1982 truck bomb attack on U.S. Marines in Lebanon remains the best and most significant example of this latter development, and its alleged links to specific states raised the question of whether those states themselves might behave similarly. Hence concern in the United States, not necessarily shared elsewhere, that threats from states with extremely limited WMD and missile capabilities might be led by individuals who act as “terrorists,” and would not be deterred by the threat of retribution.

While to others this type of scenario represents a high consequence but low probability threat, it enjoys a rather different assessment in the United States. This perceptual disjuncture underlies the current international debate and frictions over missile proliferation and defenses. Moreover, the development of non-nuclear missile defense systems has made such systems appear inherently more acceptable than the nuclear-armed systems of the Cold War. A key analytical issue is whether the current debate is driven by threat perceptions or the emergence of new technological possibilities, or both? In either case, how should the international community respond?

Changed threat perceptions have prompted renewed efforts to restrain missile proliferation, on both a global and regional level. These efforts can be categorized as moving in three directions: norm creation, capability denial, and consequence management. Norm creation is of critical importance, as in contrast to nuclear, chemical, and biological weapons, there is no consensual norm underlying capability denial in the missile area. The problems of creating one are obvious:

- Missiles are not in themselves WMD and can carry conventional ordnance;
- Criteria for distinguishing between “good” and “bad” missiles are difficult to generate (for example, should only offensive missiles be deemed unacceptable, or both offensive and defensive missiles?);
- A total ban on all missiles, similar to the prohibitions against chemical and biological weapons, seems impossible;
- Making technical distinctions between acceptable and non-acceptable missiles raises numerous difficulties—should restrictions be based on range or payload or both, or defensive or offensive function? and
- How can the “peaceful uses” problem of satellite launchers be handled?

Despite these challenges, the MTCR states have sought to move forward on this problem since the mid-1990s, and an October 2000 meeting in Helsinki adopted a draft “International Code of Conduct Against Ballistic Missile Proliferation.” This draft code is only a start, however, and leaves many questions unanswered. For example, within what institutional framework will this code reside and be developed, given that the MTCR states do not wish it viewed as part of their regime? While the development of such a code appears essential, its content and the degree of universality it will

gain remains problematic. Above all, any such code seems destined to suffer from some of the same conceptual difficulties as the NPT, such as:

- How might a code distinguish peaceful from non-peaceful uses?
- Can such a code avoid legitimizing existing technology holders—and should some states continue to possess missile capabilities? and
- Can a code adequately address the range of uses problem? (For example, can it distinguish between a presumably acceptable conventionally armed, highly accurate, low collateral damage cruise missile and a presumably totally unacceptable city busting, nuclear armed, ballistic missile?)

How then can the international community move forward in this area?

Capability denial, in the form of the MTCR export control guidelines, is generally regarded as having reached its limits. Public commentary suggests that indigenously developed technology and new suppliers outside the MTCR are now viewed as the main problems rather than technology transfers from regime members. The hope now appears to be that the proposed code of conduct can constrain such activities, though not necessarily in a manner that would enable the new suppliers to be absorbed into the regime. This approach, however, begs the question of whether the aim in this area should be to maintain the existing regime, or are new initiatives possible that would make it more effective?

One area where new initiatives may be contemplated is consequence management. Consequence management could imply two things: 1) deterring the acquisition of missiles thorough the possession of means to denying their use (the high posture road); and 2) actually preventing use. The most obvious technology to

achieve this goal is defensive missile systems, rather than counter-force capabilities, though what response a pre-emptive conventional strike against missile delivery systems would produce is an interesting point for debate. Whether unilaterally developed and deployed, or co-operatively organized by a small group of states, defensive systems raise the following problems:

- convincing the international community that the motivation behind these expensive development and deployment activities is the low probability, high consequence threat of the “countries of concern,” and not a more general aspiration to achieve global military hegemony;
- developing defenses without adversely affecting disarmament processes that could reduce the nuclear stockpiles of the existing NWS down to low numbers;
- clearly differentiating between a limited system that would not threaten the Chinese nuclear force and thus “strategic stability,” and one capable of infinite expansion which would threaten the credibility of all other national nuclear deterrents; and
- preventing the development of defensive systems from undermining the search for a norms-based approach to the control of missile proliferation.

Similar questions could also be asked about regional attempts to control missile proliferation.

- On what normative basis would they operate?
- Would they involve symmetrical restraints or asymmetrical ones, given differing regional capabilities?
- How would space launch capabilities be handled?

- Could Missile-Free Zones be created alongside Nuclear-Weapon-Free Zones?
- How would capability denial mechanisms operate?
- What would be the impact on regional stability of defensive systems based on extensions of anti-aircraft missile technology? If these systems intercept missiles in their terminal phase, what would they defend (cities or military capabilities), and what message would they convey to others in their region?

None of these questions have easy answers, and in some cases they appear unanswerable. But the time has now come to address them systematically, and the essays in this Occasional Paper seek to do just that.

Ballistic Missile Threats, Missile Defenses, Deterrence, and Strategic Stability

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Despite its frequent use in treaties, official statements, and academic papers addressing nuclear strategy and arms control, the concept of strategic stability remains poorly defined.¹ During the Cold War, strategic stability generally meant the preservation of the U.S.-Soviet nuclear balance. As described by Lawrence Freedman, the issue during the Cold War was how to develop a “strategy of stable conflict.”² As early as the mid-1950s, experts had begun analyzing the basis for stability in the super-power relationship.³ Much subsequent writing about nuclear strategy studied in great detail the best means of ensuring stability in the nuclear era.⁴

Today, the concept of strategic stability is being used—and sometimes misused—in a wide variety of contexts. It is at the very core of the current controversy over the ABM Treaty, and has become a key feature of Russian disarmament

diplomacy.⁵ The concept figured in the debates during the 2000 Non-Proliferation Treaty Review Conference. The Final Document issued by the review conference refers to “strategic stability” in the paragraph that addresses the ABM Treaty.⁶ Even though the exact term was not used, the concept of strategic stability also underlay the caveat covering a wide variety of “practical steps” called for in the Final Document: “steps by all the nuclear-weapon States leading to nuclear disarmament in a way that promotes international stability, and based on the principle of undiminished security for all.”⁷

While noting the use of the concept in tactical maneuvers and semantic debates during arms control negotiations, it is nevertheless worthwhile to acknowledge that there is an ongoing debate on strategic stability. The end of

¹ The views expressed in this essay are solely those of the author. Comments and suggestions are welcomed at grand@ifri.org.

² Lawrence Freedman, *The Evolution of Nuclear Strategy* (London: IISS/McMillan Press, 1981), ch. 5.

³ See C.W. Sherwin, “Securing Peace through Military Technology,” *Bulletin of the Atomic Scientists* 12 (May 1956).

⁴ The classics of this literature include Thomas Schelling, *The Strategy of Conflict* (Oxford: Oxford University Press, 1960); and Hermann Kahn, *On Thermonuclear War* (Princeton: Princeton University Press, 1960).

⁵ For example, see the comments by Ambassador Yuri Kapralov, “Effects of National Missile Defense on Arms Control 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>>.

⁶ The ABM Treaty is now traditionally referred to as a “cornerstone of strategic stability” in U.S.-Russian statements, and is regarded similarly by many other countries.

⁷ Final Document of the 2000 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT/CONF.2000/28), Volume I, Part I, Review of Article VI, paragraph 15.

the Cold War and the continued proliferation of missiles and weapons of mass destruction do challenge the traditional approach to strategic stability based on the nuclear balance and strategic arms control. The question is whether this traditional approach ought to be preserved at all costs, or are we entering a new era—full of opportunities and risks—characterized by a new paradigm that demands we reconceptualize strategic stability?

STRATEGIC STABILITY: A KEY FEATURE OF THE COLD WAR EQUILIBRIUM

In the Cold War era, strategic stability was primarily defined as maintaining the strategic nuclear balance between the United States and the Soviet Union. Both the SALT treaties and the ABM Treaty aimed to preserve strategic stability in the superpower relationship. It took approximately two decades to develop the following key features of Cold War strategic stability.

Preserving An Approximate Nuclear Balance Between The Two Superpowers

Preserving a nuclear balance did not mean achieving comprehensive nuclear parity at all levels but involved the more difficult task of avoiding imbalances that were—rightly or wrongly—perceived as dangerous. Early in the Cold War, strategic stability primarily meant building a secure and stable relationship, and avoiding strategic doubts that would have led to a major war by mistake or miscalculation. In the 1960s, the classical formulation “mutual assured destruction” became an axiomatic motto and was viewed as the pathway to peace. In this context, one could argue that the high readiness of nuclear forces, combining hair-trigger alert,

launch-on-warning procedures, and an ensured second-strike capability, constituted a key feature of Cold War strategic stability. It is also worthwhile to note that this type of strategic stability also involved the existence of “overkill” capabilities and an acceptance of mutual vulnerability to nuclear destruction.

Developing Crisis Management Tools

Interestingly, Cold War strategic stability did not entail avoiding competition between the superpowers. As already mentioned, strategic stability was viewed more as a “strategy of stable conflict” than as a means of maintaining an armed peace. Ideological rivalry and regional conflicts remained key features of the Cold War era. The development of crisis management tools, therefore, became an integral part of the superpower relationship. Diplomacy (summits, direct consultations etc.) was one of these tools, but military confidence-building measures and specific nuclear force postures also played a role.

Arms Control As A Strategic Stability Tool

At a later stage in the Cold War, arms control also became a key feature of strategic stability. By creating ceilings on nuclear forces, the strategic arms limitation talks and the SALT treaties formalized strategic stability by defining the nuclear balance—at least at the strategic level. While not preventing arms races in certain niches (such as theater nuclear weapons and naval weapons, among others), arms control provided a reassurance that at the central level, an approximate and acceptable balance was maintained. Even though arms control became the dominant paradigm in strategic thought for some time, other schools of thought existed. Critics of arms control underlined the risks associated with it and insisted on the need to move away from its central tenets.

Special Emphasis On Limiting Defensive Systems

Even though the United States and the Soviet Union both developed a number of ambitious ABM programs, it became clear as SALT I was negotiated that limits on defensive systems were at least as important as limits on strategic offensive systems.⁸ The ABM Treaty thus became an integral part of the SALT process, since it not only prevented an additional costly arms race in defensive and offensive systems, but also because tough limits on ABM systems were recognized as a key feature of strategic stability. It was not a coincidence that the debate over the Reagan administration's proposed Strategic Defense Initiative was the last major U.S.-Soviet strategic controversy of the Cold War.

Managing Second-Rank Nuclear Powers

Although the emergence of second-rank nuclear powers (the United Kingdom, France, and China) created some uncertainties and imbalances, these were manageable. The limited size of these powers' arsenals made it possible to neglect them in the overall balance, as none of them ever possessed more than one percent of the global nuclear stockpile. Moreover, the decision of the three second-tier nuclear powers to opt for a primarily defensive stance, as far as their national nuclear postures were concerned, made their nuclear policy compatible with overall strategic stability.⁹ The potential emergence of other nuclear powers, as long as it remained limited, was also manageable. For example, countries such as Israel, South Africa,

or India had regional security ambitions during the Cold War and lacked the capabilities to upset superpower strategic stability.

TRADITIONAL STRATEGIC STABILITY CHALLENGED

Some of these traditional key features of strategic stability remain in place and have even been strengthened by the end of the Cold War. The strategic nuclear balance has evolved since 1991 into an imperfect but real form of strategic parity at lower levels. The end of the East-West conflict has substantially reduced conflict among great powers, making crisis management easier and more direct. In the late 1980s and early 1990s, bilateral and multilateral arms control developed at a fast pace, including in the nuclear field. Despite an ongoing debate in the United States, many continue to view the ABM Treaty as the "cornerstone of strategic stability." The second-rank nuclear powers are all more or less committed to supporting overall strategic stability. WMD proliferation has seen both good news and bad news in the last decade, but remains at least partially under control.

Nonetheless, there is a growing feeling in academic and governmental circles that traditional strategic stability is increasingly irrelevant. While there is a broad understanding that the concept ought to be preserved, an emerging debate has focused on reconceptualizing strategic stability. It might, therefore, be appropriate to list the factors currently challenging strategic stability.

Increasing Indifference To The Bilateral Nuclear Balance By The United States And Russia

For a number of reasons, nuclear parity is no longer viewed as a strategic objective, even though some in Russia continue to view it as a political objective owing to its link with great

⁸ For a good account, refer to Daniel Smith, "A Brief History of 'Missiles' and Ballistic Missile Defense," in *National Missile Defense: What Does It All Mean?* CDI Issue Brief, Center for Defense Information, Washington, DC, September 2000.

⁹ Classical deterrence theory would call it "deterrence by punishment."

power status. Both nuclear superpowers increasingly tend to view strategic parity as a burden rather than an assurance, and sooner or later this trend is likely to have an impact on nuclear posture reviews, and on the evolution of the bilateral arms control process, including the fate of the ABM Treaty. The Bush administration has already signaled its inclination to move in this new direction. A recent report of the National Institute for Public Policy, to which analysts who now hold senior positions in the new administration contributed, provided a detailed outline of such an approach to nuclear policy.¹⁰

A Growing Emphasis On Missile And WMD Proliferation

Proliferation of missiles and WMD is not a new phenomenon; one could even argue that it has slowed down in the last decade thanks to the strengthening of the various nonproliferation regimes.¹¹ It is nevertheless just as true that WMD proliferation has become a more important and tougher strategic challenge.¹² Trends in modern conflicts provide one key explanation. First, major powers (especially in the West) are likely to be involved in major regional conflicts in at least two regions (the Middle East and Northeast Asia). In each region, they face potential adversaries possibly

armed with missiles and chemical, biological, or nuclear weapons. Second, the overwhelming superiority of Western armed forces at every level of the conventional battlefield makes the possession, and possibly the use of WMD, increasingly attractive to states contemplating a conflict with the West. This choice is very rational. Finally, missiles are a uniquely effective tool in this context, as they are at the moment virtually unstoppable and can achieve ranges capable of reaching U.S. or allied territory. Equipped with a WMD warhead, they therefore carry a distinctive deterrent and retaliatory value that cannot be negated, although the payload is the core issue. Consequently, there are about 25 countries that either have ballistic missiles or are seeking to acquire them. Of these, at least a handful—the DPRK, Iran, Iraq, India, and Pakistan—are expected to develop or acquire long-range missile capabilities in the future.

Declining Confidence In Arms Control And Nonproliferation Regimes

Particularly (although not exclusively) in the United States, doubts are growing about the ability of the nonproliferation regimes to handle the threat from WMD and missiles. Some critics view the various nonproliferation treaties as useful in establishing norms for the majority of states, but useless for noncompliant states, whether they are parties to a particular treaty or not. These treaties are also lambasted for creating a dangerous sense of false security among those countries that adhere to them in good faith. Moreover, critics argue that the verification and compliance provisions of these treaties are inefficient and burdensome for states that honor them, but not sufficiently effective to catch cheaters. From this point of view, the main issue has now become “consequence management,” or how to deal with the future use of WMD through active and passive defenses and counterproliferation tools.

¹⁰ See National Institute for Public Policy, “Rationale and Requirements for U.S. Nuclear Forces and Arms Control,” Volume I, Executive Report, January 2001, <<http://www.nipp.org>>.

¹¹ On this point see Joseph Cirincione, “Assessing the Assessment: The 1999 National Intelligence Estimate of the Ballistic Missile Threat,” *The Nonproliferation Review* 7 (Spring 2000), p. 125-137.

¹² At least in the United States, the turning point in the debate was the report of the Rumsfeld Commission. Report of the Commission to Assess the Ballistic Missile Threat to the United States, Executive Summary, July 15, 1998, <<http://www.house.gov/hasc/testimony/105thcongress/BMThreat.htm>>.

The Reduced Salience Of Nuclear Deterrence

Nuclear deterrence could have provided a simple answer to the strategic challenge of WMD proliferation, but the direct transfer of Cold War strategies and postures seems largely inappropriate unless “vital interests” (to quote the French concept) are at stake. The United States is particularly keen to find ways to address scenarios in which deterrence would not or could not work. Such scenarios are a primary motivation for the growing interest for defenses. The view is that deterrence could be bolstered by the presence of missile defenses. This approach can be criticized, although one must acknowledge that decreased reliance on nuclear weapons in Western strategic culture is a political fact that must be taken into account.¹³

Renewed Interest In Ballistic Missile Defense

Renewed interest in ballistic missile defenses derives directly from the issues discussed above. BMD (both TMD and NMD) provide a technical fix to a difficult strategic problem, and thus offer those countries that acquire them an unmatched military tool. The problem is that the feasibility of BMD remains debatable and a completely effective missile defense remains a myth, even in the case of a very limited threat (around 20 long-range missiles). Nevertheless, in the United States and elsewhere, many are now convinced that NMD (whatever technical forms it takes) will ultimately work and in the future

provide an effective missile defense at least against a limited threat. The main casualty of future NMD deployment is likely to be the “cornerstone” of traditional strategic stability, the ABM Treaty, or at least its current provisions. A deal to modify the treaty could be reached by Moscow and Washington, but the amendments necessary to clinch such a deal are likely to radically transform it.

CONCLUSION: A NEW PARADIGM FOR BETTER AND FOR WORSE

Most analysts would agree that the time has come to rethink strategic stability as an organizing concept of international security. Current trends, such as the legitimate emphasis put on proliferation as the major strategic challenge, the erosion of the bilateral dominance of the nuclear order, the reduced salience of nuclear weapons in Western strategies, the emergence of new regional powers, the distrust for traditional arms control, and the growing reliance on new military tools, form the foundation for a new paradigm.

Key Issues

While it is impossible to forecast the security benefits and setbacks that can be expected in the future, they will be shaped by several factors:

- **The evolution of security relations among the major powers** With or without NMD, good relations among the major powers is the first and foremost requirement of enhanced stability. After a phase of converging policies and joint effort to enhance international security, the last few years have seen these relations deteriorate.
- **The interaction of bilateral, regional, and global security** Overall strategic stability is no longer determined by a bilat-

¹³ For a fresh look at nuclear issues, see Darryl Howlett, Tanya Ogilvie-White, John Simpson and Emily Taylor, *Nuclear Weapons Policy at the Crossroads* (London: Royal Institute of International Affairs, 2000). On NMD and deterrence see Burkard Schmitt ed., “National Missile Defense and the Future of Nuclear Policy,” Occasional Paper No. 18, Western European Union-Institute for Security Studies, August 2000, <http://www.weu.int/institute/publ_uk.htm>.

eral balance, but is the result of a complex interaction between various bilateral, regional, and subregional relationships.

- **The success or failure of traditional nonproliferation regimes to stop or limit the spread of missiles and WMD** The nonproliferation regimes have successfully passed the test of universality and have established WMD nonproliferation as a robust norm challenged by only a few countries. These regimes now face a tougher challenge: gaining compliance with this norm from the core group of countries reluctant to accept it.
- **Future steps in the field of nuclear arms control** The ability of the nuclear weapon states, in particular Russia and the United States, to reduce their nuclear arsenals—whether through deep unilateral cuts or more traditional treaty-based approaches—will be a key factor in demonstrating the emergence of a new stable environment.
- **Diplomatic and technical forms of future U.S. BMD deployment** The incoming Bush administration faces several major choices regarding the deployment of BMD. Diplomatically, BMD deployment could involve a greater or lesser degree of cooperation with other countries. The technology chosen for BMD will have also a political impact; some technologies are viewed by other states as less threatening for strategic stability.
- **Future role of deterrence** Nuclear force postures adopted by the nuclear-weapon states and by emerging nuclear powers can be more or less stable. Hair-trigger alert postures, disarming first strike capabilities, and large numbers of tactical nuclear weapons can lead to misperception and miscalculations, fostering instability.

Possible Features Of Renewed Strategic Stability

What steps can be taken if the international community desires to move from the current traditional strategic stability into a more stable international system that responds to the current strategic challenges? If we want to avoid entering an era of major strategic instability, the path is narrow but still visible; it should probably involve the following items:

- **Preserving and strengthening the existing nonproliferation regimes rather than undermining them** The shift to a more stable environment involves the preservation of nonproliferation as a norm, in order to avoid a world filled with countries armed with WMD and missiles.
- **Reforming export controls to meet new challenges** Reform is particularly urgent in the field of missile technologies. The existing export control regimes appear to have reached their geographic and conceptual limits.
- **Addressing with renewed vigor all current and future noncompliance cases** Appropriate verification measures and possibly sanctions will have to be used to handle noncompliant states and strengthen NPT, the CWC, and the BWC.
- **Reaffirming the balance between disarmament and nonproliferation at the core of the NPT** If the non-nuclear weapon states have a legitimate right to demand further steps in nuclear disarmament, then the NWS must continue to take steps that reaffirm the bargain at the core of the NPT.
- **Developing an arms control and nonproliferation agenda for the next decade** The agenda laid out at the first U.N. Special Session on Disarmament has

almost been completed; now new and balanced objectives must be defined.

- **Reviewing the offense/defense balance in national security policies** In rethinking the role of nuclear weapons in the national defense policies of the nuclear weapon states during the coming decades, the balance between offensive means and defensive means (BMD) should be reconsidered as BMD technologies progress.¹⁴ The right balance cannot be defined in advance and is likely to vary from one country to another.

More than any other factor, however, the prospects for the development of a new concept of strategic stability depend on whether states adopt cooperative or unilateral approaches in responding to the evolution already underway. Even though the temptation to take unilateral action is strong, the path from old-fashioned strategic stability to a new paradigm that adequately addresses core international security issues may prove very destabilizing without genuine efforts to act cooperatively.

¹⁴ On deterrence and the offense-defense debate, see Robert Jervis, "Cooperation Under the Security Dilemma," *World Politics* 30 (January 1978), pp. 167-214.

Criteria for Assessing Ballistic Missile Threats

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This essay explores two fundamental questions posed by this conference: What criteria can analysts use when asserting that missile proliferation—or more specifically, a missile program—constitutes a threat? And, more specifically, how might missile threats be understood in terms of their impact on regional security?

Of course, threat perception is a highly complex and contentious issue, while security dynamics vary widely from region to region. Accordingly, this essay aims to raise ideas and to structure thinking on these issues, not provide definitive answers. One can say, however, that the assessment of a threat and the impact of that threat exist along a proportional continuum. For example, a state might initially characterize a missile threat through an estimate of technical or other variables but, in turn, the threat *perception* may be increased or attenuated by the ability (or inability) to respond. It is important, therefore, to review both sides of the threat equation.

Towards that end, the paper first defines a series of notional threat criteria that include, among other factors, current capabilities, program trends, and strategic context. Assessments using these criteria can help refine specific judgments about the presence or character of that threat, be it emerging or immediate. In addition, the exercise can facilitate a more careful discussion of how particular actors derive their missile threat analyses.

The next section briefly reviews the regional security impacts of missile proliferation through two broad lenses: on states within a region; and on the willingness and capability of external actors to intervene in regional crises. In a sense, then, this section looks at the other side of the threat equation coin. It concludes with a look at Iraq's missile program in terms of the notional threat criteria and regional security impacts.

THREAT CRITERIA

Analysts can use the following criteria in their missile threat assessments. In practice, of course, not all of the criteria will be applicable, depending on who does the analysis, when it is done, and the amount and type of data available. It should also be emphasized that a key weakness in this or any other approach lies in the difficulty of capturing and measuring psychological factors that can be integral to threat estimates.

- A state's *current missile capabilities* often, and not surprisingly, represent the core of any threat analysis. These capabilities include the range and payload of deployed systems, as well as the number of missiles and launchers (static, TELs, or MELs). System reliability, system response time, and TEL/MEL range are also important factors, particularly in evaluating an operational threat. It might also prove useful to examine range extension potential under a crash program or

break-out scenario (on the order of a one- to three-month timeline).

- Estimates of *warhead type*—especially nuclear, biological, or chemical—may be as central to the analysis as delivery system capabilities.¹ Needless to say, a known or suspected NBC warhead (or development program) will sharpen threat perceptions. However, the lack of an unconventional warhead may not, by itself, appreciably reduce a missile threat. Take, for example, the threat or actual use of North Korean missiles against Tokyo during hostilities on the Korean peninsula; even conventional warheads might cause significant casualties and property damage (to say nothing of the psychological impact) in such a densely populated city. Indeed, Japanese planners might consider that, under certain scenarios, the potential for a conventional attack is much higher than that of an unconventional strike.
- The type, and to a lesser degree the quality, of a state's *missile infrastructure* provides valuable clues about program objectives and how quickly they might be achieved. In a similar fashion, *program trends and activities* might also be taken into account. Program infrastructure includes direct support facilities (and their equipment), such as those intended for design, production, and testing, as well as supporting industries (electronics, metals, etc.) and infrastructure development (training programs for scientists, engineers, and technicians). Program trends involve, for example, the numbers and timing of flight and static tests.
- *Import behaviors* and other program “inputs,”

¹ The technical characteristics of the warhead itself can have a marginal impact. For example, a biological warhead might be a ground burst (bulk agent), airburst, or bomblet type.

such as domestic opportunity costs, patterns of resource investment, or the urgency of facility development and concealment, can provide early warning of an emerging threat.² Additional issues to examine include the type and scope of foreign technical and service imports, the ability of a program to absorb these imports, and shifts in resources towards a particular technological approach. However, data on such “inputs” are hard to obtain and difficult to evaluate. For example, establishing a link between a dual-use import and a missile program can be challenging.

