STRATEGIC STABILITY IN THE SECOND NUCLEAR AGE: TOWARDS A BMD PARADIGM

by

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Pour Ada, Ia meilleure co-pilote au monde.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

The end of the Cold War marks the beginning of the policy shift from strategic stability (the policy that guided U.S. and Soviet nuclear doctrine and acquisition strategies throughout the Cold War) to a new strategy privileging ballistic missile defence (BMD). Prior to this shift BMD programs were considered by both sides to be financially untenable, technologically unreliable, and dangerously destabilising and potentially catastrophic, primarily because they risked undermining the stability of a second strike capability and other stabilizing features of mutually assured destruction (MAD). I argue that this new environment is making missile defence a viable alternative to massive nuclear arsenals. In this new security environment Canada remains an anomaly. Canadian officials support NATO BMD programs but reject any bilateral and/or bi-national negotiations with Washington on continental BMD for North America. Contrary to the conventional wisdom, I argue that Canada, through the North American Aerospace Defence Command (NORAD) agreement on early warning radars, is in fact part of missile defence.

LIST OF ABBREVIATIONS USED

ABM	Anti-Ballistic Missile System
BMD	Ballistic Missile Defence
BQ	Bloc Québécois
CEP	Circular Error Probability
DND	National Defence
DPRK	Democratic People's Republic of Korea
EPAA	European Phased Adaptive Approach
GMD	Ground-Based Midcourse Defense
GPALS	Global Protection against Limited Strikes
IAEA	International Atomic Energy Agency
ICBM	Intercontinental Ballistic Missile
IRBM	Intermediate-Range Ballistic Missile
ITW/AA	Integrated Tactical Warning and Attack Assessment
JMSDF	Japan Maritime Self-Defence Force
LACD	Land-Attack Cruise Missile
MAD	Mutually-Assured Destruction
MDA	Missile Defense Agency
MEADS	Medium Extended Air Defence System
MIRV	Multiple Independently-Targetable Re-Entry Vehicle
MP	Member of Parliament

NATO	North Atlantic Treaty Organization
NDP	New Democratic Party
New START	New Strategic Arms Reduction Treaty
NDAA	National Defense Authorization Act
NNSA	National Nuclear Security Administration
NIE	National Intelligence Estimate
NMD	National Missile Defense
NORAD	North American Aerospace Defence Command
NORTHCOM	United States Northern Command
NPT	Non-Proliferation Treaty
PAC-2	Patriot Advanced Capability 2
PAC-3	Patriot Advanced Capability 3
PB	President's Budget
R&D	Research and Development
SALT	Strategic Arms Limitation Talks
SDI	Strategic Defense Initiative
SLBM	Sea-Launched Ballistic Missile
SORT	Strategic Offensive Reductions Treaty
START I	Strategic Arms Reductions Treaty I
START II	Strategic Arms Reductions Treaty II
THAAD	Terminal High Altitude Area Defence

TMD	Theatre Missile Defence
UCS	Union of Concerned Scientists
UN	United Nations
WMD	Weapons of Mass Destruction

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Chapter 1

Introduction

"The Cold War logic that led to the creation of massive stockpiles on both sides is now out dated. Our mutual security need no longer depend on a nuclear balance of terror."

-George W. Bush.[1]

There is a general consensus that the end of the Cold War created a new strategic environment, described by some as a "second nuclear age."[2] The second nuclear age is dominated largely by regional crises and strategic interactions rather than a dominant bipolar confrontation between Russia and the United States.[3] However, the literature is divided on what this new strategic environment implies for the concept of strategic stability, the policy that guided U.S. and Soviet nuclear doctrine and acquisition strategies throughout the Cold War. During the Cold War, stability rested on the mutual confidence between nuclear powers on the deterrence potential of their nuclear arsenal.[4] This was the doctrine of mutually assured destruction (MAD), which posited that as long as a nuclear state could survive a first strike with enough weapons to launch a retaliatory, second strike (and vice versa), stability was assured - there was little value in complete annihilation on both sides. Some analysts argue that the Cold War logic of strategic stability still applies, so they advocate retaining a Cold War nuclear doctrine and strategies despite the decline in nuclear arsenals.[5] Conversely, others argue that the end of the Cold War and its bipolar structure has rendered nuclear weapons obsolete, and that achieving complete nuclear disarmament is now possible. Scholars espousing this position posit that true stability will only be achieved in a world rid of nuclear weapons.[6] In sum, there is a general agreement that the current strategic environment is different. However, what this difference entails for strategic stability remains contentious. This thesis is designed, in part, to resolve this impasse by identifying the logical, historical and theoretical errors committed by both sides.

It is hard to deny that the end