- Analysis of missile-related *exports*—systems, equipment, services, etc.—can indicate strengths or weaknesses in a missile program. For example, a program's ability to export hundreds of missile systems points to its success in managing and implementing the difficult technical exercise of serial production or integration/assembly. In turn, success with production of one system provides a useful base of experience for follow-on missiles. Of course, these same exports may have security and nonproliferation regime impacts beyond what they might say about the program itself.
- *Military and operational factors* to consider include the type of training for missile units; the combat experience of missile and supporting units (e.g., survey teams); command and control arrangements, especially those related to unconventional weapons; conventional and unconventional missile doctrine; and the impact that the type of deployed missile (e.g., liquid or solid) will have on

² The Rumsfeld Report notes the importance of “input” analysis. See Executive Summary of the Report of the Commission to Assess the Ballistic Missile Threat to the United States, 15 July 1998, <<http://www.fas.org/irp/threat/bm-threat.htm>>.

military operations. As the next section notes, missile doctrine may have a powerful impact on states seeking to intervene in regional security crises.

- Threat assessments can and do venture beyond technical attributes of a particular weapon system. More specifically in our case, a missile capability or missile program must be understood within a *broader political context*. At one level, this analysis will incorporate a state's missile behaviors, including its use or threats to use missile systems, and the use of flight "tests" (or even missile sales) to send political signals. More broadly, of course, questions about a state's regional and international behavior must be taken into account. For example, can the state be classified as revisionist or status quo? Similarly, is it aggressive or does it seek compromise when pursuing its interests?
- Finally, the *strategic context or situation* will help to determine the weight given to one or another assessment criteria. During crisis or conflict, for example, threat analyses will be driven largely by estimates of deployed delivery systems or warhead capabilities rather than, say, program infrastructure.

REGIONAL IMPACT

For states within a region, missile proliferation—or perhaps more appropriately, missile programs and capabilities—presents a number of fundamental military and political threats.³

- Conventional missile strikes at airfields or key logistics hubs can influence the pace and scope of military operations: a case in point is potential Syrian attacks against assembly points for Israeli reserve units.

³ The following assumes that regional actors fall within the range of one or more missile systems.

- Missile attacks against population centers seem to have a unique potential to undermine public morale or regime support among political elites. Iraqi attacks against Teheran during the War of the Cities demonstrates the former, while initial Iranian attacks against Baghdad (for which the Iraqis at first had no response) serves as an example of the latter.
- Missile tests can prove politically provocative and economically damaging. For example, the Taiwan stock exchange lost nearly eight percent of its value, and the Taiwan dollar depreciated markedly in the wake of Chinese missile tests in July 1995.⁴
- Deployed missiles, especially those armed with NBC warheads, *may* weaken crisis stability. Like threat perception, this topic is contentious. The impact on crisis stability will depend, among other factors, on the type of missiles involved and how they are deployed and controlled.
- Missile attacks against non-combatant states have the potential to widen and escalate a conflict. The now classic example is the Iraqi strikes against Israel during the Gulf War, but it is not unreasonable to consider parallel scenarios in the event of conflict on the Korean peninsula.
- The presence of robust missile capabilities may complicate relationships between regional states and their supporters outside of the region. There is, at the very least, some potential that external states may be dissuaded from militarily or politically supporting regional actors for fear of attacks against deployed forces or directly against their homelands.

⁴ "Nuclear Missile Tests Unsettle Taiwanese Markets," *Lloyd's List*, July 27, 1995, p. 2.

For states outside a region that may seek to intervene in a regional crisis, missile proliferation can influence decisionmaking on at least two levels.

- External actors may be persuaded that intervention will prove too costly, owing to the potential of homeland attacks or, less likely, because of fears that missile strikes will inflict crippling damage (in military or political terms) on deployed forces. Of course, this issue concerns the United States, and impacts the debate over national missile defenses. A fundamental question is whether or not the threat of U.S. (nuclear) retaliation is credible and effective enough to prevent either direct attacks on the United States or unconventional attacks—via missile delivery systems or otherwise—against U.S. military forces deployed overseas. Some argue that, in the absence of missile defenses, uncertainties about the intentions of states and the use of their missile forces may be enough to dissuade the United States from intervention in many regional conflicts.
- It seems more likely, however, that regional missile capabilities will not deter intervention by external actors such as the United States, but instead shape *how* such actors will intervene and what their objectives might be. For example, during Desert Storm it appears that Saddam Hussein intended to launch unconventional missile strikes in the event of the downfall of his regime.⁵ True or not, a future U.S. president will have to take

this into account in the event of another serious crisis in the Persian Gulf. He may, therefore, be forced to limit war aims, and to communicate those limited objectives clearly to allies and to the Iraqi regime.

THE THREAT FROM IRAQ

In the decade before the 1991 Gulf War, Iraq invested considerable financial, human, and technological resources to deploy intermediate-range missiles and to develop an infrastructure capable of producing even longer-range systems.⁶ Of course, Iraq was not quiescent in other areas of weapons of mass destruction: major programs were undertaken to develop chemical, biological and nuclear weapons. Ultimately, Baghdad successfully developed and deployed (technically rudimentary) chemical and biological warheads for its Al-Hussein missile force, and undertook a crash program in August 1990 to design and manufacture a nuclear warhead. The WMD and delivery system programs were heavily supported—indeed, inextricably tied—to an aggressive pattern of foreign technological acquisition.

It would seem, therefore, that the pre-1991 Iraqi missile program would rank high under all reasonable threat criteria. In terms of regional impact, it is also clear that Iraqi missile attacks caused significant military and operational disruptions (primarily by forcing the Allied coalition to waste strike aircraft in a largely futile search for launchers), and threatened to escalate the conflict by strikes against Israel. However, the impact on crisis stability was minimal. Indeed, in a move that evokes memories of the

⁵ See Khidr Hamza, *Saddam's Bombmaker: The Terrifying Story of the Iraqi Nuclear and Biological Weapons Agenda*. (New York: Scribner, 2000), p. x; and Tim McCarthy and Jonathan Tucker, "Saddam's Toxic Arsenal," in Peter Lavoy, Scott Sagan and James Wirtz, eds., *Planning the Unthinkable: How New Powers Will Use Nuclear, Biological, and Chemical Weapons* (Ithaca: Cornell University Press, 2000), pp. 47-78.

⁶ This section draws on Tim McCarthy, "Proliferation Pathways: Iraq's Post-War Missile Acquisition Strategies," prepared for the Commission to Assess the Ballistic Missile Threat to the United States (Rumsfeld Commission), April 15, 1998.

Cuban missile crisis, Iraq even conducted two full-range missile tests just before the onset of hostilities without major incident.

More difficult and nuanced assessments must be made concerning Iraq's post-war missile program. Allied forces and UNSCOM successfully destroyed much of Iraq's missile infrastructure, though a limited system capability likely remains. Meanwhile, new facilities have emerged, although they have substantially reduced design and production capabilities. Key personnel previously involved in missile system development, including the directors of both Project 144 (Al-Hussein) and Project 1728 (Scud engine reverse-engineering and long-range designs), remain in the country; over the last nine years these senior scientists have been actively directing a variety of missile projects. Training of engineering and technical cadre has been more tightly focused than in the past, and a well-designed program to increase supporting industrial capabilities was implemented. At

times, foreign acquisition attempts have been intense—with Iraq willing to spend substantial sums of money on such imports—although they have met with inconsistent success.

It appears, then, that Iraq's declared projects have aimed to develop and refine its missile expertise rather than to produce missile systems in the country. Neither the nature of the Iraqi regime nor its geostrategic calculus has changed to any significant degree; accordingly, the abiding motivations for missile acquisition remain. Given all of the above, it is difficult to make a persuasive argument about the Iraqi missile threat in terms of available system capabilities. Indeed, Iraq may be a year or so away from returning to Al-Hussein production. Instead, it is more reasonable to assert that Iraq is an emerging missile threat in light of the assessment of program inputs, Iraq's history in the missile and weapons of mass destruction areas, and the political and strategic contexts in which the missile program operates.

New Concepts of Deterrence

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During the 1990s, a range of new questions emerged onto the strategic landscape. The end of the Cold War (1945-1990) transformed the East-West relationship, and steps were subsequently taken to reduce the “nuclear overhang” it had generated. By the turn of the century, the five NWS acknowledged by the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) had reiterated their commitment to ultimately eliminate their nuclear arsenals in a statement at the 2000 NPT Review Conference.¹ At the same time, the 1990s also witnessed a different trend. Several expert assessments indicated an increase in the numbers, types, and capabilities of ballistic missiles deployed around the world, and these analyses also concluded that WMD might be the preferred ordnance for these missiles.²

These potentially countervailing trends will play a significant role in defining the strategic environment of the early 21st century. How might concepts of deterrence develop in these new circumstances? Will the future of nuclear deterrence resemble its past? Will traditional

notions such as minimum deterrence and stability remain meaningful, especially in situations or regions where there is little or no collective institutional memory related to the theory and practice of deterrence as it developed during the Cold War? How will judgments about asymmetric deterrence capabilities, concerning trade-offs between different types of weapons, affect future strategic developments? Will “undeterrable” actors emerge? Will deterrence function as expected in a world characterized by several potentially countervailing centers of power? Finally, how might the ongoing process of globalization influence these developments?³

¹ See: Tariq Rauf, “An Unequal Success? Implications of the NPT Review Conference,” *Arms Control Today* 30 (July/August 2000), pp. 9-16; Rebecca Johnson, “The 2000 NPT Review Conference: a Delicate, Hard-Won Compromise,” *Disarmament Diplomacy* No. 46 (May 2000), pp. 2-21; and Thomas Graham, “Surviving the Storm: The NPT Regime After The 2000 Review Conference,” *Disarmament Diplomacy*, No. 46 (May 2000), pp. 22-25.

² For an overview see, Aaron Karp, “The Spread of Ballistic Missiles and the Transformation of Global Security,” *The Nonproliferation Review* 7 (Fall-Winter 2000), pp. 106-122.

³ Although not as voluminous as the literature written on the theory and practice of deterrence in the pre-1990 period, a range of materials on the subject has appeared in the last decade, including: Richard K. Betts, “The Concept of Deterrence in the Postwar Era,” *Security Studies* 1 (Autumn 1991), pp. 25-36; Willie Curtis, “The Assured Vulnerability Paradigm: Can it Provide a Useful Basis for Deterrence in a World of Strategic Multi-Polarity,” *Defense Analysis* 16 (December 2000), pp. 235-256; Keith Payne, *Deterrence in the Second Nuclear Age* (Kentucky: University of Kentucky Press, 1996); R.G. Joseph and J.F. Reichart, “The Case for Nuclear Deterrence Today,” *Orbis* 42 (Winter 1998), pp. 7-19; Colin S. Gray, *The Second Nuclear Age* (Boulder, CO: Lynne Rienner Publishers, 1999); Scott D. Sagan and Kenneth N. Waltz, *The Spread of Nuclear Weapons: A Debate* (New York and London: W.W. Norton & Company, 1995); Lawrence Freedman, “Does Deterrence Have a Future?” *Arms Control Today* 30 (October 2000); John Baylis and Robert O'Neill, *Alternative Nuclear Futures: The Role of Nuclear Weapons in the Post-Cold War World* (Oxford: Oxford University Press, 2000); Stephen J. Cimbala, *The Past and Future of Nuclear Deterrence* (Westport, CT: Praeger, 1998); Max G. Manwaring, ed., *Deterrence in the 21st Century* (London: Frank Cass, 2001); Avery Goldstein,

TRADITIONAL NUCLEAR DETERRENCE 1945-1990: THE FIRST LEARNING CURVE?

Some analysts have advanced the proposition that a collective institutional memory concerning the theory and practice of deterrence evolved during the Cold War. This process has been termed “nuclear learning,” an experience derived largely from the East-West, primarily U.S.-Soviet, competition.⁴

From this perspective, although the East-West relationship was fraught with potential danger, “a solution of sorts” to the problem of establishing a Cold War nuclear order evolved that transcended bloc rivalries.⁵ This solution established an order that involved “two linked systems of cooperative endeavour”:

- a managed system of deterrence, whereby a recognized set of states would continue using nuclear weapons to prevent war and maintain stability, but in an increasingly controlled and rule-bound manner; and
- a managed system of abstinence, whereby other states would relinquish the right to develop, hold or use such weapons in return for economic, security, and other benefits.⁶

The concept of “nuclear learning” will be explored in this paper to consider how future

deterrent relationships could evolve. But before embarking on this discussion, five preliminary observations seem pertinent.

First, the traditional understanding of deterrence did not emerge overnight, and a number of assumptions and factors (related to both theory and practice) contributed to its evolution.⁷

Second, two schools of thought exist concerning whether deterrence is “easy” or “difficult,” with both schools adopting different assumptions regarding the costs, risks, and motivations of the actors involved. As one study has characterized it, the “easy” school emphasizes that the costs and risks involved in any nuclear exchange are so high that no deterree would seriously contemplate initiating one. Theorists from the “difficult” school, in contrast, “attach less weight to the impact of infinite costs and more weight to the possibility of highly motivated deterrees.”⁸

Third, deterrence theory recognizes that judgments concerning capabilities and intentions between actors are inherently problematic. A state or alliance may have certain capabilities, but determining intentions in any given situation is far from straightforward. In practice, however, assumptions about the potential of particular capabilities must also often be made,

Deterrence and Security in the 21st Century, (Stanford, CA.: Stanford University Press, 2000); Tom Sauer, *Nuclear Arms Control: Nuclear Deterrence in the Post-Cold War Period* (Basingstoke, U.K.: Macmillan Press, 1998); and Gerald M. Steinberg, “Parameters of Stable Deterrence in a Proliferated Middle East: Lessons from the 1991 Gulf War,” *The Nonproliferation Review* 7 (Fall-Winter 2000), pp. 43-60.

⁴ For a commentary on this development see Joseph S. Nye, “Nuclear Learning and U.S.-Soviet Security Regimes,” *International Organization* 41 (Summer 1987), pp. 371-402.

⁵ William Walker, “Nuclear Order and Disorder,” *International Affairs* 76 (October 2000), pp. 703-724.

⁶ *Ibid.*, p. 706.

⁷ Lawrence Freedman, *The Evolution of Nuclear Strategy*, 2nd Edition (Basingstoke U.K.: Macmillan/International Institute for Strategic Studies, 1989). For additional commentaries on the “nuclear revolution” (including nuclear deterrence) and its impact on the Cold War see: John Mueller, *Retreat from Doomsday: The Obsolescence of Major War* (New York: Basic Books, 1989); Robert Jervis, *The Meaning of the Nuclear Revolution: Statecraft and the Prospect of Armageddon* (Ithaca, N.Y.: Cornell University Press, 1989); and John Lewis Gaddis, *We Now Know: Rethinking Cold War History* (Oxford: Oxford University Press, 1997).

⁸ Barry Buzan and Eric Herring, *The Arms Dynamic in World Politics* (Boulder, CO: Lynne Rienner Publishers, 1998), p. 170.

especially if these relate to ballistic missiles and WMD.

A fourth observation concerns the complexities associated with the relationship between ballistic missiles, missile defenses, and deterrent arrangements. The gradual acceptance, during the 1960s and early 1970s, of the notion of mutual vulnerability and the related requirement for an assured second-strike capability led to limitations on ABM systems. Nevertheless, although missile defenses came to be viewed as de-stabilizing in the context of mutual vulnerability, vigorous debate about their utility—and whether particular systems should be seen as either stabilizing or de-stabilizing—recurred throughout the Cold War.

The fifth preliminary observation reflects on a more distant time and venue, albeit one with contemporary resonance. Consider for a moment the situation confronting the delegates attending the first Hague Peace Conference in 1899, a little over a century ago. Their world was characterized by what they no doubt perceived as a rapidly changing environment, not least because of the advent of high-flying balloons, which could be used for new forms of strategic engagement.⁹ The Conference reached an agreement to prohibit, initially for a period of five years, “the launching of projectiles and explosives from balloons, or by other new methods of a similar nature.”¹⁰ While the delegates probably thought this agreement was

the best attainable at the time, they could not have foreseen the technological innovations of the coming century. They could not have known, for example, that their concerns over balloons would be superseded by radically new forms of flight, nor could they have imagined the dilemmas that would confront their successors in dealing with the new types of “projectiles and explosives” the next century would generate.

REVISITING THE TRADITIONAL ASSUMPTIONS OF DETERRENCE THEORY

Traditional deterrence theory also rests on a number of assumptions, including: notions of stability and rationality; credibility of threats; appropriate capability; effective communication of threats; and the unique characteristics of nuclear weapons.¹¹

Deterrence theory defines stability simply: the actors, at the state-to-state or alliance-to-alliance levels, have common interests in avoiding war in the nuclear age.¹² This

⁹ This example is quoted in Thomas C. Wingfield, *The Law of Information Conflict: National Security Law in Cyberspace* (North Falls Church, VA: Aegis Research Corporation, 2000), p. 2. The prohibitions agreed to at the 1899 Hague Peace Conference are provided in A. Pearce Higgins, *The Hague Peace Conferences and other International Conferences concerning the Laws and Usage of War* (Cambridge: the University Press, 1909), pp. 487-489. See also Adam Roberts and Richard Guelff, eds., *Documents on the Laws of War*, Third Edition (Oxford: Oxford University Press, 2000), pp. 59, 139.

¹⁰ Wingfield, *The Law of Information Conflict*, p. 2.

¹¹ See Phil Williams, “Deterrence,” in John Baylis, Ken Booth, John Garnett and Phil Williams, *Contemporary Strategy: Theories and Policies* (London: Croom Helm, 1975), pp. 67-88; Glenn H. Snyder, *Deterrence and Defense* (Princeton: Princeton University Press, 1961); and Robert Powell, *Nuclear Deterrence: The Search for Credibility* (Cambridge, UK: Cambridge University Press, 1990).

¹² Thomas C. Schelling and Morton H. Halperin, *Strategy and Arms Control* (New York: The 20th Century Fund, 1961); and Thomas C. Schelling, *The Strategy of Conflict* (Cambridge, MA: Harvard University Press, 1960). It has also been noted that underpinning traditional deterrence are “two distinct, yet compatible, strands of the theory...structural...deterrence theory...[and] decision-theoretic deterrence theory...” The former theory links international stability to the structure and distribution of power in the international system; the other “focuses on the interplay of outcomes, preferences, and choices in determining interstate conflict behavior.” Frank C. Zagare and D. Marc Kilgour, *Perfect Deterrence* (Cambridge, U.K.: Cambridge University Press, 2000), p. 16.

understanding, as developed during the Cold War, also prompted two parallel initiatives: 1) attempts to introduce greater crisis stability; and 2) corresponding moves to promote proliferation stability through alliance formation, security guarantees, and negotiation of global arms control and disarmament agreements.

In traditional deterrence theory, *rationality* played an important role.¹³ Actors were considered to operate with the assumption that each would be highly risk averse, although deterrence was also often described as “the threat that leaves something to chance,” implying an element of uncertainty.¹⁴ Emphasis was also placed on the *credibility of threats*, as a threat could not be effective unless an adversary believed that it would be implemented. The concept of *appropriate capability* involved a complex consideration of what sort of force structure would be required to deter a particular adversary. This force structure came to be

defined not only as the ability to deliver nuclear weapons to designated targets, but also required the possession of a sufficiently survivable force capable of retaliating after an initial attack.¹⁵

In terms of the *effective communication of threat*, the key aspect concerned the channels and language of communication. It was necessary to communicate an intended threat effectively to an adversary, as any miscommunication, misunderstanding, or misperception could lead to confusion about what responses would follow a particular action. The final assumption asserted that *nuclear weapons were unique*. Inherent in this assumption was a belief that nuclear weapons represented not only the most destructive form of WMD, but were also qualitatively different.¹⁶

DETERRENCE IN THE FUTURE: ONE CONCEPT OR MANY?

In light of the current debate over missile defense and missile proliferation, the assumptions of traditional deterrence theory should be reconsidered in terms of the following typologies of deterrent relationships: established, semi-established, and non-established. While these typologies are ideal types, they provide a framework for shedding light on certain features that may play a significant role in the future strategic environment.

Established deterrence relationships are characterized by a high degree of institutionalization (formal or informal), primarily between two states or alliances. This type of arrangement

¹³ In theoretical terms, rationality can be said to have at least three understandings: substantive; procedural; and instrumental. Substantive rationality involves judgments about value preference, such as life over death. Procedural rationality deems a rational choice to be the product of an ends-means calculation, whereby an actor considers every option and judges each one on its merits (including having knowledge of how other actors will respond), before making a choice. Instrumental rationality refers to situations where an actor may have two alternatives and chooses the option that yields the most preferred outcome. The latter variant utilizes assumptions concerning cost-benefit calculations related to threats, punishments, and pay-offs often derived from game-theoretic models involving two players. See: Zagare and Kilgour, *Perfect Deterrence*, pp. 38-39; and James G. Blight and David A. Welch, “Risking ‘The Destruction of Nations’: Lessons of the Cuban Missile Crisis for New and Aspiring Nuclear States,” *Security Studies* 4 (Summer 1995), p. 815, footnote 12.

¹⁴ Schelling, *The Strategy of Conflict*. See also, Robert Ayson, “Bargaining With Nuclear Weapons: Thomas Schelling’s ‘General’ Concept of Stability,” *Journal of Strategic Studies* 23, (June 2000), pp. 48-71.

¹⁵ On aspects of credibility and commitment, see Thomas C. Schelling, *Arms and Influence* (New Haven, CT: Yale University Press, 1966).

¹⁶ Bernard Brodie, ed., *The Absolute Weapon* (New York: Harcourt Brace, 1946). See also, T.V. Paul, Richard J. Harknett, and James J. Wirtz, eds., *The Absolute Weapon Revisited: Nuclear Arms and the Emerging International Order* (Ann Arbor: The University of Michigan Press, 1998).

could generate two potentially significant features. First, it may lead to a reasonable degree of expectation about future behavior (although this should not be interpreted as predictability). Second, prior historical experience and collective institutional memory may lead to the evolution of a common understanding concerning the requirements of stable deterrence. In a semi-established deterrence relationship, measures to regulate competition and mutual understandings concerning stability are in their formative stages. Some institutional procedures have been established, but the learning curve has not yet generated nuclear regulatory rules and procedures that are accepted by all parties. Non-established deterrence refers to those relationships in which different types of capability that could establish the basis for deterrence exist, but without any historical or procedural (formal or informal) interaction between any of the relevant parties about the meaning of stability or the regulatory rules for their relationships.

Rationality And The Question Of Use And Non-Use

The assumption of rationality also deserves reexamination. It is noteworthy that at least two views of rationality have emerged in the recent debate on deterrence theory. One position is that game theoretic or cost-benefit analysis underpinning deterrence theory derives from Western philosophical traditions (i.e., utilitarian thinking) and may not be appropriate in other cultural contexts. This argument holds that deterrence may not always operate as predicted by traditional theory, because there are varied cultural understandings of what constitutes a rational or irrational act. Deterrence, in this view, should be construed as a relativist phenomenon. A converse view contends that rationality in the cost-benefit sense does apply in

all cultural contexts, especially where nuclear weapons are concerned. This position concludes that nuclear weapons induce caution in decisionmakers regardless of cultural background, making resort to war much harder.

These contrasting points of view on rationality also have implications for the debate about why nuclear weapons have not been used in combat since 1945. Some have observed that a "nuclear taboo" evolved, proscribing the use of nuclear weapons except in cases of last resort. There are differences, however, between those that emphasize interest and material factors to explain non-use and those who attribute this outcome to ideational considerations and the development of international norms.¹⁷

In established deterrent relationships, it may be anticipated that the actors would continue to expect a reasonable degree of dependability from one another, although each might have different expectations concerning semi- or non-established deterrent relationships. Whether a relationship is established, semi-established, or non-established could also affect mutual understandings of stability. Stability can have a range of understandings, which can include economic and political factors as well as strategic and military ones. There may also be regional or contextual variations. For example, even within the context of the traditional understanding of stability, defined as the absence of general war, some actors may view this type of stability as irrelevant if one or more

¹⁷ See: Buzan and Herring, *The Arms Dynamic in World Politics*, p. 165; Lewis Dunn, *Controlling the Bomb in the 1980s*, (New Haven, CT: Yale University Press, 1982), p. 20; Richard Price and Nina Tannenwald, "Norms and Deterrence: the Nuclear and Chemical Weapons Taboos," in Peter Katzenstein, ed., *The Culture of National Security: Norms and Identity in World Politics* (New York: Columbia University Press, 1996); and Nina Tannenwald, "Nuclear Taboo," *International Organization* 53 (Summer 1999), pp. 433-468.

seek to overturn the status quo.

This point is particularly relevant in the case of ballistic missile proliferation. Deployment of ballistic missiles can transform regional and especially bilateral relationships. In situations of very close geographical proximity, reduced warning times could generate demands for heightened alert status and launch-on warning strategies. In these conditions, there would be little room for error, so the learning curve would need to be a rapid one. Ensuring that the traditional understanding of stability is maintained between established, semi-established, and non-established deterrent relationships could therefore become a distinctive element of the multilateral collective learning curve as well.

Credibility Of Threats

Another question concerns the credibility of threats in the future and, specifically, the kinds of threats that will be considered meaningful as well as the evolution of strategic doctrines. It may prove difficult to make threats credible if rationality is considered a relative not a generic phenomenon. For example, if there are multiple ethno-centric versions of what is at stake in a direct confrontation, developing a standard for credibility may be impossible.

Ballistic missiles also impact on the identification of who or what is the threat. Given technical and political limitations, how can one actor indicate to another that it is not intending to target or threaten it? This uncertainty is the central feature of the traditional security dilemma. Alternatively, another view of the security dilemma is that one actor may intentionally target its missile potential at an adversary in an attempt to provoke a reaction.¹⁸

¹⁸ For commentary on the security dilemma see: Robert Jervis, "Cooperation Under The Security Dilemma," *World*

In some contexts, there may be little difference between the established, semi-established, and non-established deterrent relationships, as many of the new asymmetries were not part of traditional deterrence arrangements. The learning curve here will consequently be a function of collective trial and error and could damage stability. Uncertainty about missile accuracy and payload may also cause problems. In established deterrent relationships, ballistic missiles initially carried large payloads to offset inaccuracy, but subsequent technical development led to lower yield warheads as accuracy improved. The question this trend raises is whether technological development will compel semi-established and non-established deterrent relationships to evolve similarly and, if so, what will be the effect on established relationships?

Effective Communication Of Threat

Effective communication is an extremely complex area. In established deterrent relationships the language of communication is likely to have been developed over time and may be articulated explicitly only rarely. Concomitantly, collective experience has also shown that even in situations where there is a historical institution of deterrent arrangements, it may still be necessary to use the language and signals of reassurance to avoid any possible differences in interpretation and any unintended consequences. Channels of effective communication and mutually understood language and signals may not be developed at all in semi-established and non-established deterrent relationships, with potentially dangerous implications during crises.

Politics 30 (1978), pp. 167-214; and Nicholas J. Wheeler and Ken Booth, "The Security Dilemma," in John Baylis and Nicholas J. Rengger, eds., *Dilemmas of World Politics. International Issues in a Changing World* (Oxford: Clarendon Press, 1992), pp. 29-60.

How Unique Are Nuclear Weapons Today?

A number of actors have the capacity to develop or acquire both ballistic missiles and nuclear weapons in the future. For some, these are old technology; for others they are still regarded as symbols of power and prestige. Two contrasting trends may emerge. While some of the actors engaged in the established deterrent relationships may feel the need to downgrade their nuclear forces, others may be compelled, by different strategic factors, to upgrade their capabilities as they seek to address the problems generated by semi-established or non-established deterrent relationships. These developments could undermine stability, particularly in situations where there is a perception of an imbalance of forces, or where the leadership is not highly risk averse.

CONCLUDING OBSERVATIONS

Two potentially countervailing trends may emerge in the early decades of the 21st century. On the one hand, efforts to strengthen the existing international WMD and ballistic missile regimes continue. On the other, confidence in these regimes is eroding, and demand for WMD may be increasing. Moreover, differing perceptions of threat and vulnerability are generating divergent demands for the reconsideration of options that might otherwise have been precluded, such as missile defenses. These developments, together with new technologies, are changing our understanding of how deterrent relationships will evolve.

The Cold War has ended, but its key developments and experiences have enduring impact. For many, the Cuban missile crisis in 1962 represented a key turning point in the “nuclear learning” curve of the early Cold War. After Cuba, improved communications between the two adversaries and agreements designed to foster stability emerged. Even then, unantic-

pated events and misperception persisted.

Moreover, other factors may have contributed to the avoidance of general war. Did differences in strategic culture matter? Was deterrence driven by historical and geographic considerations, rather than by assumptions derived from game-theory and rational calculation?

A key issue for the future is how to analyze the interplay between all these factors. Will it be possible to avoid misunderstandings or inadvertent WMD use in cases where conceptions of deterrence differ from those of the Cold War? Can the appropriate confidence-building measures and conflict resolution procedures be developed so that they provide a basis for stability and security, especially in regional contexts? Will it be possible to strengthen the existing arms control and disarmament regimes, thereby establishing greater confidence in the ability of these regimes to deliver on their collective security potential? One might view the 1899 Hague Conference as an unfortunate precedent. But the delegates to that conference, unlike their contemporary counterparts, did not have recourse to current global arrangements, and lacked the collective experience of over a century of efforts aimed at international norm development in this area.¹⁹

¹⁹ See: Harald Müller, “The Internalization of Principles, Norms, and Rules by Governments: The Case of Security Regimes,” in Volker Rittberger, ed., *Regime Theory and International Relations* (Oxford: Clarendon Press, 1993), pp. 361-388; and Jeffrey W. Legro, “Which Norms Matter? Revisiting the ‘Failure’ of Internationalism,” *International Organization* 51 (Winter 1997), pp. 31-63.

Missile Proliferation, Missile Defenses and Arms Control

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This essay is structured as follows. It begins with an examination of the growing pressures for a global missile nonproliferation regime that goes beyond the existing framework of the MTCR. Three key pressures—the continuing proliferation of missile technology, the increasing limitations of an exclusively supply-side approach, and the emergence of NMD—are cited. Next, the paper looks at the options for controlling missile proliferation and opts for a strategic approach based on generating norms via CBMs. It concludes with an examination of developments in international policy, with particular emphasis on plans for a missile code of conduct.

PRESSURES FOR BALLISTIC MISSILE NONPROLIFERATION

Ballistic missiles exert a powerful attraction for small and regional powers. Militarily, they have utility in regional conflicts and rivalries, and a missile capability can also help smaller powers carve out a wider international political niche.¹ The short flight times of ballistic missiles and the ineffectiveness of defenses against them makes them naturally attractive to insecure states, and their range can extend a state's

military reach far beyond anything that could otherwise be attained. This extension of reach, combined with the potential capability to deliver WMD, seems to be a key military factor driving missile proliferation.²

Moreover, since some small states feel all but ignored on the international political stage, they may feel compelled to use missiles as a means to promote their interests. The effect of the North Korean Taepo-dong missile program on the United States serves as a warning not to underestimate the political clout a missile program can bestow on a small country. Beyond military utility, long-range deterrence, and prestige, ballistic missile programs also provide export revenue and technological spin-off benefits.

These potential advantages help explain why, by the close of the 1990s, a total of 40 states were known to have acquired or developed ballistic missiles.³ While there are grounds for arguing that the spread of long-range ballistic missiles has been overstated, the principal focus of concern has been less the number of states with missile capability than

¹ Janne E. Nolan, *Trappings of Power: Ballistic Missiles in the Third World* (Washington DC: Brookings Institution Press, 1991). Aaron Karp also notes, "most countries remain extremely proud of their missile forces. While nuclear and chemicals weapons are hidden beneath layers of official secrecy, long-range missiles are the stuff of military parades." Aaron Karp, "Controlling Ballistic Missile Proliferation," *Survival* 33 (November/December 1991), p. 527.

² After the Gulf War, Lieutenant General Sundarji of the Indian Army made his (in)famous comment to the effect that the conflict demonstrated that a regional power needed the capability for long-range WMD delivery before risking conflict with the United States.

³ Tanya Ogilvie-White, "Offensive Missiles, Missile Defences and the Nuclear Future," unpublished paper prepared for the Nuclear Futures Project, Mountbatten Centre for International Studies, University of Southampton, January 14, 2000.

which states might acquire such a capacity.⁴ None of the “states of concern” yet has a serious long-range capability, but Libya, Iran, and the DPRK all have MRBM capability, and the DPRK is currently pursuing intermediate/ICBM capacity with the Taepo-dong program.

The Taepo-dong remains very much in the developmental stage, as does the other missile program of foremost concern to Washington, the Iranian Shahab. Thus, as the 1998 Rumsfeld Commission and the 1999 U.S. National Intelligence Estimate (NIE) concluded, the missile threat to the United States lies in the future, but in the very near future. So it was extraordinarily poor timing (or, depending on your politics, extraordinarily prescient timing) when in August 1998, just after the July 1998 release of the Rumsfeld Commission report, the DPRK test-launched the Taepo-dong missile. Some of the principal technical reasons to conclude that ICBM proliferation remained a distant possibility—such as the difficulty of developing multistage separation and multifuel systems—no longer applied.⁵

Moreover, the Taepo-dong was under development by perhaps the leading exporter of

missile technology outside the MTCR.⁶ A “second wave” of missile supply lines from the DPRK, China, and possibly Iran has emerged, and these new suppliers are unlikely to seek MTCR membership in the foreseeable future, despite occasional entreaties from the United States and occasional pledges from the missile-exporting states themselves.⁷ Continuation of supply and demand outside the MTCR framework has highlighted some of the internal problems of the regime, although it has long been recognized that supply-side arms control will eventually lose its effectiveness.⁸

The main problem remains that although the MTCR may be based on the principle of missile nonproliferation, it is operationally an export control regime. Consequently, it has limited effectiveness against a determined state, and genuinely determined states are usually the focus of greatest concern. In addition, supply-side nonproliferation requires a basic identity of foreign policy interests if it is to be effective; one reason for the early effectiveness of the MTCR was the fact that its members shared similar strategic and political interests and preferences.⁹

⁴ On the case that the ballistic missile threat from “rogue states” has been critically overstated, see Joseph Cirincione, “Assessing the Assessment: The 1999 National Intelligence Estimate of the Ballistic Missile Threat,” *The Nonproliferation Review* 7 (Spring 2000), pp. 125-137.

⁵ Analysts had not foreseen that the Taepo-dong would have three stages and a space-launch capability. Before the test, there still seemed to be little reason to suppose that the “Scud barrier” would be broken in the foreseeable future. See Wyn Q. Bowen, “US Policy on Ballistic Missile Proliferation: The MTCR’s First Decade (1987-1997),” *The Nonproliferation Review* 5 (Fall 1997), pp. 36; and Aaron Karp, “The New Politics of Missile Proliferation,” *Arms Control Today* 26 (October 1996), pp. 110-14. On the technological surprises of the Taepo-dong, see Joseph S. Bermudez Jr., “A History of Ballistic Missile Development in the DPRK,” Occasional Paper No. 2, Monitoring Proliferation Threats Project, Center for Nonproliferation Studies, Monterey, p. 31.

⁶ The DPRK has exported the Nodong missile to Iran and Pakistan, and Scud technology to Egypt, Iran, Pakistan, and Syria, according to the assessment of the Carnegie Nonproliferation Project, <<http://www.ccip.org/files/projects/npp/resources/ballisticmissilechart.htm>>.

⁷ For example, both China and the DPRK have recently pledged not to assist missile programs in other states, and the DPRK was reportedly invited to enter the MTCR by U.S. Secretary of State Madeleine Albright on her October 2000 visit.

⁸ This problem was recognized both by policymakers and analysts: for example, Brad Roberts, writing in 1993, commented presciently that while “some ballistic missiles in the developing world have had little more than nuisance value,” the technological factors that made this the case would no longer apply over the following decade. See Brad Roberts, “From Nonproliferation to Antiproliferation,” *International Security* 18 (Summer 1993), p. 143.

⁹ Jing-dong Yuan, “The MTCR and Missile Proliferation:

Another problem is that the MTCR represents, in Trevor Taylor's words, "arms control for them." It consists of a small group of states preventing others from acquiring weaponry that they themselves possess in abundance and show no sign of relinquishing.¹⁰ This problem is exacerbated, because ballistic missile technology, especially ICBM technology, is very closely related to SLV technology. The two can be virtually indistinguishable, and so a state with a perfectly peaceful SLV program unavoidably acquires much of the technology required for a ballistic missile program. While there are ways to distinguish between the two programs, it is impossible to exclude the military potential of SLV technology: a SLV is always a latent ballistic missile.¹¹ This creates serious problems when attempting to establish arms control regimes for ballistic missiles. Moreover, the time needed to convert an SLV program to an ICBM program could be brief—possibly only a few years or even less.¹² There might also be little

warning that conversion was taking place, as only limited flight-testing is required for a ballistic missile that has already been tested as a SLV.¹³ These difficulties have been magnified in recent years by the steady increase in satellite launches. In 1997, it was estimated that 1,697 satellites would be launched over the coming decade, of which 70 percent would be commercial with a value of \$58 billion, and 30 percent military with a value of \$62 billion.¹⁴

The MTCR, despite some success on its own terms, suffers the problems inherent in an exclusively supply-side approach to proliferation. These failings indicate that the global missile nonproliferation regime is incomplete. As others have noted, the missile nonproliferation regime remains "a partial regime, because only one aspect of the issue—controlling the transfer of missile technology—is presently addressed by the regime," in contrast to other WMD nonproliferation regimes (such as the NPT, CWC, and BWC) that contain commitments not to seek the proscribed types of weapons or supply them to others.¹⁵

The third factor in the missile nonproliferation problem is the emergence of U.S. plans for a NMD system, the rationale for which, rhetorically at least, is the spread of ballistic missiles to "states of concern." The declared

Moving Toward the Next Phase," paper prepared for the International Security Research and Outreach Programme, International Security Bureau, Department of Foreign Affairs and International Trade, Ottawa, Canada.

¹⁰ Trevor Taylor, "The Arms Control Process: The International Context," in Jeffrey A. Larsen and Gregory J. Rattray, eds., *Arms Control Towards the 21st Century* (Boulder, CO: Lynne Rienner Publishers, 1996), pp. 43-44. The charge of great power hegemony masquerading as nonproliferation concern is often leveled at the NPT, and India in particular has bitterly criticized the MTCR as discriminatory and a mechanism to protect military and economic monopolies by the developed states. Deborah Ozga, "A Chronology of the Missile Technology Control Regime," *The Nonproliferation Review* 1 (Winter 1994), p. 68.

¹¹ As a consequence, the United States does not distinguish between SLVs and ballistic missiles in its export control policy towards non-MTCR members, meaning peaceful and therefore legitimate SLV programs can be severely hampered, reinforcing the MTCRs elitist image.

¹² Wyn Q. Bowen, *The Politics of Ballistic Missile Nonproliferation* (London: Macmillan, 2000), p. 24. National Intelligence Council, "Foreign Missile Developments and the Ballistic Missile Threat to the United States Through 2015,"

September 9, 1999, <http://www.cia.gov/publications/nie/nie99msl.html>.

¹³ Certain aspects of ballistic missile development, such as corrections to trajectory bias and designing warhead reentry vehicles, do require flight-testing, but other differences between SLVs and ballistic missile programs, such as launch facilities, would require fairly intrusive verification to ensure detection.

¹⁴ Commission to Assess the Ballistic Missile Threat to the United States, Appendix III: Unclassified Working Papers, <http://www.fas.org/irp/threat/misile/rumsfeld/pt3_siebert2.htm>.

¹⁵ Dinshaw Mistry, "Ballistic Missile Proliferation and the MTCR: A Ten Year Review," *Contemporary Security Policy* 18 (December 1998), pp. 59-82.

motivation for NMD is to defend the United States against a ballistic missile attack, but a deeper and probably more important motivation for NMD is to prevent the United States from being deterred from regional intervention with conventional weapons. A “rogue state” or “state of concern” is, therefore, a state that pursues unacceptable regional ambitions, while using the threat of a missile attack to deter the United States. In short, a “rogue” is what has also been termed a “modern” state, using the traditional methods of Westphalian politics to assert itself vis-à-vis other states.¹⁶ As early as 1993, the Bottom Up Review conducted by the U.S. Department of Defense identified the top two threats to world order as “aggression by major regional powers with interests antithetical to our own,” especially in the Middle East and Northeast Asia, and “the proliferation of WMD around the world.”¹⁷ Recalling Indian Lieutenant General Sundarji’s point about the real lesson of the Gulf War, former U.S. Secretary of Defense Aspin remarked that if Iraq had possessed nuclear weapons, it might well have been able to deter intervention by the United States and its allies.

NMD, then, is a unilateral response to missile proliferation, rather than an attempt to engage the problem itself. The effects of NMD on missile programs in “states of concern” are difficult to predict, but the three key motivations driving missile development in these states remain: 1) bolstering long-range deterrence of militarily superior opponents (most likely the United States); 2) increasing regional prestige

and leverage in conflicts with regional military competitors; and 3) earning export revenues. In the case of long-range deterrence, it is possible that the deployment of NMD will discourage missile development, but it seems equally likely—perhaps more likely—that NMD deployment will generate a new international market for countermeasures, especially given the vulnerability of some missile defense systems to this technology.

Overall, the international community faces a threefold problem: 1) the qualitative and quantitative spread of ballistic missiles; 2) the increasing difficulties faced by existing arrangements designed to restrict that spread; and 3) the potential of NMD to exacerbate existing problems and generate new ones. The emergence of the NMD issue is hardly surprising, considering the absence of an international demand-side norm to engage and manage missile proliferation. To establish a new norm-based regime restricting missile proliferation will require simultaneous steps to generate a global anti-ballistic missile culture, avoid accusations of great power hegemony, and somehow reconcile these two requirements with the U.S. deployment of NMD (bearing in mind that the United States is unlikely to abandon NMD for any reason other than technical failure in the foreseeable future).

CONTROL OF BALLISTIC MISSILES

Ballistic missiles can be regarded as a generically threatening delivery system for three key reasons: their effectiveness as surprise attack weapons and the resulting corrosive effect on crisis stability; their association with WMD owing to inaccuracy and low payloads; and their capacity to generate interregional threats in a way that few other technologies do.¹⁸ If the

¹⁶ Aaron Karp, “Can Other Nonproliferation Regimes Be Insulated from Developments in Missile Proliferation?” unpublished paper presented at the PPNN Workshop on The Tough Challenges Facing Nuclear Nonproliferation, Høsbjør, Norway, December 10-12, 1999, p. 5-6.

¹⁷ U.S. Department of Defense, *Report on the Bottom Up Review* (Washington, DC: U.S. Government Printing Office, 1993).

¹⁸ Ogilvie-White, “Offensive Missiles, Missile Defenses, and the Nuclear Future,” p. 4.

findings of the Rumsfeld Commission and the 1999 NIE are accurate, these factors will become more significant in the future as ICBM capabilities proliferate.¹⁹

The need to control missile proliferation, particularly ballistic missiles, is based on two criteria. The first is the ethical requirement to stem the spread of WMD, which by their nature are unacceptable to the international community. In this context, controls on missile proliferation are an indispensable component of the global anti-WMD culture that is institutionalized through the NPT, the CWC, and the BWC. Limiting the spread of missile forces inevitably places limits on the capacity of states to deliver WMD, and so one option is to institutionally link missile control with WMD control. Since the inaccuracy and low payload of first-generation ICBMs mean that they are only truly effective when armed with WMD, this argument should not be dismissed lightly.²⁰

Nonetheless, arms control as it has been applied to missiles must be distinguished from the control of WMD. Ethical limitations on weapons are usually grounded in concern over

inhumane effects or indiscriminate destruction: the Geneva Convention, for example, outlaws weapons that cause civilian casualties disproportionate to the military objective. A missile is a delivery system rather than a weapon in itself, so the potential norms for missiles are qualitatively different than those for WMD. The principal effects of missiles *per se* lie not in their destructive power, but in the consequences of their range, speed, and the lack of defenses against them. International humanitarian norms generally relate to “the use of certain weapons that are considered too indiscriminate or unnecessarily injurious.”²¹ It is difficult to see how the latter criterion can be applied to a delivery system rather than a warhead. In most cases, it is not the missiles in themselves that are the problem, but the payloads they carry.

Therefore, establishing an ethical basis for controls on missile proliferation appears difficult. Although both missile and WMD control are closely linked, they are not the same thing. Nevertheless, the possession of missiles is clearly a factor in determining a state’s strategic capabilities and thereby impacts international strategic stability. It follows that norms related to arms control over missiles must be based upon common ideas about strategic stability and on features generic to missiles themselves. To cite Hedley Bull:

Unless the powers concerned want a system of arms control; unless there is a measure of political detente among them sufficient to allow of such a system; unless they are prepared to accept the military situation among them which the arms control system legitimises and preserves, and can

¹⁹ Moreover, much about missile development is hidden: one of the most potent arguments of the Rumsfeld Commission’s report was the assertion that the United States would have little or no warning of ICBM deployment in “states of concern.” See Report of the Commission to Assess the Ballistic Missile Threat to the United States, July 15, 1998, <<http://www.house.gov/hasc/testimony/105thcongress/BMThreat.htm>>. This analysis has been criticized as “rather hysterical.” See Cirincione, “Assessing the Assessment.” The August 1998 Taepo-dong test, however, indicates the extent to which long-range missiles can be developed in secret.

²⁰ As Aaron Karp has noted, WMD, especially nuclear weapons, and missile development are now so closely linked that “the question is no longer of the chicken or the egg sort, rather it is both chickens and eggs, with the increasing certainty that if you see one, you will sooner or later see the other.” See Karp, “Can Other Nonproliferation Regimes Be Insulated from Developments in Missile Proliferation?” p. 2.

²¹ Jo L. Husbands, “Preventing the Spread of Arms: Delivery Means and Conventional Weapons,” in Larsen and Rattray, eds., *Arms Control Towards the 21st Century*, p. 236.

agree and remain agreed about what this situation will be, there can be little place for arms control.²²

These requirements—desire for arms control, political detente, and above all common conceptions of stable military security—are the necessary preconditions for future arms control agreements related to missiles.

PROSPECTIVE SOLUTIONS

The way forward lies not only in maintaining existing regimes, but also in creating new ones. A comprehensive solution requires the development of a new multilateral regime to address the demand side of missile proliferation, which would work alongside the existing supply-side regime. Such a new regime will of necessity start from scratch, since it will require establishing global norms where few if any currently exist. Much ballistic missile proliferation is fairly opaque, leading to shock developments such as the 1998 Taepo-dong missile test that generate suspicion about other states' intentions. Judging intentions is always an intensely political process, but it is made considerably more difficult in the absence of transparency, and the negative impact of unannounced testing on security should not be underestimated.²³ In other words, a global missile nonproliferation regime will need to begin by generating openness and a degree of mutual confidence before more ambitious plans, such as global or regional bans, are likely to be successful. The logical first step is the development of CBMs.

Two approaches to CBMs can be identi-

fied. *Traditionalist* approaches tend to emphasize CBMs as useful in making conflict situations less unstable without changing the underlying causes of the conflict. From this point of view, CBMs are seen as particularly useful in bolstering crisis stability.²⁴ This concept ascribes a narrow role to CBMs and with regard to missile programs, it would principally aim to encourage openness about missile capabilities and launches in order to lessen the dangers of surprise attack and misinterpretation. This transparent approach will work most effectively when the states involved share a common view of strategic stability and regard the status quo as acceptable. The U.S.-Soviet conflict during the Cold War serves as a clear example. This approach works less well in situations characterized by strategic insecurity and instability, and/or dissatisfaction with the status quo. Missile CBMs in the narrow context, while possibly ameliorating the most destabilizing effects of ballistic missiles, risk being counterproductive by legitimizing missile programs that are publicized rather than kept secret.

Transformationalist views of CBMs adopt a more progressive and optimistic stance and see CBMs as making a qualitative difference to political relationships. From this perspective, CBMs possess the capacity to change the terms on which states interact, rather than simply ameliorate them. The growth of multilateralism—or agreed rules of legitimate conduct between three or more states—provides a favorable environment for the development of transparency.²⁵ Multilateralism involves not just

²² Hedley Bull, *The Control of the Arms Race: Disarmament and Arms Control in the Missile Age* (London: Weidenfeld and Nicolson, 1961), p. 10.

²³ See Ben Sheppard, "Regional Rivalries are Replayed as India and Pakistan Renew Ballistic Missile Tests," *Jane's International Defence Review* (May 1999), pp. 57-59.

²⁴ The distinction between traditionalist and transformationalist approaches to CBMs is outlined in "Constructing Nonproliferation and Arms Control: The Norms of Western Practice," in Keith R. Krause, ed., *Culture and Security: Multilateralism, Arms Control and Security Building* (London: Frank Cass, 1999), pp. 33.

²⁵ Ann Florini, "The Evolution of International Norms," *International Studies Quarterly* 40 (1996) p. 382.

agreed normative rules of conduct, but also their non-discriminatory application, and when applied to transparency agreements on missile capabilities, may be instrumental in the delegitimization of ballistic missiles. The longer term objective is to foster confidence and trust between participating states, while non-participating states become increasingly isolated. Transparency in this context is more than just a feature of multilateralism, but can in fact be its foundation. A growing culture of openness has developed in international politics, and “secretive behaviour that was once taken for granted has come to be seen as a signal of nefarious intentions.”²⁶

POLICY INITIATIVES

In light of the problems discussed above, some signs in 1997-99 point to a shift in emphasis in the MTCR regime. The joint statement issued by the 1997 MTCR Plenary Meeting in Tokyo expressed “concern” over indigenous missile programs and pledged to extend contacts with non-members in order to “impede” missile proliferation and “encourage” adherence to MTCR norms. This carrot-and-stick approach of encouragement and impediment still focused largely on transfers, underlining the fact that the MTCR remained a suppliers’ cartel. By 1999, however, some clear themes linking ongoing missile proliferation with the need to improve the MTCR began to emerge. The principal theme emphasized that the cartel model had reached the limits of its effectiveness and that demand-side constraints were needed. Another theme of discussion highlighted the need to discover a method to distinguish missile development from SLV development.

These ideas were developed further at the

Noordwijk MTCR Plenary in October 1999. The joint statement issued following the session stressed the need for “responsible missile behavior” on a global basis. Although there was no definition of the distinction between responsible and irresponsible missile behavior, this statement still indicated a significant shift in MTCR thinking on missile proliferation. The MTCR members were clearly looking beyond the framework outlined only two years earlier in Tokyo. In 2000, Russia floated a proposal for a Global Control System (GCS) on missiles. The GCS was not so much a Russian plan as a package of ideas originating with Russia and its MTCR partners.²⁷ It had three principal themes: 1) a definition of “responsible missile behavior;” 2) a range of techniques for establishing and verifying such behavior; and 3) the provision of incentives to prompt states to agree to pursue such behavior.

The first theme, responsible missile behavior, is not a “one-size-fits all” concept. For some states, it means agreeing to forego any attempts to develop missiles, while for others it would mean limits on deployment and/or further improvements to the range, payload, or other characteristics of existing missiles. Thus this type of system would not necessarily be confined to successful proliferators but would, potentially, be the basis for a global missile regime. The second aspect of this system is transparency: a global launch monitoring regime, in which launch notification, early warning information, and test data is distributed to

²⁷ France had proposed an international notification regime on the transparency of SLV launchers and ballistic missile testing; Britain had voiced support for an SLV transparency scheme; and the United States later agreed that “the first step in any international agreement [on missile nonproliferation] should be the signing of agreements on exchanging missile launch information and notification of planned launches.” See Mark Smith, “The MTCR and the Future of Ballistic Missile Non-Proliferation” *Disarmament Diplomacy*, No. 54 (March 2001).

²⁶ Ibid, p. 381.

member states via an international organization. In operational terms, this sort of openness increases knowledge about the capabilities of states with missiles programs. In political terms, it might generate a culture of openness and thereby delegitimize secrecy about missile capabilities. It might, in time, encourage moves away from the use of missiles as international political currency.

The third theme involves incentives: what is on offer for states that agree to participate? This point is significant, since many of the states at which the GCS is presumably directed have few resources—political, military, and economic—in comparison to many of the MTCR states. Moreover, many are located in regions with acute and immediate security problems that are absent in more privileged parts of the world. As a result, they will probably demand compensation for the abandonment or restraint of missile programs. The most radical form of compensation on offer is a security guarantee for regime members agreeing to renounce ballistic missiles. While lacking details, these proposals suggest assurances against missile attack and assistance from the United Nations in the event of one. This proposal could mean anything from immediate military intervention to assistance in dealing with the aftermath of a missile attack; the United States was quick to reject this aspect of the GCS proposal as infeasible.

Less ambitious incentives have been put forward to distinguish SLV from ballistic missile production. Suggestions in the GCS that SLV programs could receive aid in exchange for commitments not to convert them into ballistic missiles have been strongly criticized. The critics point out that SLVs are so closely related to ballistic missiles that aiding a SLV program would effectively aid the development of a latent capacity for ballistic missile production. Another option would involve aiding some aspects of

SLV programs while maintaining tight controls on launcher technology. Under such a scheme, member states might be able to pursue commercial space programs, provided that the actual launch was handled by other states at favorable rates. Booster technology would then remain tightly controlled under the MTCR.

As pointed out earlier, many components of the GCS represented a public airing of ideas that had substantial support among MTCR members. This point particularly applies to the proposals on transparency and incentives, which are the principal planks of the code of conduct that was drafted at the 2000 MTCR Plenary in Helsinki. The details of the code have yet to be made public, and it will be finalized in consultation with non-members, reflecting an outreach effort. But the key emphasis is on transparency of missile and SLV programs, and where possible restraint and even reduction of these programs.²⁸ It is described as “a set of principles, commitments, confidence-building measures and incentives” designed to create a common concept of “responsible missile behavior,” to be implemented via a multilateral instrument open to all states.²⁹ The code entails

a number of confidence-building measures whereby each state would, as far as confidentiality allows, explain its ballistic and space policy, including its civilian space programme. Furthermore, the countries concerned would undertake to give notice to the other participating states of any tests or firing of ballistic missiles.³⁰

²⁸ Ibid.

²⁹ NATO Press Release M-NAC-2 (2000)121, December 14, 2000, “Report on Options for Confidence and Security Building Measures (CSBMs), Verification, Non-Proliferation, Arms Control and Disarmament.”

³⁰ “Transatlantic Co-operation on Anti-Missile Defence,” WEU Assembly Report, November 15, 2000.

The transparency proposed, and in fact the code of conduct itself, is a flexible concept that can be tailored to suit individual and regional purposes.

To conclude, demand-side controls represent the missing piece in global missile nonproliferation, and the events of the last two years have underlined this point. Establishing such a regime requires 1) creating institutionalized norms where few if any currently exist; and 2) multilateralism, since we live in a multipolar world and are dealing with interregional weapons. The proposed code of conduct is a “politics first” option. It leaves existing

technology unchanged and attempts to change how people view the technology by increasing transparency. It should be seen as a vital first step in the growth of a demand-side nonproliferation regime, rather than an end in itself. Its strength is the recognition that uncertainty about military capabilities is a prime cause of insecurity, but it is important that transparency is not seen as legitimizing missile programs. Over the longer term, a transformationalist approach to the development of CBMs under the proposed code will be indispensable to the development of a global missile nonproliferation regime.

Forecasting the Strategic-Military Implications of NMD Deployment

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When the United States deployed the atomic bomb in 1945, military planners expected that it would take a decade for the Soviet Union—still struggling with the tremendous devastation wreaked by World War II—to come up with a similar weapon. Instead, the Soviet Union tested its first atomic bomb in 1949, and Washington gained no discernible diplomatic or strategic advantages from its prior deployment and decision not to place these weapons under international control. During the 1950s, similar action-reaction dynamics led to the development of the hydrogen bomb by both countries, with neither side gaining in security. In the early 1970s, American military planners again believed that they had developed a decisive military advantage over the Soviet Union in their deployment of the first MIRVs for U.S. ballistic missiles. They expected that the Soviet Union would take at least a decade to mount an effective response and moved ahead with a unilateral deployment. Instead, by 1975, the Soviet Union had matched the United States and then eventually used this very technology to develop an overwhelming numerical advantage in heavy, ground-based missiles with multiple, high-yield warheads (such as the SS-18 system). By the early 1980s, indeed, the United States viewed these counter-deployments as so threatening that it felt “forced” to move ahead with the Strategic Defense Initiative (SDI).

This selective history of postwar military innovations underlines several critical points

regarding the possible U.S. deployment of a NMD: 1) NMD is unlikely to revolutionize the strategic environment or render offensive weapons obsolete; 2) NMD will be met by active military countermeasures from a number of states (given the current global context of multipolarity); and 3) NMD is likely to “ratchet up” rather than reduce the overall number of armaments worldwide. Interestingly, despite ample evidence from military history about technological innovation, the current debate in the United States over possible responses has tended to be limited to the issue of direct countermeasures: either Russian/Chinese missile deployments or simple penetration aids. The breadth of possible responses to NMD, however, is far greater. It includes not only the deployment of missiles and decoys, but also asymmetrical responses in the form of alternative delivery vehicles, such as cruise missiles, and the development of other WMD, such as biological or chemical warfare agents.

Furthermore, the current U.S. debate has failed to analyze the implications of NMD for outer space. Currently, this realm is a weapons-free environment, supported by a limited treaty regime (the Outer Space Treaty) and a number of tacit agreements against weaponization. However, in the absence of specific treaties banning anti-satellite weapons, a U.S. NMD deployment that relies on space-based components may open a Pandora’s box of possible responses by other states. Such a

development could put at risk future manned, scientific, and commercial activities in space, as well as U.S. arms control monitoring capabilities. Reliable access to satellite reconnaissance information is a key prerequisite for the maintenance of current U.S.-Russian arms control treaties, which provide the basis for strategic stability.

Given these issues, this essay analyzes the military responses that other states are likely to take if NMD is deployed. Strategic logic suggests that these measures will be directed in three basic areas: 1) means of overwhelming U.S. missile defenses; 2) means of destroying vulnerable NMD subsystems on the ground, at sea, and in space; and 3) means of circumventing NMD through the deployment of alternative delivery systems and weapons.

An over-riding question that the United States and its allies must address in considering NMD deployment is whether its development will on the whole make them more secure or instead lead to greater vulnerability. In other words, instead of assuming that the current state of military affairs will continue "plus NMD," any serious analysis of NMD's implications needs to consider the future state of military affairs not just one step ahead, but also two or three steps ahead, including complications introduced by likely military responses. Only by undertaking such a dynamic analysis can we begin to understand what the future strategic environment with a deployed NMD system will look like.

In order to analyze military responses to NMD, we must set a baseline in regards to the system itself and its characteristics. Following the victory of George W. Bush in the U.S. presidential elections, we can assume that his administration will begin to act on his pledge of deploying a multi-layered NMD system as soon

as possible. This effort will likely include ground-based interceptors and forward-deployed radars, sea-based interceptors deployed near states of concern, and space-based early warning, tracking, and queuing radars, as well as conventionally armed space-based interceptors. This NMD architecture may also include airborne lasers and other weapons, depending on how plans develop. This system is not that envisaged under the SDI in the 1980s. The amount of defensive technology employed will be far less, and the criteria for effectiveness will be measured by its ability to intercept successfully some tens or low hundreds of incoming missiles, not thousands.

Several additional points about missile defenses are critical at the outset of this analysis. Compared to offenses, sophisticated defenses are much more vulnerable to attack, due to their heavy reliance on forward-based tracking radars and a variety of space-based assets. The task of the defender, therefore, is far more difficult than that of the attacker. Moreover, the task of hitting a fixed target somewhere on the Earth is much simpler than the task of trying to identify a launch; calculate the speed, range, and trajectory of the rising missile; plot a viable interception area; and then deliver a missile to the anticipated collision point, while avoiding countermeasures. At each link in this chain, the defender is vulnerable both to possible mistakes and to attacks on his system components. Depending on the technologies employed, weather can also pose a significant problem, affecting trajectories and speeds and rendering lasers and visible spectrum sensors difficult, if not impossible, to use.

Moreover, due to the immaturity of many of the proposed system elements, while NMD may be deployed early in the Bush administration, the process will be gradual. Adversaries will have considerable time to "size up" the system

and develop a variety of means of subverting it. Given the poor test record of U.S. missile defenses to date, questions are likely to remain about the actual effectiveness of the deployed system and its ability to achieve even limited goals. On the other hand, the issue of how actively states will seek to subvert the U.S. NMD system must also be addressed. It is certainly possible that a gradual deployment may lead other states to respond incrementally, depending on the military and diplomatic environment. However, if NMD deployment coincides with a flouting of the ABM Treaty and an increase in U.S.-Russian or U.S.-Chinese tensions, the response to NMD could be considerably quicker and more vigorous. It might also include multinational approaches, as states feeling threatened by the system may begin to coordinate their military responses in the classic form of a preventive alliance.

Although these uncertainties will affect the specifics of any response, this study assumes a mid-point reaction as most likely. Since NMD, as outlined during the Bush campaign, will be multi-layered and involve the deployment of weapons in space, this factor will also be considered in analyzing the possible response. Given the Bush administration's commitment to deploying the system with or without the ABM Treaty, some level of tension with Russia and other states has to be presumed. Still, the analysis presented here will not assume an extreme reaction by other states. Such a response might be expected were the United States to deploy NMD and simultaneously increase its strategic offensive forces. Fortunately, such a move seems highly unlikely, given the Bush administration's publicly expressed inclination to reduce U.S. nuclear forces unilaterally.

OVERWHELMING AN NMD SYSTEM WITH MISSILES AND COUNTER-MEASURES

To the extent that the U.S. debate on NMD has addressed possible responses by other states, it has focused largely on increased missile deployments by states of concern and their potential deployment of so-called "penetration aids" (particularly, decoys, chaff, and submunitions). Both of these responses could be used to overwhelm a deployed NMD system by increasing the number of targets that the defender has to intercept: either at the outset (by increasing the number of "buses") or in the mid-course stage of flight (by increasing the number of possible warheads or warhead "look alikes"). These two issues are separate and should be analyzed accordingly.

Given the proliferation-based concern that underlies the perceived need for NMD, the question of whether NMD will deter or instead stimulate further deployments of foreign ballistic missiles is a central one. Opponents of NMD naturally argue that U.S. defenses will lead states to compensate by building more missiles, while supporters of NMD emphasize that defenses will reduce the utility of enemy missiles, deterring their acquisition. What can a more careful analysis add to this debate?

As potential opponents face the deployment of NMD, they will likely consider several questions. First, how can I counter this system? Second, how do the relative costs of particular countermeasures compare? And third, are there other purposes for which I might want missiles, such as prestige, use against my neighbors, or space-launch capability? The answers to these questions are contingent on domestic political, economic, and strategic factors in countries of concern. Each state will answer them differently according to its perception of the U.S. threat and its own domestic capabilities.

For example, while the most convenient

route for Russia would simply be to stop de-MIRVing its ICBMs (saving Moscow money), North Korea would have to build new missiles to achieve the same effect (costing Pyongyang money). For some states, the question of achieving new thresholds of capability may stimulate them to advance their missile programs rather than deterring them, assuming the availability of adequate resources. For a country like China, which has a small stockpile of relatively vulnerable nuclear weapons and sufficient resources, U.S. deployment of NMD is likely to prompt a more active pursuit of such alternatives as mobile missiles and MIRVs. As noted above, NMD deployment could also push other countries to counterbalance NMD through greater military collaboration. In such a scenario, Russia could provide China with know-how for deploying maneuverable warheads. While expensive, these options would add "step-level" increases to China's capabilities. Such advanced technologies, however, likely exceed the technological means of states such as Syria, Libya, Iraq, or Iran. Therefore, their best option may be to pursue asymmetric responses (described in the next section).

To summarize, in response to the U.S. deployment of NMD, we can expect large and technologically capable states to seek "step-level" increases in sophistication and modest increases in the number of launchers. Middle powers may seek greater numerical increases in ballistic missiles, particularly when such weapons can also be used against local adversaries. Smaller states may build a few additional missiles, but they are unlikely to be able to afford a sustained build-up. All of these adversaries, however, are likely to turn to penetration aids to ensure the success of the missiles they have.

Several factors suggest that U.S. NMD deployment will stimulate significant develop-

ment of penetration aids by other states. First, most penetration aids are inexpensive and do not require advanced technology. Where deploying a new type of missile may cost hundreds of millions of dollars and require sophisticated technology and additional military personnel to guard and maintain it, adding chaff, balloon decoys, or submunitions to an existing warhead may cost in the low thousands of dollars, particularly if such systems are bought off-the-shelf from more advanced states that have already invested in testing them.

Second, penetration aids do not violate any international treaties or taboos. Since (except for submunitions) most penetration aids do not constitute "weapons" in and of themselves, there is no strike against a state's international reputation for deploying them. Indeed, they may seem more "respectable" than the deployment of missile defenses, since it is impossible even to *convert* most of them (balloons, chaff) to weapons use, unlike with some NMD interceptors. There are also few restrictions on their sale in terms of international export controls, unlike for missiles. Thus, there is every reason to believe that a bustling market in such systems will develop hand-in-hand with any deployment of NMD. Third, penetration aids may be highly effective. The recent problems in the U.S. NMD test program suggest that dealing with large numbers of decoys will be extremely difficult,¹ increasing the incentives for states to acquire and deploy them. These factors underscore a single, clear point: penetration aids will be widely deployed by a large number of states if NMD deployment is pursued by the United States.

¹ On this issue, see the Union of Concerned Scientists/MIT report "Countermeasures: A Technical Evaluation of the Operational Effectiveness of the Planned U.S. National Missile Defense System," Union of Concerned Scientists, Boston, Mass., April 2000.

Overall, the net impact of countermeasures is likely to be a modest increase in foreign missiles, warheads, and MIRVs, as well as a broad proliferation of penetration aids, which will make the task of defending against incoming missiles much more difficult. In light of this analysis, any NMD system will have to develop means of discriminating warheads from decoys and for destroying submunitions, if it is to be effective.

DESTROYING NMD SYSTEM ELEMENTS ON THE GROUND, AT SEA, AND IN SPACE

In contrast to countermeasures, the debate on NMD thus far has neglected what may be the real Achilles' heel of all proposed NMD architectures—the vulnerability of system elements to attack and destruction. NMD system elements can be divided by category: 1) domestic computers and command/control elements; 2) forward-based radars and interceptors; 3) sea-based interceptors and components; and 4) space-based launch detection systems and interceptors. Each of these elements is vulnerable to different types of attack, with varying degrees of difficulty.

The least vulnerable and arguably highest value systems in the NMD architecture are the computer networks that will direct the overall defensive system. These computers are likely to be located in heavily protected underground sites, so they are not likely to be susceptible to direct attack. However, communications links within the United States (antennas, dishes, and transmission lines) are considerably more vulnerable and equally important to the system. If an adversary were able to conduct raids on the infrastructure surrounding these facilities (through commando attacks, nearby missile launches or weapons drops, or suicide bombings), the enemy might be able to shut down the NMD system in advance of its missile

attack. Nevertheless, considering the military nature of the facilities involved and the difficulty of such operations, this kind of attack must, overall, be accorded a relatively low probability of success.

Moving outward in the NMD network, forward-based radars are considerably more susceptible to attack. Specifically, the proposed X-band radar on Shemya Island in the Aleutian chain off the coast of Alaska would be comparatively vulnerable. It is worth recalling that several of the Aleutian Islands were seized by Japan during World War II. While direct seizure and occupation is extremely unlikely today, the Shemya radar could be attacked by sea or by air. Cruise missiles might be especially effective in such efforts, given the extreme difficulty of defending against them and the fragility of the facility's equipment. Unpredictable sea and weather conditions (including frequently heavy fog) could favor the attacker as well, lending an element of surprise and cover to the assault. Commando-type operations by highly trained marines might also be successful. (North Korean commandoes, for example, have infiltrated South Korean territory with virtual impunity for years, despite extensive efforts by Seoul and the U.S. military to prevent such incursions.) NMD interceptors based in Alaska, although less exposed than the Shemya radar, will also be highly vulnerable at the time of launch, but would otherwise likely be protected in reinforced, underground bunkers.

These vulnerabilities point to the need for extensive reinforcements around any forward-based elements of the NMD system. Such efforts may be problematic when these facilities are located on foreign soil, such as the Flyingdales radar in the United Kingdom and the Thule radar in Greenland. It is highly unlikely that these vulnerabilities can be completely overcome, no matter how much money is spent. For example, a low-yield nuclear attack on any of these sites would be virtually

impossible to defend against and yet have a devastating impact on the NMD system. Indeed, this particular vulnerability could increase the demand for tactical nuclear weapons among NMD opponents such as China and Russia. It might also encourage other states with fewer resources to develop cruise missiles and sea-launch capabilities.

Given the possible role of ships in the NMD architecture, especially *Aegis*-class destroyers, some vulnerability of sea-based assets must be discussed. To date, U.S. deployment of forward-based elements of NMD has been limited. However, under the Bush administration, there is likely to be a significant expansion of sea-based elements, which are deemed more “ready” than either the land- or space-based interceptors. If this is the case, states seeking to overcome these defenses will have an incentive to combat these elements through anti-ship warfare. One response may be an increased emphasis on quiet submarines, of the type that are now widely available from Russia (such as the *Kilo*-class 636 model).

Finally, the vulnerability of space-based assets is a crucial and as yet poorly analyzed issue. Of all of the possible NMD system elements, space-based assets are the most susceptible to effective counterattack, particularly in a time of war. Opponents would have to be capable of launching at least medium-range ballistic missiles with some accuracy in order to attack space-based assets. It is this same capability, however, that represents the minimum criteria for a state to be of concern as a missile proliferation threats. Several additional states that might be the target of the proposed NMD system, at least under foreseeable circumstances, possess both space-launch capability and nuclear weapons. These states, including Russia, China, and India, have additional means of attacking any proposed

NMD system using true space-based elements.

Early warning satellites in geo-stationary orbits are not particularly vulnerable, due to their extreme distance from the Earth. These elements are also not absolutely crucial to the functioning of NMD, particularly if low-Earth orbit (LEO) satellites and/or aircraft can be used for the purposes of launch detection. These LEO satellites, however, are highly vulnerable to attack. Some of these satellites also would be employed in tracking and queuing missions, making their destruction a high priority for a potential NMD adversary. Several possible avenues of attack are likely, based on the laws of physics.

Direct ascent anti-satellite (ASAT) missiles make up one class of likely anti-NMD weapons. These systems, drawing upon observable orbits for NMD satellites, could be timed to disperse a cloud of projectiles into the path of on-coming NMD observation or tracking satellites. Given the high velocity of the collisions, even small projectiles the size of bullets could destroy satellites or render them inoperative. Against a field of Space-Based Infrared System (SBIRS) low satellites, the launch of a field of projectiles could take out dozens of individual elements, thus “blinding” the NMD system. States possessing nuclear weapons could be even more effective, clearing whole regions of LEO space with nuclear explosions and the accompanying electro-magnetic pulse blasts aimed at destroying or disabling all satellites within hundreds of miles.

Other types of ASAT weapons might include co-orbital ASATs, or ASAT systems that might be deployed permanently in space. Given current treaties, none of these weapons (unless nuclear armed) represent any direct violation. If the United States were to deploy NMD interceptors in space, it would have no grounds

internationally for objecting to such ASAT systems. Depending on the technological sophistication of the state, a relatively simple weapon composed of a satellite stuffed with conventional explosives might be maneuvered into the same orbit of a suspected NMD system element and exploded.

The Soviet Union conducted tests of this type of weapon during the 1960s and 1970s, leading the United States to declare it “operational.” Given its conventional explosive payload, there would be no international restrictions on Russia’s deployment of such systems—possibly in large quantities—or on their sale to China, India, Iraq, or other states. Such weapons could also be nuclear armed, offering a considerably greater impact and range, although this would require withdrawal from or violation of the Outer Space Treaty.

The “seeding” of LEO with such weapons, in response to U.S. deployment of NMD system elements, would represent a dangerous cluttering of the exact area of space being used extensively for passive military and commercial purposes as well as for manned space flight (including the International Space Station). Adding weapons to this environment could jeopardize other types of activities, possibly even making near-Earth space unusable for civilian and passive military purposes, particularly if states engaged in extensive testing programs. Meanwhile, a few ardent U.S. NMD supporters at various U.S. national laboratories continue to advocate deploying large numbers of interceptors in space (Brilliant Pebbles), which would generate strong incentives for other states to develop and deploy countermeasures. Such a move by the United States would also effectively remove the informal taboo on the placement of weapons in this sensitive environment.

Over the long term, there could also be other currently unforeseen developments. For

example, other states might decide to field their own NMD systems in space to protect themselves against possible missile attacks. While such an outcome is unlikely in the next 10 years, the growing number of states capable of launching satellites into space indicates that such deployments are certainly realistic in the second decade of the 21st century. France, Japan, Israel, India, and, of course, Russia have all discussed future military space programs. With U.S. stimulus, the incentive to copy at least some U.S. space defenses, if only for the purposes of national prestige, would be strong. These deployments would change the current nature of space and transform it into a zone of active (rather than passive) military activities. Manned military activities—long advocated by air forces around the world—might be the next logical step. Such a move, however, would undermine the Outer Space Treaty and complicate future efforts to control weapons in space.

CIRCUMVENTING NMD THROUGH ASYMMETRIC MILITARY RESPONSES

Despite the above discussion, it appears that the most likely state responses to NMD would be to employ *other* means than missiles for delivering nuclear weapons, conventional explosives, or biological/chemical weapons against the United States.² There are several very good military reasons why states are likely to pursue these options, perhaps in tandem with the other responses discussed above. First, building ballistic missiles is extremely expensive. While prestige is one reason why some states seek such capabilities, the development of long-range missiles greatly reduces funds available for other weapons systems. Second, ballistic missiles are highly transparent, since their launch produces plumes of hot gases that are easily

² On this point, see also Stephen W. Young, *Pushing the Limits: The Decision on National Missile Defense*, Council for a Livable World, Washington, DC, April 2000, p. 35.

detected from space or by aircraft, and the metal bodies of the missiles themselves have an obvious radar signature. They are perhaps the worst weapons for an opponent to acquire if the goal is a stealthy attack. Consequently, even strong supporters of missile defenses today acknowledge that NMD deployment is likely to stimulate other countries to seek asymmetric responses. The alternatives here are considerable. Let us discuss some of the most likely options.

For a state seeking to deliver (or threaten to deliver) a nuclear weapon against the United States, it need only have a reliable delivery vehicle, not necessarily a missile. Given the relative difficulty experienced by U.S. customs authorities in apprehending drug smugglers, similar channels could likely be used to deliver a nuclear weapon. Such options could include suitcase bombs smuggled in vehicles or on foot, the use of small aircraft operating at night in remote border regions, the employment of small boats, or other means. Similar methods could be used to deliver chemical and biological weapons. In each of these scenarios, terrorists could be employed to deliver the weapon to its target. Even terrorists lacking apparent state sponsorship have been able to launch attacks inside the United States, as in the World Trade Center bombing in New York.

In terms of missiles, there are several viable, cheaper, and more stealthy alternatives to long-range ballistic missiles. Cruise missiles are readily available on the world arms market and could be highly effective in delivering a warhead to a target, especially if deployed on a commercial vessel sailing in international waters off the coast of the United States. Short-range ballistic missiles could also be launched from unmarked vessels and would have a relatively good chance of flying under any planned NMD system. Other options might include, as in the

USS Cole incident in Yemen, delivery of a weapon on a rubber raft or other seemingly harmless or hard-to-detect vessel.

Indeed, one senior U.S. Bush administration official, whose voice has attracted national and Congressional attention to the need for NMD, readily admitted at a conference held in 1999 (attended by the author) that he expects NMD to cause “the bad guys” to *redouble* their efforts to acquire asymmetrical means of attacking the U.S. homeland or U.S. allies and their assets. Thus, the response to NMD may very well be accelerated development of other WMD and less traceable means of delivery. Despite the increased threat this response seems to pose, few have voiced concern about this contradiction or the possible *negative* long-term implications of NMD deployment on overall U.S. security. Instead, the perspective seems to be that these developments are “inevitable,” and the United States would be better off in this environment with at least some means of defending itself against a missile attack.

Overall, the availability of asymmetrical military responses to NMD suggests that states will continue to focus spending on areas where they believe the United States to be vulnerable. These efforts may take the form of “testing” U.S. defenses at overseas bases or perhaps against targets closer to the U.S. homeland. The U.S. response is likely to be increased vigilance at harbors, airports, and other points of entry, as well as beefing up intelligence operations overseas and internal security. New detection systems will also likely be studied, developed, and deployed along U.S. borders. Protecting national security will become more expensive under these conditions and the power and reach of military and security forces within U.S. society will become greater and more pervasive.

This debate hinges on whether the further

development of such asymmetrical means of warfare by potential opponents is inevitable even without NMD deployment. While it is difficult to say with certainty, it seems clear that the intensity of the search by opponents to acquire asymmetrical means of attack will be in part determined by NMD deployment and the means through which it is achieved. If this effort is unilateral and involves the violation of widely recognized treaties, the response is likely to be much more active. Moreover, “rogue” states and terrorist groups in the developing world are likely to receive more assistance in their efforts if U.S. NMD policy is conducted in a way that alienates either Russia or China, or both. These countries are in a good position to assist third countries in their efforts to acquire alternative delivery systems and weapons.

CONCLUSION: NMD DEPLOYMENT AND THE FUTURE OF STRATEGIC STABILITY

To date, the U.S. debate on NMD deployment has largely assumed that the military reaction of other states would be minimal, limited mainly to reactive missile deployments and some use of penetration aids by Russia and China. This truncated discussion has overlooked a wide variety of possible steps that a larger group of states might take in attempts to reduce the effectiveness of NMD. The history of warfare suggests that such responses are not simply possible, but highly likely. The specific responses that any individual state adopts will depend on several factors, including: 1) its perception of the rationale behind U.S. NMD deployment and the perceived threat it poses to them; 2) its existing military arsenal and research and development capabilities; 3) its financial resources; and 4) the availability of missiles, related technologies, and countermeasures on the international arms market.

In addition to these military deployments,

state behavior in response to NMD may lead to the breakdown of various nonproliferation regimes and arms control treaties.³ Indeed, if the U.S. response to the threat of missile proliferation takes the form of a unilateral deployment of NMD (a military response), it may trigger action-reaction dynamics and lead other states to adopt similar policies emphasizing unilateral arms build-ups. If such a dynamic unfolds, it will greatly complicate the future international environment for arms control. It could also increase world tensions and make the peaceful use of space—including for arms control monitoring—much more difficult, if not impossible.

The alternative, a U.S. approach that emphasizes international cooperation and the strengthening of international nonproliferation regimes as a *response* to the problem of missile proliferation, is worth addressing before these military dynamics get out of hand. Treaty-compliant missile defenses restricted to the theater level, offensive arms reductions, strengthening of the Missile Technology Control Regime, and the negotiation of an ASAT-ban for space would all be meaningful steps toward addressing international fears about U.S. missile defenses. These measures might also be effective in helping to reduce the demand for missiles in various regions, thereby reducing the need for missile defenses in the first place.

³ On this topic, see James Clay Moltz, “The Impact of National Missile Defense on Nonproliferation Regimes,” *The Nonproliferation Review* 7 (Fall-Winter, 2000), pp. 61-74.

Regional Perspectives: Europe

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The question of Ballistic Missile Defense (BMD)¹ and ballistic missile proliferation frequently poses itself in different terms for the Old Continent than for other regions of the world. Many European countries are bound to the United States not only by a dense network of relations in all issue areas, but also via military alliance. Compared to Asia, the Middle East, or the Persian Gulf, Europe has so far posed a much smaller problem in terms of ballistic missile proliferation, limited mainly to the export of sensitive components and technology by some European firms. Today, the Old Continent is confronted with two main developments in this area: on one hand, the regional proliferation of weapons of mass destruction (WMD), defined as delivery systems plus nuclear, biological, and chemical warheads; and on the other, the increasing tendency—especially of the chief partner in the NATO alliance—to resort to military means in grappling with this problem. There is a third significant strand of development: the tentative first attempts by Europe to establish its own identity through a European Security and Defense Policy (ESDP) and to emancipate itself from the United States. For the present, however, these initiatives are confined to seeking to establish a European intervention force. All in all, European nonproliferation policy continues to follow a typical pattern—reacting rather than acting.

This paper addresses the following issues: 1) new political challenges that await Europe at the

interface between U.S. missile defense plans and WMD proliferation in various regions; and 2) conceptual questions and answers this first issue raises for the European Security and Defense Policy (ESDP).

NEW POLITICAL AND CONCEPTUAL CHALLENGES FOR EUROPE: BALANCING THE UNITED STATES AND RUSSIA

The United States

The main unwavering U.S. demand up to now has been that Europe support its missile defense plans and endorse the major changes to the 1972 Anti-Ballistic Missile (ABM) Treaty that such defenses would require. In addition, on May 31, 2000, a unique offer—so far only verbal—was made by the outgoing U.S. President Bill Clinton to all “civilized nations,” including the European allies. En route to Moscow for a summit with his Russian counterpart Vladimir Putin, Clinton declared his willingness to share the planned U.S. missile defense shield with Europe. However, an official invitation that would have necessitated a concrete response from the Europeans did not follow this declaration. Clinton’s vague statement may, however, be repeated and made more specific by the new Bush administration. Such a proposal is especially likely if, unlike Clinton, the Bush administration plans its NMD system in such a way that directly includes Europe in the protective arrangements. As the 2000 Republican presidential candidate, George W. Bush introduced the idea of “allied missile defense.”

¹ To help clarify the terminology: BMD = national missile defense (NMD) + theater missile defense (TMD).

Any such U.S. offer would have both security and technological implications.

Any official offer by the United States to extend missile defense to Europe would reinforce some aspects of the current debate over missile defense and also raise entirely new issues. It would illuminate the bases and goals of missile defense as an element of U.S. military strategy and defense policy. So far, deterrence and disarmament have occupied center stage in the debate over these goals. Among BMD advocates, there is agreement that as far as the short-term role of missile defense is concerned, its object in the immediate future is to perfect, and thus extend, the system of deterrence. U.S. views regarding the medium- and long-term objectives of BMD appear confused. Should missile defense replace the system of Mutual Assured Destruction (MAD)? If so, what form should the path to a “defense-dominant” world take: unilateral (a uniquely U.S. NMD system) or multilateral (a cooperative transition under U.S. leadership)? Moreover, what role should regional missile defense play in this transition?

A further set of issues relates to the potential tension between the increased armament involved in creating so-called defensive weapons and the potential reduction/elimination of nuclear weapons. How will the United States approach the instabilities created on the path to a “defense-dominant world,” including the probable resistance of key states such as Russia and China, who, instead of compromising, may respond by increasing their nuclear armaments?

For Europe, the main question concerns the impact of missile defense on the transatlantic relationship, and thus on the security of Europe itself. This question touches on a number of aspects, which can be divided into “political and urgent” and “theoretical, medium- and long-term.” The first category of issues can be addressed in the form of a collective response by the European Union (EU) and the European

members of NATO, while the second category requires country-specific responses. Through the end of 2000, Europe criticized and rejected U.S. demands for support of the NMD program and for endorsement of the necessary changes to the ABM Treaty. European countries have demonstrated an unusually high degree of unanimity in taking this stance. The EU and European members of NATO have made it clear that they oppose the unilateral abandonment of the ABM Treaty by the United States, and would welcome any sort of U.S.-Russian compromise.

Denmark and Britain face urgent country-specific questions. Assuming that the new U.S. administration, intent on pushing ahead with NMD, will probably seek to expand its radar facilities in Thule, Greenland, and Fylingdales, United Kingdom, it will look to Copenhagen and London for official permission to undertake this expansion. In the medium- and long-term, if NMD is deployed, both European nuclear powers—France and Britain—will come under pressure to develop new conceptual approaches that address the potential devaluation of their nuclear capability and, in effect, deterrence capacity. At some point, it seems that they will have to commit their arsenals to a process of reduction tending towards disarmament.

Having played only an occasional role in the discussion of NMD to date, technological factors will probably acquire renewed significance in European governments’ decisionmaking about their participation in an NMD system. The Bush administration may well make a corresponding offer to its European allies. In order to highlight the problems associated with such an offer, I return to the previously mentioned offer made by Clinton toward the end of his presidency.

On May 31, 2000, at the close of the EU summit in Lisbon, Portugal, Clinton held a press conference with the president of the EU Commission, Romano Prodi, and the Portuguese prime minister, Antonio Guterres. He stated, as

mentioned previously, that he was willing to share the planned missile defense shield with U.S. allies and other “civilized nations.” Clinton maintained that if the United States could develop and implement this technology to protect against “...irresponsible new nuclear powers and their possible alliances with terrorists and other groups, then every country that is part of a responsible international arms control and nonproliferation regime should have the benefit of this protection.” It would, he said, be “immoral” to withhold this technology from other “civilized nations,” whether or not they were nuclear states. “That’s always been my position and I think that is the position of everyone in this administration.”²

Immediately before this statement, Clinton outlined his position on “information sharing” with Russia. As the public reaction indicated, the context of “information sharing” made it clear that Clinton intended to send the message that the United States should offer to share its technology with its allies and other “civilized nations” not only in the form of U.S. protection, but also by providing direct access to the relevant technology. Memories of the parallel offers made by Clinton’s Republican predecessors Bush and Reagan were rekindled. Once again, expectations have arisen—all the way up to the top ranks of the German government, for example—and, on the other side of the coin, huge fears. The expectations relate to the prospect of securing a share in and possibly exploiting advanced U.S. technology. For example, Germany and German firms are considering a broad spectrum of possibilities in areas far beyond the military sphere. The fears, correspondingly, can be summed up as anxiety about Europe falling back into—or remaining stuck in—a state of second-class technological

development. In both cases, a German refusal to participate would effectively mean systematically missing out on the chance to link into U.S. cutting-edge technology.

It is possible—as it was last time Europe faced a similar dilemma during the Reagan/Bush years—to argue that these expectations and fears have no basis in reality. At least two assumptions are tacitly woven into the hopes currently being cherished by some Europeans:

- **The U.S. military industrial/technological complex is the main driver of the missile defense project** The importance of this factor should not be ignored; but it should not be overestimated either.³ Rather, it is the author’s assumption that the *military-ideological* complex is by far the most important driving force behind U.S. missile defense plans. Given the recent history of “defensive” technologies, this redefinition started with the “Contract with America,” and the conservative revolution staged by the Republicans, which reached its high point with the landslide victory in both houses of the U.S. Congress in the November elections of 1994. In foreign policy terms, missile defense is the only concrete item in an otherwise vague and colorless program. Moreover, it has now become a key feature of U.S. national security policy, particularly among conservative Republicans.
- **The technology on which the missile defense program is based is reliable** This view clashes with the results of the tests that have been performed thus far—the overwhelming majority of which have been unsuccessful. Still, these tests are only a tiny part of a much more extensive series that have yet to

² White House Office of the Press Secretary, May 31, 2000, “Press Conference of President William Clinton, Prime Minister Antonio Guterres, and European Union Commission President Romano Prodi.”

³ For the time being, I leave this statement unadorned. I shall return to the influence of economic *and* technological factors at a later date, when the present confused situation has been clarified.

be carried out. To be fair, one must concede that President Clinton's offer was tied to the crucial condition that the necessary technology in fact exists. The Lisbon proposal is therefore currently no more than a paper tiger; its realization depends on future technological developments.

If one assumes that the new Bush administration will offer its allies a share in the as yet scarcely tested missile defense technologies, such an offer would have to be compared with possible participation criteria set by the allies. In determining what would constitute reasonably equal involvement—by Germany or German firms, for example—the criteria stipulated by the Kohl government seem relevant. These criteria formed the basis of the U.S.-German Memorandum of Understanding concerning the SDI project in the 1980s. At that time Chancellor Kohl laid down the following conditions: 1) fair partnership and free exchange of knowledge; 2) the avoidance of a technological one-way street; 3) a self-contained research area; and 4) influence on the overall project.⁴ My initial assessment at that time was that none of the expectations could be fulfilled, and the reasons for this negative finding lay in a series of structural factors, notably:

- The generally strict U.S. policy of confidentiality in regard to scientific and technological data, and the tight restrictions for non-classified DOD research work in universities and commercial firms.
- The tightening of export control legislation and practice relating to high-tech military items, particularly in the micro-electronics

field, including: restrictions on the transfer of sensitive data; restricted use of research results from SDI contracts; unfavorable conditions for sizeable orders, such as measures to protect the competitiveness of U.S. firms and products; and the unequal treatment of foreign versus U.S. companies). The result was that the orders from non-U.S. firms for SDI never amounted to more than “peanuts” overall. From October 1985 to the end of the Reagan administration in December 1988, the total value of orders from non-U.S. firms amounted to \$323.35 million. Of this total, \$55.8 million went to British contractors and \$62.31 million went to German contractors.⁵

These conditions, which at that time demonstrated the illusory nature of expectations for a fair and financially lucrative share in SDI, still apply today. The technological protectionism of the United States is a variant of the unilateralism that currently prevails in U.S. security policy.⁶ Despite the end of the East–West conflict, genuine partnership involving foreign governments and companies in the various missile defense projects would require a radical shift in thinking by all the major U.S. actors toward multilateralism. In turn, such a reassessment of multilateralism would modulate the hegemonic position of the United States *vis-à-vis* its allies. At the legal and administrative level, this fundamental reorientation would entail a complete restructuring.

Such a move would mark a break with long tradition and would therefore require support from the executive and legislative branches of the

⁴ Quoted in Bernd W. Kubbig, “Die SDI-Rahmenvereinbarung zwischen Bonn und Washington. Eine erste Bilanz,” in *Die militärische Eroberung des Weltraums*, II (Frankfurt-am-Main, 1990), pp. 644–719; see also the English version: Bernd W. Kubbig, “The SDI Memorandum of Understanding Between Bonn and Washington: A Review of the First Three Years,” PRIF-Report No. 5, PRIF, Frankfurt-am-Main, 1989.

⁵ Strategic Defense Initiative Organization, *1989 Report to the Congress on the Strategic Defense Initiative*, (Washington DC: U.S. Government Printing Office, 1989). The report indicates that Israeli firms received the lion's share of contracts issued to foreign suppliers, \$164.22 million.

⁶ Bernd W. Kubbig, Matthias Dembinski, and Alexander Kelle, “Unilateralism as Sole Foreign-Policy Strategy? American Policy toward the UN, NATO, and the OPCW in the Clinton Era,” PRIF-Report No. 57, PRIF, Frankfurt-am-Main, 2000.

United States government. Although one cannot exclude the possibility of a future administration making adjustments to key laws in order to facilitate transatlantic cooperation on BMD, the last word belongs to the majority in Congress—where the champions of the “Buy American!” line are traditionally found. The extent to which the primacy of protectionism determines U.S. policy on cooperative missile defense can be demonstrated by examining two projects:

- The United States, Italy, and Germany are jointly conducting a project in the field of extended air defense, the Medium Extended Air Defense System (MEADS).⁷ For the U.S. administration and Congress, the project has only symbolic significance, illustrating the concept of transatlantic partnership and the international orientation of U.S. missile defense policy. The project is gradually decaying, however; Congress has constantly undermined it. Originally, the development phase was to be completed by 2002, but this deadline has been postponed by 10 years. The U.S. DOD continues to protect its undisputed dominance in high-technology, refusing to share key data with the two European partners in the project. One simply cannot describe this project as a trilateral enterprise among equals. Those who argue for a fair partnership regard MEADS as a “transatlantic tragedy.” Backing the economic interests of the U.S. arms industry, the Pentagon has championed a concept of MEADS that neither European partner regards as ideal.⁸

⁷ See Bernd W. Kubbig (with the collaboration of Tobias Kahler), “Problematische Kooperation im Dreieck: Das trilaterale Raketenabwehrprojekt MEADS,” in HSKF, *Raketenabwehrforschung International*, <<http://www.hsfk.de/fg1/proj/abm/bulletin/pdfs/kubbka.pdf>>.

⁸ According to recent U.S. press reports, this problem has now been resolved to the satisfaction of the two European

- The United States is only prepared to sell the “improved” version of the Patriot interceptor (PAC-3) to Germany if it accepts so-called “black boxes.” In other words, Germany can buy the PAC-3 only if it agrees to forego access to certain classified data on the PAC-3.⁹

The embassies of seventeen countries criticized U.S. export control legislation for undermining defense cooperation in a joint letter to then-U.S. Secretary of State Madeleine Albright, dated December 16, 1999. In a similar letter dated December 9, 1999, the head of Daimler Chrysler Aerospace, Manfred Bischoff, likewise called on Albright to alter export control legislation so that it facilitates transatlantic cooperation.¹⁰ In personal conversations, Daimler Chrysler Aerospace staff members do not hide their bitterness about U.S. laws and their application. The skepticism exhibited by German firms toward U.S. promises during the SDI era persists.

MEADS partners. The accuracy of these reports and their implications, remain unclear. *Inside Missile Defense*, June 28, 2000, p. 3; *Defense News*, June 26, 2000.

⁹ *Defense News*, November 22, 1999.

¹⁰ The paper *Defense Daily*, which received copies of both letters, published extracts from them in its January 6, 2000 edition. According to these excerpts, the Dutch ambassador to the United States, Joris Vos, and his colleagues advised the U.S. Secretary of State: “Currently...the lengthy and dated process of export controls is increasingly developing into a serious impediment to defense cooperation. [...] The processing time for export licenses for defense equipment and services as well as Technical Assistance Agreements (TAAs) and Manufacturing Licensing Agreements (MLAs) within the State Department, Office of Defense Trade Controls, has lengthened alarmingly.” Bischoff wrote: “I respectfully urge you to review current export control policies and procedures with a view towards promoting cooperation among NATO allies and laying the groundwork for possible future transatlantic industrial mergers. [...] Cooperation also is a prerequisite for any true transatlantic industrial merger. Without more joint transatlantic armaments programs, it is difficult to see why a transatlantic industrial merger would make economic sense.”

Russia

Up to now, Russian demands on Europe have been diametrically opposed to those of the United States. Moscow firmly rejects U.S. missile defense plans and champions the maintenance and strengthening of the ABM Treaty. Since the middle of November 2000, there have been mixed signals from Moscow, though these are feelers and not signals of a shift in the basic Russian posture. President Putin has stuck to the traditional strict position, the head of the Strategic Rocket Forces, General Vladimir Yakovlev, has shown some flexibility. He suggested that defensive weapons and offensive nuclear systems could be offset against one another: if a country seeks to enhance its missile defense capability, he argued, it should make corresponding reductions in offensive nuclear forces.¹¹

Moscow's political demands on Europe stem from its basic stance on NMD, the threat of further armament, and the looming collapse of the whole arms control edifice. As a consequence, Russian demands—like those of the United States—have become a key background condition for Europe. The European views on NMD and the ABM Treaty outlined above did much to meet Russian concerns. Moscow's deliberations have not been limited to strategic defensive weapons, but also included substrategic or tactical defensive weapons. Again, Russia is perturbed that the United States may seek to complement NMD with TMD systems.

At issue here are short-range systems such as the updated Patriot (PAC-3), the U.S. Navy's so-called Lower Tier sea-based system, and the U.S. Army's Theater High Altitude Area Defense (THAAD) system. The ABM Treaty does not limit these systems. After years of tough negotiations between Moscow and Washington, agreement was finally reached on these systems in a series of "demarcation agreements," signed on

September 26, 1997. These agreements define the technical characteristics distinguishing strategic defensive weapons (prohibited by the treaty) from permitted substrategic systems, although in 1997 the two sides were unable to agree on the classification of the U.S. Navy Theater-Wide system planned by the United States.¹² The agreements remain unratified, however.

The distinction between substrategic and strategic weapons remains fluid, as substrategic defensive systems can potentially be employed against long-range missiles. The integration of various TMD systems, Moscow fears, would—providing the technology functioned properly—enhance the effectiveness of NMD. According to a study of June 1, 1999, by the Pentagon's Ballistic Missile Defense Organization (BMDO), the radar stations planned for NMD could enable the U.S. Navy Theater-Wide system to counter Russian strategic capabilities. The Clinton administration planned to deploy more than 600 sea-based interceptor systems of this kind.

Europe has also been the target of various Russian proposals concerning missile defense cooperation. Unlike Clinton, before the June 2000 U.S.-Russian summit, Putin repeatedly suggested that Russia join with NATO and the EU to create a joint missile defense system extending from Lisbon to Vladivostok.¹³ Whereas the Clinton administration deemed this proposal an inappropriate answer to the WMD problem and rejected it, Europe has not yet given a specific answer.¹⁴ How far these Russian offers are motivated by security considerations aimed at finding a joint answer to the problem of WMD

¹¹ *Frankfurter Allgemeine Zeitung*, November 14, 2000.

¹² On this, see: Bernd W. Kubbig, Harald Müller, and Annette Schaper, "Die strategische Rüstungskontrolle zwischen den USA und Rußland: Erfolge—Probleme—Perspektiven," HSK-Report 11, PRIF, Frankfurt-am-Main, 1996, pp. 49–52.

¹³ *Frankfurter Allgemeine Zeitung*, June 3, 2000; *New York Times*, July 5, 2000; *New York Times*, July 6, 2000; *Washington Post*, June 6, 2000; *Frankfurter Rundschau*, June 7, 2000.

¹⁴ *Washington Post*, June 10, 2000.

proliferation, and how far they signal an interest in military technological cooperation with the West as a means of gaining access to superior high-tech capabilities, remains an open question. It does, however, seem inappropriate to assume that these offers are solely intended to drive a wedge between the United States and Europe.¹⁵

ESDP AND THE BMD CHALLENGE

Overall, U.S. policy toward Europe boils down to the question of how the transatlantic relationship is to be structured in the future: will it be a traditional hegemonic relationship with a large asymmetrical divide, or will it be a more balanced and perhaps strictly symmetrical partnership? Moscow's position and its offers of cooperation raise two conceptual challenges for European security and defense policies: 1) To what extent should Russia be incorporated into the European security structure? and 2) How should this incorporation proceed—in a primarily political *cum* economic manner, or through military cooperation on missile defense?

There are a number of possible responses to this challenge. Common to all of them should be a determination to be led by the dictates of arms control and the primacy of political measures as a response to the problem of proliferation. In relation to the United States, the demand to uphold the ABM Treaty is still a central concern for Europe, and it should be linked to significant nuclear disarmament measures. In view of the danger of a new arms race—which would probably extend to both Russia and China, and possibly set off a chain reaction in Asia—Europe, when working with the United States, should seek to ensure that NMD, if not ultimately prevented, remains as restricted as possible. Without abandoning its well-founded rejection of a

European missile defense system, Germany should, as a suboptimal alternative, insist that Russian concerns about stability be addressed by binding restrictions. Any modifications to the ABM Treaty should outline the individual phases of NMD deployment in concrete terms.

Demands such as these are important for the European states, but they are not sufficient to establish them as serious players. Denmark and Britain in particular cannot on the one hand declare themselves in favor of maintaining the ABM Treaty and on the other agree to the conversion of the radar stations in Thule and Fylingdales. Other states in Europe should encourage them to use their trump-card position *vis-à-vis* the United States to persuade it, as chief partner in the alliance, to adopt a stance more favorable to disarmament.

Europeans must also insist that Russia and China take their nonproliferation commitments more seriously. It must be made clear to Moscow that its lax export control policy is part of the proliferation problem. Only recently, the Kremlin considerably relaxed its regulations on nuclear exports.¹⁶ This stance gives *carte blanche* to others wishing to trade with problem countries, such as India and Iran, and it undermines Russian attempts to counter U.S. missile defense plans by citing the importance of the NPT or the ABM Treaty. This policy also gives political succor to those who cast doubt on the effectiveness of arms control and export control, and provides ammunition for those who advocate missile defense as an answer to the proliferation problem.

Europe must also address Moscow's offer to cooperate in tackling the problem of WMD proliferation. In other words, it must decide whether the Old Continent should cooperate with Russia in developing and deploying TMD.

¹⁵ See, for example, *Washington Times*, June 7, 2000.

¹⁶ *Neue Zürcher Zeitung*, May 16, 2000.

Personally, I am skeptical of this type of military cooperation, which, in my view, ought not to be accorded priority. The prime task for Russia is to build economic links with Europe. Furthermore, Moscow has not yet put forward any convincing official analysis of the missile threat to Europe that demonstrates the need for TMD; indeed, Moscow generally backs political solutions to missile proliferation, as demonstrated by Putin's visit to North Korea.¹⁷

WMD CHALLENGES IN THE MIDDLE EAST AND THE PERSIAN GULF

Over the last few years, the WMD programs of Iran, Iraq, Syria, and Libya have begun to attract attention in Europe. In 1996, within the framework of NATO, a joint evaluation of the threat was undertaken, and its results largely accorded with the U.S. appraisal.¹⁸ Since then, however, there have been a number of decisive political developments. In Iran, elections have placed the reformist forces alongside the fundamentalists on the political stage. Syria became a committed negotiating partner in the talks between the Israelis and Palestinians. Libya is evidently seeking some sort of link to Europe and the United States. In Iraq's case, by contrast, more problems seem to be emerging: an end to restrictions on Baghdad's sovereignty looms, and because of Israel's tough attitude, even Iraq's erstwhile arch-enemies Saudi Arabia, Iran, and Kuwait are arguing for the lifting of the international embargo and no-fly zone imposed on Iraq.¹⁹

¹⁷ On this point, see "Positioning Europe as a Credible Actor in the 'Ballistic Missile Defense Game': Concepts and Recommendations," PRIF Reports 56, PRIF, Frankfurt-am-Main, 2000.

¹⁸ See Parlamentarische Versammlung der NATO, Politischer Ausschuss, Unterausschuß transatlantische Beziehungen, *Die Nationale Raketenabwehr (NMD) und seine Folgewirkungen für die Allianz*, Entwurf eines Zwischenberichts von Karl Lamers (Berichterstatter), October 6, 2000, p. 18.

¹⁹ *Frankfurter Allgemeine Zeitung*, November 17, 2000.

Against this background, the question arises as to whether the 1996 analysis of the threat still reflects the current situation. The following draws on the report published by the Pullach-based German Federal Intelligence Service (Bundesnachrichtendienst, or BND) in October 1999, which offered an appraisal of the threats to NATO and Central European states such as Germany:²⁰

- The WMD programs in some of the crisis regions in question (i.e., Iran, Syria, and Libya) could, if technically viable, "...also pose a direct threat to the Federal Republic of Germany and to NATO in the medium or long term."²¹
- Some countries in the Middle East are working on delivery systems with ranges of more than 1,000 km. In July 1998, for example, Iran tested a Shahab-3 missile with a range of 1,300 km, and another test took place in July 2000. The Shahab-4, currently under development, will probably have a range of 2,000 km.
- Central European countries such as Germany could, in addition, fall within the range of Iraqi delivery systems if Saddam Hussein's

²⁰ This BND report is useful in terms of offering a non-U.S. perspective, as both its design and its concerns reflect specific German experiences. It is dominated by the German export scandal of the second half of the 1980s, which the secret services failed to detect in time. At that time, German firms were being pilloried all over the world. So that these experiences will not be repeated, the report gives a detailed account of what are in some cases criminal procurement practices of those states with an interest in WMD. No such passages are to be found in the National Intelligence Estimates published by the United States, which, for its part, remains profoundly marked by the trauma of Pearl Harbor and therefore intent on ensuring that it is never again caught unaware by a surprise attack. The main aim of the BND report is to enable German firms (the main audience for the report) to identify dubious prospective clients in time. See: *Proliferation von Massenvernichtungsmitteln und Trägerraketen*, (Pullach, Germany: Bundesnachrichtendienst, October 1999).

²¹ *Ibid.*, p. 10.

regime continued with the 3,000 km range missile program discovered by U.N. inspectors. At present, however, there are no tangible signs of such a development. The BND report also expresses the fear that without regular U.N. inspections (or some equivalent within the framework of the International Atomic Energy Agency), Iraq "...could, technically speaking, regain its 1990 position within a maximum of three to five years."²²

- North Korean sales of medium-range missiles to states in the Middle East also present a possible source of danger for Europe.

JOINT EVALUATION AND JOINT STRATEGY FOR EUROPE?

As far as the EU and the European members of NATO are concerned, to what extent do the individual countries agree with the appraisal of risks outlined above? In other words, is it possible to arrive at a joint assessment of the missile threat? Some factors suggest that problems are likely to arise. NATO member Turkey, for example, currently lies within the range of Iranian Shahab missiles. In this connection, the BND analysis also raises a number of methodological problems that must be satisfactorily addressed in order to formulate appropriate threat assessment criteria based on credible, transparent premises:²³

- The report deals solely with state-instigated activities and totally excludes subnational or transnational organizations, such as terrorist groups.
- Although the BND analysis mentions the regional motives behind arms acquisition activities, its explanation of them in terms of

state and governmental efforts to secure power and defend military security interests adds no real substance and does not seriously evaluate them.²⁴ A more detailed exploration of the extent to which proliferation processes, particularly in the Middle East, affect or are related to Europe is needed.

- The BND does not distinguish between military capabilities and political intentions. During the Cold War, this analytical shortcoming supported worst-case scenarios that were consistently exploited to justify armament activities that were portrayed as nothing more than reactive measures by the West.
- Intelligence organizations appear to operate on the assumption that there will be a linear progression in armaments activities in the "states of concern." Apart from what they consider to be the slim chance of external influence, they evidently do not allow for the possibility of ups and downs or major setbacks to the WMD programs of these states.

There is also the possibility of adopting a joint strategy to address the threat. The BND report concedes that containing trade in WMD components and technologies will become even more difficult, owing to three trends. First, dual-use technologies pose a serious challenge to preventing proliferation. Second, Eastern European countries are attractive suppliers of WMD technology: states with WMD programs increasingly turn to these countries, which do not maintain strict controls on exports. A third complicating factor is the growing trade among states actually engaging in WMD activities, which effectively circumvents international control.

The BND, however, still views two arms control and export control measures as means of

²² Ibid., p. 29.

²³ Bernd W. Kubbig, "Pullachs Gespür für den Primat der Politik," HSKF *Raketenabwehrforschung International*, Internet <<http://www.hsfk.de/fg1/proj/abm/forum/bnd.htm>>.

²⁴ *Proliferation von Massenvernichtungsmitteln und Trägerraketen*, p. 8.

“...considerably slowing down, or even, in some cases, completely halting...” the spread of WMD.²⁵ The first is a comprehensive international agreement that would ensure enforcement of existing nonproliferation agreements. The BND report lists seven multinational agreements of European or global scope, beginning with the NPT and followed by the CWC, the MTCR, and the Wassenaar Arrangement. These agreements commit the participating countries to forgo the development, production, storage, and export of nuclear, biological, and chemical weapons and their delivery systems. For such a commitment to be credible, it must be verified and consistently applied. The report makes no bones about the fact that the majority of the countries with an interest in acquiring weapons of mass destruction have made no such commitment.²⁶ This is a different situation from the one that prevailed in the 1980s. At that time, a mixture of international pressure and domestic political change led Brazil and Argentina to abandon their missile programs, and South Africa halted its nuclear weapon program as well.

For this reason, the BND analysts rely on the imposition of export controls by the supplier countries as the “main method” of containing the spread of weapons of mass destruction.²⁷ They underline the need to standardize national export control regulations. The BND detects a measure of progress in this area, but has also identified a need for further action: “In particular, controls must be tightened in such a way as to prevent a situation in which purchasers who cannot obtain goods in one industrialized state can obtain them more easily in a neighboring state.”²⁸ In practical terms, the report calls for “...monitoring of the end-use of export goods, and knowledge of the end-user,” in order to limit trade and thus also the assistance that Western companies provide in

developing the capabilities of those states that have indigenous programs.²⁹ The BND report also stresses that the countries seeking to develop WMD actively seek to attain this kind of autonomy in weapons technology.

Furthermore, the report raises the question of whether or not existing arms and export control measures effectively address the threat, most notably in the Middle East, but provides no direct answer. There are two factors to note in this connection. First, the report does not evaluate the effectiveness of the countermeasures that it rightly advocates. Second, politicians may hastily accept any analysis by the BND as grounds for increasing military measures to confront the threat, including the development of missile defense systems.

As previously mentioned, although the report is skeptical with regard to the effectiveness of international agreements prohibiting WMD, it advocates improving export legislation and enforcement. This argument lacks coherence, in the sense that the multinational agreements it cites also encompass export controls. Thus, the Wassenaar Arrangement, to which over 30 countries presently belong, is aimed at coordinating export controls on dual-use goods and military products. This agreement, if reliably enforced and accepted by additional countries, would be an ideal means of achieving the kind of coordination of export regulations that the BND report regards as necessary. Export controls are not a panacea, especially not when—as observed in the report—several states are interested in gradually building up their own infrastructures for producing warheads and delivery systems. In this area, international diplomacy, as mentioned by the report, comes into play. During the 1980s, diplomacy persuaded a number of countries to abandon their WMD programs. If one takes the October 1999 BND report literally, it argues in a differentiated manner, saying it cannot discern any positive trend “at present.” Since then, there have

²⁵ Ibid., p. 18.

²⁶ Ibid.

²⁷ Ibid.

²⁸ Ibid., p. 15.

²⁹ Ibid., p. 17.

definitely been developments that, while not justifying any kind of euphoria, do give grounds for optimism. The BND, therefore, perhaps underestimates the stick and carrot approach to policy, which could potentially reduce the dangers in the Middle East that were outlined in the report.

SOLUTIONS TO BMD-RELATED PROBLEMS AS ELEMENTS OF ESDP

From the perspective of arms control policy, the answer proposed by the BND report is a welcome one. An updated scheme of cooperative arms control, driven by the joint desire to minimize threats through the primacy of politics, could be implemented using Iran as a model. The conditions for such an approach are favorable: according to the official BND (and CIA) analysis, there are only half a dozen or so problem states engaged in developing WMD capabilities. The frequently cited “new threat paradigm,” which refers to the rapid and essentially uncontrollable spread of WMD, does not apply in the case of the focused threats in the missile domain. A “diplomacy first” approach can therefore cope with these difficulties. The prospects for such an approach are politically favorable. In the case of Iraq, however, international monitoring must be conducted on a regular basis.

Europe should exploit this window of opportunity. An institutionalized dialogue with the “states of concern” should be initiated, and talks within a multilateral framework should serve as means of jointly broaching, clarifying, and resolving security problems. This kind of mechanism was successful during the Cold War. Why should it not succeed now? Teheran, for example, would be able to set out the motives for its arms acquisition activities; and Europe, for its part, would have the opportunity to explain its fears. Within the framework of the critical

dialogue that has already been initiated, notably by Germany and France, those concerned could work towards a verifiable limit on Shahab missiles. In return, the Europeans could make a credible contribution in the economic sphere—which is where their strength lies—by offering Teheran preferential economic terms. Given the current dissension in Iran, a dialogue would assist the reformers, whereas deploying missile defenses would have the opposite effect.³⁰

³⁰ I attempted to formulate such a concept in: Kubbig, “*Positioning Europe*.” There is one key issue related to ESDP not addressed in this paper. The desire to protect European troops deployed within the framework of the planned European intervention force may impact on future European decisions regarding missile defense.

Regional Perspectives: the Middle East

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Ballistic missile proliferation, one must always remember, began not in the minds of aspiring regional powers or capricious dictators, but among the established major powers. Missile proliferation originally was a process of diffusion that started in Germany in 1945 as Britain, France, the Soviet Union, and the United States all competed to grab the technological spoils of the defeated Nazi war machine. To be sure, all four had modest rocketry projects of their own. China too would start its ballistic missile program with a Soviet-supplied design for an improved version of the V-2. Without this burst of know-how, which radiated out of Germany, much like engineering's own cosmic "big-bang," the pace of global rocketry development would have been much slower and its course would have been much different.¹

It testifies to our politically constructed perception of the phenomenon that even most well informed observers would date the beginning of missile proliferation not to the events of 1945 but to the second generation of newcomers who began to appear in the late 1950s. This was when Egypt and Israel began their own pursuit of the remaining shards of Nazi inheritance. Egypt went directly to the source, hiring ex-patriot German

engineers to recapitulate their wartime successes. Israel chose an indirect route, relying on help from French firms that had previously developed their own expertise in cooperation with veterans of Peenemuende.

In this sense, second-generation missile proliferation began in the Middle East. Throughout the latter decades of the 20th century, missile nonproliferation was also driven by events emanating from the Middle East. These include Israel's all-important Jericho program of the 1960s, the surge of Scuds into the region around the time of the 1973 war, followed by Israel's crucial albeit unsuccessful effort to acquire American Pershing ballistic missiles, the nascent projects of Libya and Iraq in the late-1970s, the further surge of Scuds which led to the War of the Cities, and the revelation of the Condor-2 in the late 1980s. Although events elsewhere—whether in Latin America, Northeast Asia, or South Asia—could not be ignored, for those involved in analysis or policy-making, missile proliferation was a synonym for the Middle East.

In the early 21st century, however, priorities are much different. The region of most exigent proliferation concern today almost certainly is Northeast Asia, where North Korea dominates all aspects of global rocketry proliferation and diplomacy. South Asia appears to be on the verge of witnessing the first completely new deployments of nuclear-armed ballistic missiles in some 25 years. The Middle East, by comparison, has become a proliferation backwater, receiving progressively less attention from proliferation boffins.

¹There is no satisfactory published history of this event. Various national versions can be found in Michael J. Neufeld, *The Rocket and the Reich: Peenemuende and the Coming of the Ballistic Missile Era* (New York: The Free Press, 1995) epilogue; Dennis Piszkievich, *Werner Von Braun: The Man Who Sold the Moon* (Westport, CT: Praeger, 1998) chps. 3 & 4; Jacques Villain, *La Force de Dissuasion Francaise* (Paris: Docavia, 1987) pp. 44-62.

Simple exhaustion might account for some of the shift in priorities, but more fundamental forces also are at work. Above all, the shift is a reaction to variations in the rate of change, which appears to be much more dynamic in other regions. No less significant is the apparent ripeness for diplomatic solutions in these regions. Already the South American and South African rocketry programs are historical memories. The same trend is clearest today with North Korea, where general and highly specific dialogues appear to be improving the chances for peaceful resolution of the worst challenges.² A similar process is at work in South Asia. Even though the Franco-Indian, Indian-American, and Pakistani-American dialogues on nuclear and missile issues do not have much in the way of clear results to show, tensions in South Asia are not the same either. Even the staunchest national critics of South Asian nuclear and missile proliferation generally do not maintain that the outbreak of major war is significantly more likely there today. Rather, critics tend to focus more on the dangers should war occur, the economic waste, the impact on domestic political culture, and the effects on global disarmament.³

While there are reasons for cautious hope elsewhere, the Middle East remains mired in pessimism. Ballistic missile programs continue their seemingly ineluctable progress, and diplomatic dialogues on armaments issues are all but nonexistent. As Seth Carus noted a couple of years ago when analyzing missile problems in

particular, the Middle East is the place where nothing happens, and what little does happen almost invariably goes wrong.⁴ The political situation today—two months after the start of what is widely feared to be an endless low-level war between Israel and Palestine—seems to indicate that the chances for renewed progress could hardly be dimmer. Can one imagine a less inviting place to start a new round of disarmament talks?

WHAT'S WRONG WITH THE MIDDLE EAST?

The frustrations with missile proliferation in the Middle East arise largely from the region's fundamental lack of political progress, the precondition for cooperation in other areas. After all, much of the surge of global peace since the end of the Cold War comes not from specific measures curtailing arms but from political changes that made armaments issues less sensitive and easier to resolve. Political change made disarmament possible, not the other way around.

The most important of the political transformations brought about by the end of the Cold War is that few states fear being attacked by the armed forces of other states. The scourge of war has not disappeared, but it no longer threatens the existence of states. The worst violence today comes not from other governments and their armed forces but from societies, from secessionism and sectarianism.⁵ Of course, most regions

² Robert J. Einhorn, "Statement on Nov. 3 North Korean Missile Talks," U.S. Department of State Washington File, November 3, 2000; and Einhorn, "Press Conference on N. Korea Talks," *ibid.*, July 12, 2000.

³ Samina Ahmed, "Pakistan's Nuclear Weapons Program," *International Security* 23 (Spring 1999), pp. 178-204; Praful Bidwai and Achin Vanaik, *New Nukes: India, Pakistan and Global Nuclear Disarmament* (Olive Branch Press, 2000); Sumit Ganguly, "India's Pathway to Pokhran II," *International Security* 23 (Spring 1999), pp. 148-177.

⁴ W. Seth Carus, "Israeli Ballistic Missile Developments," in Report of the Commission to Assess the Ballistic Missile Threat to the United States (the Rumsfeld Commission Report) Appendix III: Unclassified Working Papers, July 15, 1998, pp. 87-94.

⁵ Although this view is often associated with the triumphalism of Frances Fukuyama's "End of History" or the intellectual mush of Kantian democratic peace, the strength of state-to-state stability only gets harder and harder to quibble with. A judicious statement of the essential rules of

have their token insecure states whose very existence frightens their neighbors. Serbia in Europe and Pakistan in South Asia are prominent examples. Even so, most regions of the world are enjoying an age of unprecedented political stability.

The exceptions are Central Africa, Central Asia, and the Middle East. In this group, the latter stands out. It is the only region where simultaneously warfare between states is entirely feasible, the proliferation of weapons of mass destruction remains an acute problem, and the use of such weapons appears to be an imminent risk. Serious risks of missile warfare exist elsewhere: North Korea may have peculiar ideas of what constitutes self-defense, and India and Pakistan may be shockingly self-confident about their mastery of deterrence. But it is only in the Middle East where missile-armed governments stand ready to use their armaments to achieve immediate political goals, to deter attack, to compel concessions, or to shift territorial borders.

WHEN STRATEGY DOESN'T HELP

The Middle East problem is compounded by our inability to make strategic sense of the role of ballistic missiles in the region. In most other parts of the world, the role of ballistic missiles is narrowly circumscribed. The arsenals of the nuclear weapons states, like those of India and Pakistan, are explicitly instruments of deterrence. Although voices in the United States are asking whether nuclear weapons could be used to counter a non-nuclear attack—specifically a CBW attack—the consensus is not in favor of such options. North Korea's capabilities may be more ambitious, created not just to stave off defeat but also to prevent the United States from intervening in regional crises. Even so, it appears that these capabilities are essentially intended to be a deterrent.

contemporary state-to-state relations is Robert Cooper, *The Post-Modern State and the World Order* (London: Demos, 1996).

When one assesses the role of ballistic missiles in the Middle East, however, the possibilities are much broader. Israelis have long described the Israeli nuclear missile force as an existential deterrent. Others in the region do not accept this rationale, but tend to see the Israeli missile force as a tool for preserving unethical territorial gains, bolstering political dominance, and ensuring the maintenance of an unjust status quo. The problem is even trickier with a country like Iraq, which has used its ballistic missiles against its neighbors repeatedly. Not only does it invoke its missile capabilities freely, it applies them to highly divergent goals. During the 1991 war alone, Iraq appears to have used its ballistic missiles more or less simultaneously for three different strategic objectives.⁶ They were fired against Israel in an effort *to provoke* retaliation. Against Saudi Arabia, they were fired in an effort *to compel* the country to expel Allied forces based there. And they were used passively against Iran, *to deter* Iran from joining the Allied coalition.

Contributing to the confusion is the fact—often ignored even by those of us who should know better—that ballistic missiles have no intrinsic qualities. Although there is an engineering reality to every rocket, there are no political certainties. Even seemingly specific characteristics like maximum thrust, payload, accuracy, and reliability are ultimately not mathematical statements of fact but simply general parameters. In the Cold War, analysts wrestled endlessly with the problem of determining an adversary's intentions from its capabilities. Today, as Tim McCarthy points out in his essay for this Occasional Paper, even those capabilities require

⁶ Timothy V. McCarthy and Jonathon B. Tucker, eds., "Saddam's Toxic Arsenal," in Peter R. Lavoy, Scott D. Sagan and James J. Wirtz, eds., *Planning the Unthinkable: How New Powers Will Use Nuclear, Biological and Chemical Weapons* (Ithaca: Cornell University Press, 2000) ch. 2; and Barry R. Posen, "U.S. security policy in a nuclear-armed world, or what if Iraq had had nuclear weapons," in Victor A. Utgoff, ed., *The Coming Crisis: Nuclear Proliferation, U.S. Interests and World Order* (Cambridge, MA: MIT Press, 2000), ch. 6.

considerable interpretation. In a war lasting months or years, where weapons are used routinely, the facts of engineering are eventually certain to become apparent. But in a political world of crises and confrontations, who is to say? How far *will* a rocket go? What armament *will* it carry? *Will* it be able to hit its target? In lieu of numerous and carefully monitored tests and/or wartime experience, there can be no clear answers to such questions, only interpretations. Whether or not we should be afraid of these rockets is a judgement, subject to continuous debate.

As scholars of strategy as diverse in outlook as Barry Buzan and Colin Gray can agree, it is strategy that ultimately dominates technological capabilities.⁷ Yet the Middle East is a region seemingly without clear strategic intent. The reason outside observers struggle with the implications of the various competing ballistic missile forces is because so little has been done to clarify them within the region itself. If, as Avner Cohen maintains, even Israel—with the most mature missile force in region—lacks a formal strategic doctrine, what chance is there for outsiders?⁸ Although there are benefits to ambiguity, there is also a cost to be paid. In this case the cost lies in the inability to foreclose options. The confusion of Middle Eastern strategic thought makes it impossible for outsiders to neglect possibilities. This is a part of the world where all possibilities—worst case, best case and everything in between—must be regarded with equal seriousness.

Instead of principles, the Middle East offers strategic thinkers only questions. Export controls can be effective in the region, but it is hard to be

certain whether they are working or not. Deterrence may be as effective in the Middle East as elsewhere, but only in particular situations. Missile defenses may be necessary to deal with some threats, but it is hard to be specific about when.

SOME QUESTIONS

Rather than engaging in the frustrating business of trying to resolve issues that clearly defy straightforward answers, it may be healthier at this juncture to stress the questions themselves. Besides the enigmas explored above, other key questions testing the ability of the international community to deal with the challenge of Middle East missile proliferation include:

What constitutes the missile arsenals of the Middle East? One of the minor revelations of Iraq's defeat in 1991 was the discovery that the conventional counting rules for ballistic missiles may be seriously flawed. Traditionally, missile forces were estimated at three per mobile launcher: one ready round, one re-fire, and one spare. When Kuwait released its list of equipment captured and kept by Iraq after the war, though, the list included not 36 Frog missiles expected to match its 12 transporter-erectors, but 112. Apparently Kuwait had received a total of roughly 120 Frogs, or ten per launcher. Presumably, the difference represents rounds expended in training.⁹

The problem becomes even more severe as countries gain manufacturing capabilities. Iran has long been said to have a Scud factory, as reportedly does Egypt, which also imports Scud components. Although these facilities may do more overhaul work than actual production, their

⁷ Barry Buzan and Eric Herring, *The Arms Dynamic in World Politics* (Lynne Reinner, 1998); and Colin S. Gray, *Modern Strategy* (Oxford University Press, 1999).

⁸ Avner Cohen, *Israel's Nuclear Bomb* (Columbia University Press, 1998). Cohen explained his views about Israeli strategy in private conversation.

⁹ Judy Aita, "U.S. says Iraq Using Stolen Kuwaiti Military Equipment," *USLA Wireless File*, January 10, 1995.

potential is clear.¹⁰ In the past we usually assumed that new missile capabilities would be visible at least five or ten years before missile deployments actually occurred. We should have known better. While this still appears to be true at the level of technical intelligence, the same cannot be said of political judgments. Several countries have successfully concealed chemical or biological weapons projects. Iraq proved that it was possible to hide a complete nuclear weapons program as well, and Iran is also widely suspected to have a secret nuclear weapons program.¹¹ In the missile field, the rude shock administered by North Korea in August 1998 put an end to such *hubris*. After all, few analysts of missile proliferation—certainly not this author—had warned that North Korea was near a first flight test of the Taepo-Dong, and no one had predicted it would carry a third stage.

If it is true that indigenous development can be largely concealed, and that total numbers of deployed missiles can be much larger than previously assumed, the world may be changing in ways we have only begun to appreciate. The number of ballistic missiles in the Middle East alone may number not hundreds, as is widely assumed, but thousands. This is especially important with regard to Soviet-supplied Scuds and North Korean-supplied Scud versions. Already, reports Uzi Rubin, Israel faces more than 500 ballistic missiles capable of reaching its territory. These include mainly Syrian missiles, a small number of Iraqi weapons, and Iranian Shahab-3s.¹² This estimate, which appears to be based on orthodox counting rules, though, could be too conservative. Until official transparency

becomes widespread, the scale of Middle East missile proliferation can only be regarded as enigmatic.

How dependent is the Middle East on foreign sources of missile technology? Except for Israel after the 1967 war, missile proliferation in the Middle East has been as much about foreign suppliers as indigenous demand. Except for Israel, it is widely assumed that no other country in the region is capable of making significant missile progress without massive imports of foreign technology and assistance. It is believed that this progress is governed by the ability of external actors to close the gates.

There is considerable merit to this argument. Libya's efforts to acquire foreign technology show that dependence can be real indeed.¹³ Other countries try to minimize their links. Iran, for instance, consistently claims to be self-sufficient. Whether this statement means it has received enough foreign help to continue development all by itself, or that it has enough to maintain what it has, is impossible to say.¹⁴ To turn to the example most completely understood, Iraq was discovered to be less dependent than widely assumed. Access to foreign technology was critical in determining the rate of its progress, but the goals of the program were entirely indigenous. Deprived of foreign help, it has been able to maintain the nucleus of a program ready to expand rapidly if a more forgiving environment emerges.¹⁵

One development complicating the picture is the changing demand for foreign technology. The Missile Technology Control Regime (MTCR) was created to deal with countries attempting to purchase whole rockets or at least major, clearly

¹⁰ Andrew Koch, "USA Rethinks MTCR Options," *Jane's Defence Weekly*, March 10, 2000, p. 22.

¹¹ U.S. Senate, Governmental Affairs Committee, Subcommittee on International Security, Proliferation, and Federal Services, Statement by Robert D. Walpole on The Iranian Ballistic Missile and WMD Threat to the United States Through 2015, 106th Congress, 2nd Session, September 21, 2000.

¹² Barbara Opall-Rome, "Israeli Official Charts Threat," *Defense News*, March 13, 2000, p. 9.

¹³ Can Coughlin, "Missile Deal Puts Israel in Gaddafi Sights," *The Telegraph*, September 24, 2000.

¹⁴ "Iran Claims Missile Self-sufficiency," *Jane's Missiles and Rockets* (January 2000), p. 5.

¹⁵ McCarthy and Tucker, "Saddam's Toxic Arsenal," pp. 54-56; "UNSCOM Reveals Iraq's Secret Missile Programmes," *Jane's Missile and Rockets* (March 1999), pp. 1-3.

identifiable technologies. The rocket, after all, is a sixty-year-old technology, continually growing less exotic. Although many countries in the Middle East are only too willing to buy whole rockets and components, they are no longer as dependent as they once were. With greater investment in training personnel and careful planning, states can achieve their goals with small bits and pieces. The discovery that Libya was buying Scud components subcontracted to a Taiwanese manufacturing plant illustrates the growing complexity of the problem.¹⁶

Adding further doubts is the rising importance of soft or invisible technologies, the human skills of missile development and other forms of weapons proliferation.¹⁷ Soft technologies—including both engineering and managerial skills—are often the greatest weaknesses of many regional missile programs. Countries like Iran have gone to great lengths to overcome this problem, most spectacularly by establishing official links with Russia's Baltic State Technical University.¹⁸ But export controls and sanctions are poorly suited to containing what is ultimately a human, not material problem.

Can Middle Eastern missile proliferation be restrained by outside actors? How much influence does the outside world actually have? External efforts to control Middle East missile proliferation are predicated on one of two assumptions with distinct implications for non-proliferation efforts. From one perspective, states acquire these capabilities in response to regional power balances, in order to maximize their military power and political options. In this scenario, the solution to the problem lies in

restoring regional power balances. Alternatively, the problem is based on the lack of strong norms, and the solution lies in the creation of broad international understandings of what is acceptable and what is not. Both perspectives stress the role of the international community.

In contrast, a growing academic literature accepts the proposition that decision-making on proliferation is largely guided not by international factors but by domestic political factors.¹⁹ If so, there are critical limits to what either the international community or major powers can do to deter proliferation. Aside from the difficult business of international norm creation and eventual multi-lateral disarmament, the ability of outsiders may be limited.

Can missile proliferators be deterred from using their weapons? All the experience in the Middle East suggests that the barriers to the use of long-range missiles depends largely upon how they are armed; missiles carrying conventional high explosives have a very low threshold for use, while missiles armed with weapons of mass destruction have a much higher—and so far unsurpassed—threshold for use. But what will happen if more regional actors acquire nuclear-armed ballistic missiles? Will deterrence be sufficient to ensure restraint?

Two schools of thought have emerged on this question, centering largely on the enigmas posed by the potential of Iranian weapons proliferation. On one hand, students of the Iranian strategic culture like Shahram Chubin, Geoffrey Kemp and Michael Eisenstadt, cautiously suggest that Iran's strategic goals are modestly limited to self-defense. Although all three acknowledge the overwhelming importance

¹⁶ "Britain Protests at Libyan Smuggling of Missile Parts," *Financial Times*, January 10, 2000, p. 1.

¹⁷ William A. Reinsch, "Export Controls in the Age of Globalization," *The Monitor* (Summer 1999), pp. 3-6.

¹⁸ Simon Saradyhyan, "Russia Alleges University Gave Iran Rocket Technology," *Defense News*, April 24, 2000, p. 12.

¹⁹ Eric Arnett, ed., *Military Capacity and the Risk of War* (Oxford: Oxford University Press, 1997); a less extreme interpretation is Mitchell Reiss, *Bridled Ambition* (Baltimore, MD: John Hopkins University Press, 1995).

of internal debates and power struggles over strategic goals, their work gives credence to the hope that Iranian power can ultimately be tamed much like that of China in the 1970s.²⁰ On the other hand are those who regard Iran as an inherently revolutionary state, unable to accept either its cultural inferiority or confessional slights and insults to Islamic preeminence, and unwilling to abandon a mission to undermine the authority of its adversaries. Deterrence, from this perspective, is little more than wishful thinking. Against this Iran there is no alternative to engaging in a long-term effort to topple the revolutionary government.²¹

Will proliferators deter established nuclear powers from using their long-range missiles?

In other words, will deterrence constrain the United States and other global powers more than it constrains emerging regional powers? Few doubt that the nuclear weapons states will be deterred from threatening or even using their nuclear-armed ballistic missiles to defend themselves against attacks on their national territory. But does the magic of their deterrents extend to automatic protection of their regional influence, foreign bases, or expeditionary forces?

In recent essays, Stephen Peter Rosen and Barry Posen rehearse this debate.²² Rosen (be sure to keep the names straight) believes that the United States will be readily intimidated from intervening in regions like the Middle East as the risks mature. Posen rejects this view, arguing that in the face of direct threats from regional

adversaries with nuclear armaments, the United States will be compelled to intervene aggressively in order to preserve its global role. No doubt there is a certain dialogue of the deaf here; the two sides seem to be saying very different things. Rosen maintains that outside powers like the United States will be too intimidated by regional risks to intervene at all, while Posen deals with the question of what happens after a commitment to intervention is made.

How will defenses affect Middle East missile deployments and use? As Clay Moltz points out in his contribution to this Occasional Paper, defenses are no panacea for the dilemmas of regional missile proliferation. Unless they are extraordinarily effective, which even strong advocates usually concede is unlikely in the near future, defenses are best understood as one element in a complicated strategic situation.

The only sensible answer to the question of the effect of defenses in the Middle East is to confess that we really don't know. Extremists on one side may insist that defenses will convince would-be proliferators to give up their game altogether, while those on the other side maintain that they will eliminate the few bricks of stability that still exist. The reality is more likely to be found in the middle. Defenses will strengthen territorial security without making it absolutely certain. They will compel regional actors to rethink their offensive postures, but probably not as much in either direction as partisans seem to think. Defenses are ultimately just one more weapon system and cannot resolve strategic uncertainty any more than any other bit of hardware.

CONCLUSION: THE IMPERATIVE TO SEEK CLARITY

Strategic uncertainty insures that the more the Middle East changes, the more it stays the same. But change is real and must be accommodated. More countries are acquiring long-range

²⁰ For example, Michael Eisenstadt, "Living With a Nuclear Iran?" *Survival* (Autumn 1999), pp. 124-149.

²¹ Kenneth R. Timmerman, "Fighting Proliferation Through Democracy: a 'Competitive Strategies' Approach Toward Iran," in Henry D. Sokolski, ed., *Prevailing in a Well-Armed World: Devising Competitive Strategies against Weapons Proliferation* (Carlisle, PA: U.S. Army War College, 2000) pp. 111-133.

²² See the contrasting contributions by Stephen Peter Rosen and Barry Posen in Victor A. Utgoff, ed., *The Coming Crisis: Nuclear Proliferation, U.S. Interests and World Order* (Cambridge, MA: MIT Press, 2000), ch. 6.

missiles they did not possess in the past, and many are developing the potential to arm them with weapons of mass destruction as well. For these reasons, defenses cannot be disregarded as an option. Russia and the United States already deploy theater defenses, and the United States is beginning to deploy more advanced ones. Israel is in the process of deploying active territorial defenses. Under the Missile Defense Act signed into law in June 1999, the United States is legally committed to deploy national missile defenses as soon as they are deemed technologically feasible.

Fitting these considerations into the regional security equation will take time and experience. The questions presented here may never be resolved, or perhaps answers can emerge only through the kind of warfare we want most desperately to avoid. This is one kind of doubt we want to live with. In the meanwhile, however, it behooves analysts to open their minds and consider both the unprecedented dangers and possibilities that technology represents.

Regional Perspectives: South Asia

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In South Asia, ballistic missiles have invariably been examined in the context of WMD in general and, after China, India and Pakistan signed the Chemical and Biological Weapons Conventions, nuclear weapons in particular.¹ Even today ballistic missiles are regarded as the primary means of delivering nuclear weapons: the bulk of China's nuclear arsenal is missile-based, and both India and Pakistan are moving towards missile-based nuclear systems as well. Given this linkage, at least three concerns have been raised with regard to nuclear weapons and the proliferation of ballistic missiles in South Asia following the series of nuclear and missile tests in the region since 1998. First, given the level of hostility between India and Pakistan, as well as the absence of early-warning systems and the short flight time for missiles, there was fear that South Asia may become the flash point (accidental or deliberate) for a nuclear exchange. Second, there was concern that the tests

and related missile developments may adversely affect global regimes and may lead other countries that have renounced such programs, both within and outside the nuclear nonproliferation regime, to break out.² Third, there was alarm that the new capabilities in South Asia—in addition to China's existing ones—may be exported to other areas of regional tension, particularly the Middle East and Northeast Asia.

In retrospect, however, these concerns appear to have been overstated. While both India and Pakistan are likely to continue conducting missile tests to validate delivery systems for their nuclear weapons,³ neither has overtly deployed, let alone used them yet, thus maintaining a virtual de-alert state.⁴ Similarly, while Iran did cite events in South Asia as a rationale for its own previously planned test-flight of the Shahab-3 missile in July 1998, this was probably a post-facto and

¹There is also a problem in defining South Asia. It very often depends on where one is located. In Washington, it has been confined to India and Pakistan, although recently, there has been some acknowledgement that China is part of the region. In Islamabad, it is still seen in terms of India and Pakistan, as it is in Beijing. In fact, Beijing has gone so far as to say that it is not part of South Asia, even though some of its missiles reportedly based in Tibet can only be used in this region and, perhaps, Central Asia. However, from New Delhi, South Asia is considered to include India, Pakistan, and China at the very least and Central Asia, the Middle East, and Korea at the most. Leading experts such as Jasjit Singh define "Southern Asia" as encompassing China, Central Asia, Iran, Afghanistan, Oman, UAE, the countries of South Asia, Indonesia, Malaysia, Thailand, and Myanmar. In this paper, "South Asia" includes at least China, India, Pakistan, as well as missile-capable countries around their periphery.

² The nonproliferation regime comprises the member states of the legally and formally established Treaty on the Non-Proliferation of Nuclear Weapons (NPT), the Comprehensive Test Ban Treaty (CTBT), and the more informal Nuclear Supplier's Group (NSG), the Missile Technology Control Regime (MTCR), the Australia Group, and the Wassenaar Arrangement.

³ The latest test flight of India's *Agni-II* medium range ballistic missile (MRBM) took place on January 17, 2001. This is likely to be followed by a test of Pakistan's Shaheen -II MRBM soon. India is also expected to test the Agni-III, which is reported to have a range of 3,500 kilometers, later this year.

⁴ See Waheguru Pal Singh Sidhu, "A Virtual De-alert in South Asia," *UNIDIR Newsletter*, Number 38, August 1998, <<http://www.unog.ch/unidir/E38-2II.HTM>>. See also "Pakistan, India 'Have Not Moved Very Far' to Field Nukes: Cohen," *The News*, May 13, 2000.

convenient justification. This interpretation is supported by Tehran's statement following the latest test of its 1450-km range Shahab missile in July 2000, which made no mention of the Indian test of the 2000-km range Agni II in April 2000 or the more recent test in January 2001.⁵ States may, however, break out of the regime in the future. Indeed, as the North Korean and Iraqi cases have shown, there will be states that feel compelled to opt out or defy the regime; but this compulsion is unlikely to be determined by the tests in South Asia, though it may adversely influence events there.⁶

Finally, despite suspicion that nuclear weapon technology may spread from South Asia (particularly cash-strapped Pakistan) to other regions of tension, especially the Middle East under the convenient, if somewhat misleading label of the "Islamic Bomb," there is little evidence to suggest that there has been any such development so far. However, a future transfer cannot be ruled out. It is important to remember that there is substantial proof that sensitive nuclear and missile technology was being supplied by at least two members of the nonproliferation regime to Pakistan.⁷

⁵ Programme for Promoting Nuclear Non-Proliferation (PPNN) *Newsbrief*, Number 51, Third Quarter 2000, p. 22.

⁶ For instance, a breakout in the Middle East is more likely to be determined by the Israeli nuclear capability than India's nuclear posture. See, for instance, "Assessing Arab Anger," *Proliferation Brief* 3, no. 15, Carnegie Endowment for International Peace, May 16, 2000, <<http://www.ceip.org/programs/npp/nppbrief.htm>>

⁷ These are China and North Korea. See, for instance: Andrew Koch and Waheguru Pal Singh Sidhu, "Subcontinental Missiles," *Bulletin of the Atomic Scientists* 54 (July/August 1998), <<http://www.bullatomsci.org/issues/1998/ja98/ja98koch.html>>; and Waheguru Pal Singh Sidhu, "India's Security and Nuclear Risk-Reduction Measures," in Michael Krepon and Michael Newbill, eds., "Nuclear Risk-Reduction Measures in Southern Asia," Stimson Center Report Number 26, Washington, DC, November 1998,

Even without the linkage to nuclear weapons, these three concerns are likely to linger. Indeed, in the near future, given the diffusion of technology that is increasing the accuracy of ballistic missiles, it is only a matter of time before conventionally armed ballistic missiles with pinpoint accuracy and greater destructive power will also have to be taken into consideration.⁸

Although the purpose of this paper is to examine South Asian regional issues, their impact on international security with regard to ballistic missile proliferation, and related moves towards building national missile defenses, such an examination would provide only part of the story. Equally crucial is the need to examine the impact of global events and regimes as well as the implications of developments in other regions, such as the Middle East, on South Asia. For example, any decision in Washington to field a NMD system, though not directly related to South Asia, will inevitably lead to further missile proliferation in the region: such a move would encourage Beijing to enlarge its nuclear arsenal, which could prompt New Delhi, and in turn Islamabad, to follow suit.

Similarly, understanding the role of domestic actors in the national ballistic missile programs in South Asia is important. As was the case with the rejection of the Comprehensive Test Ban Treaty (CTBT) by the U.S. Senate, domestic politics are likely to determine whether India and Pakistan come on board this and other global treaties. Thus, decisions made in Washington are as likely to affect events in South Asia as decisions made in

<<http://www.stimson.org/pubs/cbm/sa/sidhufnl.pdf>>, pp. 24-26.

⁸ Indian strategists are already studying this possibility. See, for example, A. K. Sachdev, "India's Surface to Surface Missiles: The Doctrinal and Strategic Framework," *Strategic Analysis* 24 (May 2000), <<http://www.idsa-india.org/an-may-04.html>>.

Beijing, Islamabad, and New Delhi are likely to impact global and regional events.

This paper begins with an overview of the impetus behind South Asia's nuclear missile program and focuses on the determining regional and extra-regional factors. Based on this overview, the next section outlines the multiple roles that missiles perform, followed by an examination of the rationale behind the present "de-alert" status of missiles in South Asia and the prospects for a regional missile disarmament treaty. Finally, this paper argues that while the possibility of regional missile disarmament is remote, the current de-alert state is likely to continue. The elimination of missiles in South Asia is likely to occur only within the framework of a global treaty.

IMPETUS FOR MISSILES

A number of indigenous technical and military imperatives, national prestige, and domestic political factors provide critical impetus for the Indian and Pakistani missile programs. This section, however, will focus on the impact of key regional and extra-regional factors.⁹ A primary consideration was the deployment and use of similar missiles—particularly conventionally armed SSMs—in the 1973 Arab–Israeli and the 1980–1988 Iran–Iraq War. This was the first time that armed forces akin to those in South Asia employed missiles in a military role. Although their effectiveness as weapons of war has been questioned, there are indications that in at least some cases SSMs armed with conventional warheads could prove decisive in battle.

For instance, during the Afghan civil war of the 1990s, the barrage of SCUD missiles used by the government forces may have been instrumental in breaking the siege of Jalalabad, held by rebel forces. Similarly, during Operation Desert Storm

in 1991, the United States effectively used thirty-two Army Tactical Missile System (ATACMs) missiles against Iraqi surface-to-air missile sites, logistic sites, artillery and rocket battery positions, and tactical bridges.¹⁰ As further validation for conventionally armed missiles, Indian strategists have cited the use of Tomahawk cruise missiles in August 1998 against suspected terrorist training camps in Afghanistan, as well as in the summer of 1999 in Kosovo.¹¹

Similar targets have been identified for the missiles in the South Asian inventory. Indeed, the designers of Prithvi have consistently compared the Indian missile to the ATACMs and the Russian TOCHKA missile system, arguing that the accuracy of the Prithvi is comparable to these systems.¹² In fact, some military analysts have argued that neither the ATACMs nor the M-11 have shown the same accuracy in test firing as the Prithvi.¹³ Even if this is an exaggerated claim, there is no doubt that with further improvements via increased development and testing the Prithvi and other missiles would be accurate enough to take on the role assigned to the ATACMs during Operation Desert Storm.

Within the region, Pakistan first introduced different types of missiles on the battlefield.¹⁴

¹⁰ For a history of the ATACMS program, see "Army TACMS," U.S. Army, Redstone Arsenal, <<http://www.redstone.army.mil/history/sytems/ARMYTACMS.html>>.

¹¹ Sachdev, "India's Surface to Surface Missiles."

¹² Major General V. J. Sundaram (Project Director, *Prithvi* DRDL), "Surface to Surface Missiles Come of Age in India," *Artillery Journal* (1990), pp. 53–5.

¹³ See Wing Commander J. P. Joshi, "Employment of *Prithvi* Missiles," *USI Journal* 76 (October–December 1996), p. 465.

¹⁴ Shekhar Gupta, "Nuclear Weapons in the Subcontinent," in "Defense and Insecurity in Southern Asia: The Conventional and Nuclear Dimensions," Stimson Center Occasional Paper No. 21, Washington, DC, May 1995, pp. 45–46. Gupta argues that Pakistan was the first to deploy the Sidewinder air-to-air missiles (AAMs), which came with the F-104s, along with the first anti-tank missiles and air-to-surface precision guided munitions.

⁹ The other factors have been elaborated in Sidhu, "India's Security and Nuclear Risk-Reduction Measures."

India began to seriously examine the SSMs only after their use in the Iran–Iraq War and the reported interest by Pakistan in similar missiles tipped with chemical warheads. Some senior Pakistani military officials, such as former army chief General Mirza Aslam Beg, have argued that the Indian missile program is, in fact, a response to Pakistan’s missile development.¹⁵ However, given the gestation period of five to eight years for missiles such as the Prithvi and Hatf, as well as the appearance of the two in the late 1980s, it seems to suggest that the two missile programs may have been launched around the same time in the early 1980s. Statements by Prime Minister Benazir Bhutto in early 1989, at the time of the successful launches of the 80 km-range Hatf-I and the 300 km-range Hatf-II, seem to indicate that they were the fruition of a missile project initiated by her father, Zulfikar Bhutto, in 1974 on a “priority basis.” However, in all likelihood, these programs were taken up in earnest only in the early 1980s.¹⁶ If this analysis is correct, the indigenous Pakistani missile program nearly mirrors that of India’s in its chronology.

While both missile programs may have been initially driven by domestic and technical forces—and possibly the knowledge of the other side’s nascent missile quest—the appearance of similar missiles on the other side of the border certainly provided the post-facto rationale for indigenous development. In the Indian case, this rationale took on a more strident tone after the reported

transfer of Chinese M-11 missiles to Pakistan. This was apparent in the assertion made by General Beg. It was also made explicit in the annual Indian defense report of 1997-98. According to the report, “China’s assistance to Pakistan’s nuclear weapons program and the sale of missiles and missile technology to Pakistan also directly affects India’s security.”¹⁷

Thus, the appearance of missiles across the border was the perfect peg to hang the domestic quest for missiles. All the concerned parties—the defense scientists, the military, and politicians—used this external impetus to rationalize induction and justify a doctrine for missile deployment. The doctrine that the armed forces promote is an extension of doctrine regarding nuclear weapons. Simply put, the armed forces argue that nuclear weapons can best be deterred by nuclear weapons, and as a logical corollary, missiles deter missiles.

The China factor has been a critical and constant element in the Indian security equation since the 1962 Sino–Indian War. The role of this factor was highlighted by the first Chinese nuclear test in 1964 and most recently reflected by Indian Defense Minister George Fernandes, when he asserted in 1998 that China is India’s “potential threat number one.”¹⁸ The China threat can be divided into direct and indirect categories. China’s own missiles and arsenals, particularly those capable of striking targets in India, pose the direct threat. The indirect threat is posed by China’s supply of missiles to countries in India’s neighborhood, such as Pakistan and Saudi Arabia; its technical assistance in the missile-related area, particularly to Pakistan; and its creation of bases and monitoring stations, such as in Myanmar.

From India’s point of view, Chinese missiles

¹⁵ According to General Beg: “It [the *Prithvi*] is in response to what we have on our side. We have *Hatf*, which is a similar program, which we deployed about three years back. And at that time they had nothing on the ground. So, they have deployed in response to that. We don’t blame them. And I don’t think their *Prithvi* can carry a nuclear warhead, neither can our *Hatf*. I think it is just to maintain the balance.” Interview with General Mirza Aslam Beg, by Michael Krepon, Rawalpindi, May 1994.

¹⁶ Benazir Bhutto’s statement was reported in *The Muslim*, February 6, 1989.

¹⁷ *Ministry of Defence Annual Report 1997-98* (New Delhi: Government of India, 1998), p. 2.

¹⁸ John F. Burns, “India’s New Defense Chief Sees Military Threat,” *New York Times*, May 5, 1998.

reportedly based in Tibet—a deployment that China consistently denies—pose the most serious direct threat. Some Indian analysts have also questioned India's concerns about the Chinese missiles in Tibet. For instance, Achin Vanaik argued that though the Dong-Feng-3 (DF-3) missiles reportedly based in Tibet have the range to hit India, they were “targeted at United States bases in the Philippines” and noted that these “missiles are now obsolete.”¹⁹ However, the lack of transparency makes it difficult to ascertain China's missile deployment and to assess the extent of the threat China poses to India. For instance, it is not clear if, when the DF-3s were supplemented with the DF-4s, China was still primarily targeting U.S. bases or if its missiles were then re-targeted at India. Also, following the closure of U.S. bases, what then are the targets for these missiles? Are the DF-4s and the DF-21s used to target India?

Clearly, it is difficult to assess accurately the direct threat posed by Chinese missiles based in Tibet for a number of reasons. First, China has never publicized either the strength of its missile force or its location. On the contrary, Beijing has been “...very effective in keeping secret the details,” and “...there remains uncertainty about the number of ballistic missiles deployed,” which must be based on “best estimates.”²⁰ Second, the Tibetan plateau, full of natural caves and manmade tunnels, is ideal for concealing missiles, most of which are tractor-based and have been moved around to make them difficult to track or target. Third, India has not had the national technical means to track these missiles or pinpoint their locations, particularly in Tibet. India depends on human intelligence, particularly Tibetan refugees or resistance fighters who may have their own vested interest in over- or

underestimating missile strengths. Finally, in the absence of a verification regime, there is no means of checking whether the missiles that China claims have been decommissioned have indeed been retired, or whether perhaps they were simply re-deployed and re-targeted.

In contrast, the indirect Chinese threat posed to India has been well documented and ironically poses a direct threat to the nonproliferation regime.²¹ It is based on China's uninterrupted build-up and modernization of its nuclear and missile arsenal; its supply of missile and nuclear technology to countries in India's neighborhood, such as Iran, Iraq, Pakistan, and Saudi Arabia; and its technical assistance in the nuclear and missile-related area, particularly to Pakistan. In 1987, China sold the 2,700 kilometer-range DF-3 missiles—which once formed part of its nuclear arsenal—to Saudi Arabia. Is the DF-3 really obsolete, as some claim? If so, why would Saudi Arabia pay billions for it? As far as India is concerned, these missiles are capable of carrying nuclear warheads and could be used to deliver nuclear weapons in the future.²²

Similarly, reports of the supply of Chinese nuclear and missile technology to Pakistan have been well documented. In his testimony before the U.S. Congress in 1993, then-Director of the CIA, James Woolsey, acknowledged the Sino-Pakistan nexus:

Beijing has consistently regarded a nuclear-armed Pakistan as a crucial regional ally and vital counterweight to India's growing military capabilities....Beijing, prior to joining the NPT [Nuclear Nonproliferation Treaty] in

¹⁹ Achin Vanaik, “Mystery of the Reorient,” *The Telegraph*, March 31, 1997.

²⁰ National Resources Defense Council, NRDC Nuclear Program, “Table of Chinese Nuclear Forces, 1996,” <<http://www.nrdc.org/nrdcpro/nudb/datab17.html>>.

²¹ See: “China Continuously Aided Pak: Report,” *Times of India*, September 6, 2000.

²² Waheguru Pal Singh Sidhu, *Enhancing Indo-US Strategic Cooperation*, Adelphi Paper 313 (Oxford: Oxford University Press for the International Institute for Strategic Studies, London, 1997), p. 18.

1992, probably provided some nuclear weapons-related assistance to Islamabad.²³

Subsequent reports suggest that Beijing may have transferred an entire M-11 production plant to Pakistan, built in the town of Fatehganj after May 1992. In his testimony before a Senate Subcommittee in April 1997, the U.S. Deputy Assistant Secretary of State for Nonproliferation, Robert Einhorn, admitted that it was only in May 1996 that the United States was able to wrest an assurance from Beijing that it was indeed halting supplies of critical nuclear and missile technology to Pakistani programs. In return, China demanded (and got) advanced nuclear and satellite technology from the United States, thereby further eroding the already battered nonproliferation regime.

The latest revelations of Chinese assistance to Pakistan, on March 15, 2000, showed that even after Pakistan's nuclear tests, China was not held accountable for its role.²⁴ Indeed, the tests provided Beijing an opportunity to whitewash its past proliferation record and to present itself as a zealous guardian of the nonproliferation regime before the world. Although in November 2000 China declared its intention to establish formal missile controls in return for the waiver of U.S. sanctions, it remains to be seen to what degree these controls will be transparent and verifiable.²⁵

²³ *Hearing of the Senate Government Affairs Committee*, Witness: James Woolsey, Director, Central Intelligence Agency: February 24, 1993.

²⁴ John Pike "Pakistan's Nuclear and Missile Facilities Revealed," News Briefing, Federation of American Scientists, Washington, DC, March 15, 2000, <<http://www.fas.org/eye/indo-pak.html>>. The Director of the CIA, George Tenet, also confirmed the transfers of Chinese M-11 missiles to Pakistan in his testimony before the Senate Foreign Relations Committee on March 22, 2000. See "U.S. Knew about Sale of M-11s to Pak," *Hindu*, March 23, 2000.

²⁵ "China Pledges It Will Not Aid Foreign Missile Development," *AP*, November 21, 2000.

New Delhi's response has been lukewarm, because this declaration does not reverse those transfers that have already occurred.²⁶

Even if China did not contribute to the Pakistani program, as Beijing vehemently claims, its own program—however benign—has a direct bearing on proliferation in South Asia. As Tariq Rauf has noted, the "dilemma in South Asia" is that "...nuclear proliferation and nuclear security are inter-linked: Pakistan versus India, India versus China, China versus Russia, and Russia versus the United States."²⁷ This linkage is crucial, because on one hand it implies that as India's capabilities grow, China may be compelled to respond. On the other hand, if China enhances its nuclear capability to counter the U.S. NMD shield (as indeed Beijing has threatened to do), then India may be forced to match the Chinese build-up. This in turn may lead Pakistan to increase its arsenal to counter India. Therefore, the inverse linkage between non-compliance by NPT members and proliferation in South Asia is equally important.

MULTI-ROLE MISSILES

Military rationale apart, conventionally armed missiles also serve political purposes for China, India, and Pakistan. This was illustrated in 1996 at the time of the Taiwanese presidential elections, when China fired several Dong-Feng (DF) 11 and DF 15 missiles in the Taiwan Strait as part of a military exercise. Although this move did not affect the outcome of the elections, it did make the new leadership cautious about declaring independence from China. In South Asia, the attempt to create the impression of tit-for-tat missile tests between India and Pakistan serves a

²⁶ "India Hopes China Will Honor Arms Control Pledge," *Reuters*, November 22, 2000.

²⁷ Tariq Rauf, "Accommodation not Confrontation," *Bulletin of the Atomic Scientists*, 55 (January/February 1999).

similar purpose.

In India, the missile program has another objective: to challenge the technology denial regimes aimed at denying New Delhi the necessary technology. In fact, one of the official mandates for missile research is “to develop critical components, technologies.... and to reduce the vulnerability of major programs [such as missiles]...from various embargoes/denial regimes, instituted by advanced countries.”²⁸ Hence, the continuous development of missile technology is essential not only to prove India’s technological prowess, but also to challenge the exclusive and discriminatory nature of the various technology control regimes.

Moreover, the monetary incentive of exporting missiles is equally tempting. For instance, China reportedly earned an estimated \$2.5 to \$3.5 billion for supplying thirty-six DF-3 intermediate-range ballistic missiles (IRBMs) to Saudi Arabia. Similarly, the sale of 100 SCUDs to Iran by North Korea earned Pyongyang approximately \$500 million.²⁹ Thus, similar missile sales by India could be a valuable source of hard currency during times of economic turmoil.

Finally, there is another role that South Asia’s missile capability could play in the international arena—that of a bargaining chip, depending on the potential incentives for countries in the region. In this context, the November 2000 Chinese statement of intent to establish export controls in return for the waiver of U.S. sanctions and greater access to technology may provide a model for others to emulate. A more dramatic form of this trade-off could include a total cessation of missile program development, as appears to be the case with

North Korea. Although this strategy has not found popular support in South Asia, it is reflected in the writing of some Indian strategists.

For instance, Air Commodore Jasjit Singh argues:

[India] should not hesitate to forego development and deployment of the Agni if states in the Asia-Pacific region initially, and in the world ultimately, are prepared to eliminate this class of weapons. This would be a far more effective and equitable approach than ...the MTCR.³⁰

However, it is unlikely that India would accept a regional disarmament commitment without linkage to a similar commitment at the global and strategic levels.

THE ROAD AHEAD

Given the multiple roles that missiles play for countries in South Asia and the lessons learnt from the use of missiles in other parts of the world, it is very unlikely that countries in the region will accept any proposal to “cap, rollback, and eliminate” their missile capabilities. On the other hand, it is equally unlikely that these countries will deploy their missiles in a high-alert, hair-trigger mode, primarily because at the moment the non-military objectives are more significant than the military ones. Hence, missiles in South Asia are likely to stay in a virtual state of de-alert.

While both India and Pakistan have inducted missiles that can strike deep into each other’s territories within minutes, these missiles have not been deployed nor are they on hair-trigger alert.³¹

²⁸ *Ministry of Defence Annual Report 1996–97* (New Delhi: Government of India, 1997), p. 55.

²⁹ Aaron Karp, “The Maturation of Ballistic Missile Proliferation,” in William C. Potter and Harlan W. Jencks, eds., *The International Missile Bazaar: The New Suppliers Network* (Boulder, CO: Westview Press, 1994), p. 11.

³⁰ Jasjit Singh, “Arms Control and the Proliferation of High-technology Weapons in South Asia and the Middle East: A View from India,” in Shelley A. Stahl and Geoffrey Kemp, eds., *Arms Control and Weapons Proliferation in the Middle East and South Asia* (New York: St. Martin’s Press, 1992), p. 133.

³¹ Both India and Pakistan make a distinction between “induction” and “deployment.” *Induction* indicates a peacetime, non-belligerent activity of acquiring a new weapon

In fact, it could be argued that in order to make their nuclear postures more credible, there is a case for both India and Pakistan to *increase* the state of alert of the nuclear forces to at least launch under attack, so as to ensure the use of the capability. This argument would be particularly valid were India to take into account the arsenal of its other nuclear neighbor—China—with which it shares a disputed border.

Although China claims that its nuclear arsenal is purely defensive and not on hair-trigger alert, and has provided a unilateral no first-use guarantee, this stance is not entirely verifiable. In fact, from what little is known about China's nuclear force and strategy, the combination of round-the-clock alert, decentralization, concealment, and a tacit launch-on-attack warning actually indicates a dangerous high trigger alert.³² Coupled with the lack of transparency in China, this situation is accentuated by the absence of reliable early warning systems and an ambiguous no-first-use policy. Nonetheless, India and Pakistan are likely to retain a non-deployed, de-alerted status for their missiles in the foreseeable future for a number of reasons, including: the present level of missile and nuclear technology in the region; the short flight times coupled with the absence of any real-time early warning systems; the political nature of nuclear weapons; and the economic factors related to increasing the level of alert.

All these factors validate the need to not only continue the current policy of virtual de-alert in

South Asia, but to formalize it in the form of a bilateral agreement. The prospects for such a formalization were favorable following the launch of the ambitious Lahore process, set into motion by the Lahore Declaration signed between Prime Ministers Nawaz Sharif of Pakistan and Atal Behari Vajpayee of India, following the latter's high-profile bus journey to Lahore in February 1999.³³ However, Pakistan derailed the Lahore process by intruding into Kargil in the summer of 1999. Although a formal de-alert agreement, under which India and Pakistan undertake not to deploy nuclear-tipped missiles, would have been part of the Lahore process and an extension of the existing agreement not to attack each other's nuclear facilities, the Kargil confrontation from May to July 1999 effectively killed this chance. While verification would have been difficult, the agreement would have been a crucial confidence-building measure (CBM) in facilitating steps towards arms control.

Nonetheless, some aspects of the Lahore agreement are being adhered to by both India and Pakistan, albeit unilaterally. For instance, both countries diligently, if somewhat reluctantly, notify each other of impending missile tests. India began this practice in April 1999, just before the first test of the Agni-II, when it briefed ambassadors of the

system and training with it at the unit level. *Deployment* implies a more warlike posture in which the weapons are actually placed on launchers and kept ready for operational use at a forward location.

³² Litai Xue, "Evolution of China's Nuclear Strategy," in John C. Hopkins and Weixing Hu, eds., *Strategic Views from the Second Tier: the Nuclear Weapons Policies of France, Britain and China* (University of California Institute on Global Conflict and Cooperation: San Diego, 1994), pp. 167-89.

³³ Signed on February 21, 1999, the Lahore Declaration called for the "...resolution of all outstanding issues, including Jammu and Kashmir." Along with the Declaration, a Memorandum of Understanding was also signed, which enumerated a series of measures to reduce the risk of accidental or unauthorized use of nuclear weapons and the need to implement "...existing Confidence Building Measures." These measures included upgrading communication links between the two director-generals of military operation and prior notification of missile tests. See: "Lahore Declaration," *India Perspectives*, Special Issue, May 1999, <<http://w3.meadev.gov.in/perspec/pmvis-spl99/lahore-dec.htm>>; and "Memorandum of Understanding," *India Perspectives*, Special Issue, May 1999, <<http://w3.meadev.gov.in/perspec/pmvis-spl99/mou.htm>>.

permanent five U.N. Security Council members, as well as Japan, Germany, and Pakistan. Islamabad followed suit when it tested the Ghauri-II within days. Similarly, before the January 17, 2001 test, India again informed the same group of countries, including Pakistan, of its intention to test-fire the Agni-II.³⁴ Pakistan can be expected to reciprocate before its next missile test.

This limited and unilateral CBM apart, the chances of a signed, effective, and formal bilateral de-alert agreement will most likely be linked to a global de-alert regime covering all five nuclear weapon states (NWS) as well. A global de-alert regime would be an important step towards a universal no first-use regime. Thus, a pattern of delayed induction, storage, and deployment should be adopted by other NWS in an attempt to de-alert their nuclear arsenals. By doing so, they would in fact be reverting back to their own past practice. This would be acceptable to India, as it would cover not only Pakistan but also China. However, if a global treaty does not materialize, then it would be important for New Delhi to formalize such an agreement at least with Beijing, and there are indications that this may happen in the near future.³⁵

Some scholars have suggested that South

³⁴ See K. Subrahmanya, "Agni II Ballistic Missile Tested Successfully," *Deccan Herald*, January 18, 2001, and "India Informed US, China, Pak about Agni Test," *Press Trust of India*, January 18, 2001.

³⁵ An attempt in this direction appears to have been made in Article III of the "Agreement between the Government of the Republic of India and the Government of The People's Republic of China on Confidence-Building Measures in the Military Field Along the Line of Actual Control in the India-China Border Areas." See: *A Handbook of Confidence-Building Measures for Regional Security* (The Henry L. Stimson Center: Washington D.C. 1998), p. 208. Some Chinese scholars have suggested that India and China should agree to ban short-range nuclear capable missiles along their border. See, "Remarks made by Dr. Li Bin, Director, Arms Control Research Division, Institute of Applied Physics and Computational Mathematics, Beijing," Defense Special Weapons Agency International Conference on Controlling Arms, Philadelphia, PA June 11, 1998, Philadelphia.

Asia take advantage of its unique virtual de-alert status and reach an agreement, similar to the Intermediate-Range Nuclear Forces (INF) Treaty to eliminate these missiles before they are inducted and deployed.³⁶ In theory, the example of the INF Treaty would appear to be applicable to the South Asian situation. However, there are some significant differences that inhibit the practical application of this model in the South Asian context. First, the aim of the INF Treaty was to eliminate an existing weapon system that had purely military utility. In South Asia, missiles are also regarded as symbols of prestige and technological prowess; any attempt to eliminate them would be seen as anti-national and unpopular in the domestic public domain. Second, a significant factor in the evolution of the INF Treaty was the "dual track" approach, which clearly stated a policy of deployment *and* negotiations. This implied that negotiations were held under the threat of deployment, and that negotiations may not have occurred had the threat to deploy not been carried out. In the case of South Asia, there is no clear deployment policy—possibly because any such policy would erode the virtual de-alert status. Thus, not only has deployment been deferred, it has not been explicitly linked to negotiations. Third, strong domestic peace movements in each of the European countries that received U.S. intermediate-range missiles strongly resisted deployment. In the South Asian case, such peace movements are virtually non-existent and, therefore, no domestic pressure to either disarm unilaterally or to negotiate is evident. On the contrary, the national domestic consensus appears to be in favor of continued testing, induction, and deployment of these nuclear capable missiles.

In South Asia, there are no alternative missile systems to ensure security from offensive missiles at the moment. While a nuclear umbrella might

³⁶ Kathleen Bailey and Satoshi Morimoto, "A Proposal for a South Asian Intermediate Nuclear Forces Treaty," *Comparative Strategy* 17 (1998), pp. 185-95.

conceivably provide security for Islamabad, New Delhi is now unwilling to accept and unlikely to expect such a guarantee. The only way an INF treaty would be acceptable to India is if it were a global treaty that led to the elimination of all intermediate-range nuclear forces worldwide. That however, may not be acceptable to the second tier NWS, particularly China, which regards its intermediate nuclear forces as an essential part of its deterrence posture, particularly in Northeast Asia.

Given this scenario, the existing virtual de-alert status, coupled with the practice of prior notification of missile tests in South Asia, is probably the most practical and acceptable option at the moment. While attempts to formalize these measures should be encouraged, these attempts will succeed only if they are linked to a global nuclear de-alert regime. Such a global regime, in turn, would be dependent on the enthusiastic support of not only the United States and Russia (who must lead by example), but also the second tier NWS, who must accept the basic premise of de-alerting. So far, however, such acceptance has not been forthcoming.

Regional Perspectives: Northeast Asia

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The proliferation of ballistic missile technology and the increase in the deployment of ballistic missiles in Northeast Asia has been a major concern of the defense establishment in Japan for some time. As early as 1988, a private Japanese consortium was tacitly encouraged to participate in the U.S. Department of Defense Western Pacific Study, which looked conceptually at a possible application of the SDI/GPALS concept in Northeast Asia. A group of Japanese academic specialists published a book on Theater Missile Defense (TMD) in 1992. An internal research project conducted by a Japanese think tank in 1994-1995 concluded that the proliferation of ballistic missile technology had passed a point of no return, and that TMD—if proven to be feasible—would be the most effective counterproliferation step. A joint Japanese-U.S. conceptual research project on Ballistic Missile Defense (BMD) was initiated in 1994, and the Japanese Defense Agency (JDA) began its own research project on BMD in 1995.

The Taepo-dong 1 missile test by the Democratic People's Republic of Korea (DPRK) on August 31, 1998 was a crucial event that affected the decision-making process of the Government of Japan with regard to missile defense. The general perception is that as a result of the North Korean tests, Japan decided in December, 1998 to undertake a joint technological research program with the United States on the Navy Theater-Wide (NTW) Area Block 2 program of TMD. While the DPRK missile test certainly facilitated Japan's

decision to conduct joint technological research with the United States, it should be kept in mind that this decision was imminent, if not already taken internally. It should also be noted that Japanese and Chinese academics had already been actively debating BMD/TMD issues since 1996.

These events, together with the unique “exclusively defense-oriented” posture of Japan, the seriousness of the Taiwan issue, and the U.S. program on National Missile Defense (NMD), complicate the arguments surrounding Japan's response to the proliferation of ballistic missiles. A discussion of the regional implications of ballistic missile proliferation and BMD, including issues related to China, Taiwan, the DPRK, and the Republic of Korea (ROK), may shed some light on this complexity.

CHINA'S RESPONSE TO NMD/TMD AND ITS IMPLICATIONS

The Chinese defense white paper, “China's National Defense in 2000,” states that “a certain country is still continuing its efforts to develop and introduce the NMD and TMD systems, which have undermined the international community's efforts to stem the proliferation of weapons of mass destruction and to promote disarmament.” The white paper also argues that the United States is accelerating its development of NMD

in disregard of the relevant provisions of the ABM Treaty and the opposition of the international community...China

expresses its strong opposition to such moves on the part of the U.S., for they will undermine the global strategic balance, severely hamper the nuclear disarmament process and international nonproliferation efforts, jeopardize global peace and regional stability, and may even touch off a new round of arms race.

Specifically concerning TMD, China's white paper argues as follows:

The joint research and development of the TMD system by the U.S. and Japan with a view to deployment in East Asia will enhance the overall offensive and defensive capability of the U.S.-Japan military alliance to an unprecedented level, which will also far exceed the defensive needs of Japan. This will touch off a regional arms race and jeopardize security and stability in the Asia-Pacific region. China expresses its profound concern over such a development. China is strongly opposed to the provisions of the TMD system, its components and technology, and any such assistance to Taiwan. China is also strongly against any attempt to incorporate Taiwan in any form into the TMD system by any country.

This language suggests that while China strongly opposes both NMD and TMD, its opposition to NMD is stronger overall. Yet, with regard to TMD, Taiwan remains a special factor. Some Chinese analysts privately note that the real problem caused by TMD/BMD is its possible relevance to Taiwan. From the Japanese perspective, this concern is understandable.

Nevertheless, in the Chinese defense white paper, reference is made to the Second Artillery Force, an independent arm under the direct

command of the Central Military Commission of the People's Liberation Army in charge of strategic and conventional missiles. However, the white paper does not mention the status of ongoing Chinese missile development programs, nor does it discuss the deployment of existing missiles. Some analysts contend that China is engaged in its own research of BMD technology.

It is understandable that China, which pursues a minimum deterrence strategy, has serious concerns about NMD. Although China has tested new types of intercontinental ballistic missiles (ICBMs), including the solid-fuel DF 31, its existing inventory is very limited in numbers. It is estimated that China currently has 20 liquid-fueled, single-warhead ICBMs. Therefore, the prospective deployment of 20-100 interceptors in Alaska in the first C-1 phase of NMD would, from China's standpoint, seriously undermine the credibility of its aging minimum deterrent. This perception will likely influence China's procurement decisions and deployment schedules for the DF 31, and in the future, the DF 41 and JL 2 missiles currently under development. While many analysts question the logic of its position, China pursues missile development programs while it simultaneously warns of the danger of an "arms race." Nonetheless, China must make its procurement decisions in the context of national priorities for economic growth. An accelerated build-up of ICBMs would divert resources away from the paramount goal of achieving faster economic growth.

The question of future U.S.-Chinese strategic stability underlies this debate on NMD. Of course, this question can only be addressed in the context of overall bilateral relations, and also in the context of how much progress can be achieved in the strategic arms reductions between the United States and Russia.

The relatively new arguments for boost-

phase intercept (BPI) NMD vis-à-vis the DPRK are stimuli for more debate with China. The four possible components of BPI NMD include the ground-based interceptor (GBI), sea-based interceptor (SBI), airborne laser (ABL), and satellite-based laser (SBL). China's opposition to the deployment of space weaponry such as SBL is well known, and ABL is not regarded as sustainable over a long period. The prospect of a GBI based in the vicinity of Vladivostok, operated with the cooperation of Russia, offers the United States a possible means of countering the perceived missile threat from the DPRK without triggering Chinese concerns regarding a possible arms race. SBI, in conjunction with the deployment of AEGIS cruisers off the coast of North Korea, is an alternative suggested by some analysts. In this case, however, the possibility of positioning a cruiser just outside the Exclusive Economic Zone (EEZ) of the DPRK (or within the territorial waters of Russia) needs further analysis.

China's opposition to TMD (or what Japan calls BMD) should be considered from several different perspectives. Here, the issues relating to the ABM Treaty, international strategic balance, and minimum deterrence lose their relevance. With regard to Japan, the Chinese argument is that TMD/BMD will enhance the capabilities of the Japan-U.S. alliance to "unprecedented levels," that "far exceed the defensive needs of Japan," thus triggering "a regional arms race." While Japanese strategic analysts argue that the North Korean missile threat to Japan is substantial, Chinese analysts disagree, arguing that Japan is overreacting since the DPRK is a weak state. Although China has consistently opposed TMD/BMD, some Chinese analysts have become privately receptive to the danger that a total denial of defensive capabilities may pave the way in Japan for arguments in favor of a build-up of offensive ballistic missiles. Because such arguments would qualitatively shift the defensive posture of the Japanese Self-Defense Forces, no serious

arguments have yet been made within Japan about this alternative.

Because of the sensitive nature of the issues involved, Chinese IRBM deployments and the resulting relevance of TMD/BMD for Japan vis-à-vis these missiles are not often discussed between the two parties. When the Japan Defense Agency (JDA) mentioned in its annual paper, "Defense of Japan 2000," that China deploys about 70 IRBMs with a range capable of reaching the entire Asia region, including Japan, and that these IRBMs are being upgraded by retirement of the DF 3 and deployment of the DF 21, China responded by accusing Japan of drumming up the China threat. Japan is wise enough not to treat the Chinese IRBMs as a potential threat explicitly, but the Chinese insistence that TMD/BMD would touch off an arms race raises questions in the minds of many Japanese about the possible targets of these IRBMs.

Any future introduction of TMD/BMD in the Northeast Asian region should be coupled with efforts to create a regional mechanism for the control of ballistic missiles. For example, an offensive/defensive missile ratio should be sought in the interest of maintaining stability. Since the region has no record of arms reduction talks in modern history, this argument currently falls on deaf ears. However, the November 2000 agreement between the United States and China regarding export controls on missile and missile technology exports by China can be considered as an important step toward this goal.

TAIWAN

In its "2000 National Defense Report," Taiwan describes its perception of the Chinese missile threat as follows:

The PLA Second Artillery Corps now has over 400 missiles of short, medium, and long ranges, including ICBMs...The DF families, now de-

ployed in areas directly across the strait from Taiwan, very likely will be used against major political, economic, and military installations of ROC. In addition, together with the ground-attack cruise missiles now under completion, they can be employed for multiple-wave and multidirectional saturation attacks. This then will be the most seriously threatening form of PRC military invasion.

To cope with possible missile attacks, the report indicates that the Taiwanese Armed Forces are given guidance for “early warning, immediate response, multiple-layer interception, and decisive destruction.” The Taiwan missile defense system “will be built stage by stage as the relevant preparation and improvement work on potentials continues...The underlying principle of the progress schedule is: lower levels to higher ones, expansion from points to areas, west (coast of Taiwan) before the east, equal emphasis on land and sea.”

Despite the strong threat perception, Taiwan carefully avoided a direct reference to TMD in the report, while showing interest in acquiring PAC-3 systems in the future. Faced with passionate opposition from China regarding TMD, and with strong hesitation by the United States to share TMD technology, Taiwan’s options regarding missile defense are limited. Analysts estimate that about 200 short-range missiles are currently deployed in the vicinity of the Fujian Province, and this number is increasing rapidly. The proximity of Taiwan to these missile sites will probably make TMD an unsuccessful endeavor for Taiwan. Furthermore, the sheer number of Chinese short-range missiles would likely negate the usefulness of any upper- or lower-tier TMD systems.

It is likely that both Taiwan and China share

such calculations. The strong rhetoric by China with regard to TMD on Taiwan should thus be understood as a political gesture. China probably fears that even the consideration of TMD could provide a false sense of security for Taiwan, behind which separatism could gain force. Another fear may be that cooperation on TMD might lead the United States and Taiwan to form a de facto military alliance vis-à-vis China. In this regard, Japan has expressed on a number of occasions its faith that China will resolve its conflict with Taiwan through peaceful means.

NORTH KOREA

The Japanese public perception of the DPRK missile threat underwent a dramatic change with the test firing of the Taepo-dong 1 missile over Japan on August 31, 1998. North Korea had begun developing Scud missiles in the mid-1980s and test fired a No-dong missile, with a range capable of covering almost all of Japanese territory, into the Sea of Japan in 1993. Despite the increasing concern of the defense establishment in Japan regarding the continuing development and export of ballistic missiles by the DPRK, popular, and hence political concern about this phenomenon did not truly materialize until 1998. Japan’s policy response, including its refusal—though temporary—to sign onto the KEDO agreement, stunned even its ally, the United States. Nonetheless, this response effectively signaled the United States about Japanese concerns regarding the effectiveness of U.S. deterrence against the DPRK.

At the time of the Taepo-dong 1 test, Japan’s means of dialogue with North Korea were extremely restricted. In the limited exchanges that did take place, the DPRK strongly maintained its position that the launch was a peaceful one for the purpose of sending a satellite into space. Even today in the ongoing normalization talks, the

DPRK basically refuses to address this issue with Japan. The agreement reached between the United States and North Korea on the suspension of DPRK missile tests pending discussions between the two governments was heralded in Japan as an epochal event. The outcome of the U.S.-DPRK missile talks will have an important bearing on the Japanese government's policy decisions regarding future development and deployment of TMD/BMD. Reports indicating that North Korean high-level defense officials did not attend the November 2000 U.S.-DPRK missile talks in Kuala Lumpur, Malaysia appear to underscore the complexity of curtailing DPRK's missile program.

SOUTH KOREA

In March 1999, the South Korean Ministry of Defense announced that it did not plan to participate in the U.S. TMD program. The ministry cited the high cost of the program and its limited effectiveness for South Korea's defense purposes as the justification for its decision. The 1999 ROK Defense Report did, however, address North Korea's ballistic missile program. It stated that the DPRK has "the capabilities to develop mid- and long-range missiles," and that "such a capability poses a great threat not only to South Korea but also to neighboring countries in Northeast Asia." It added:

Pyongyang recently deployed in the forward area twenty SA-5 ground-to-air missiles with a range of 250 km, far enough to reach the central region of the South. In addition, it possesses Frog-5/7 ground-to-ground free rockets with ranges from 50 km to 70 km, 170 mm self-propelled artillery pieces, and 240 mm MRLs. When launched near the DMZ, these rockets and guns can strike as far south as a line linking Seoul, Chunchon and Sokcho.

From this assessment, one can infer that South Korea's threat perception is more focused

on artillery, for very good reasons. Although the ROK military had shown interest in the acquisition of Russian (and later U.S.) lower-tier TMD technology in the early 1990s, some ROK defense analysts began to question the efficacy of the U.S. TMD program by the mid-1990s. It seemed that Japan's announcement of its joint NTW research program with the United States initiated in December 1998 generated more skepticism rather than support within South Korea. After the 1999 ROK decision not to participate in the U.S. TMD program, and more so after the epoch making North-South Summit Talks in June 2000, a number of ROK analysts began to point out the dangers of instability inherent in ballistic missile defense. The background of such thinking may also be understood in the context of an attempt to improve relations with China. South Korea relies on China in its efforts to further improve its relations with the DPRK, and China's strong stance on ballistic missile defense potentially offers the ROK a role to "bridge" the differences between China and Japan.

This very short paper has elaborated on some of the complexities involved with the perceptions and thinking about ballistic missile defense in Northeast Asia. While not addressed in this paper, it is worthwhile to recall that Russia is a tremendously important player in this area, and that India is also very relevant.

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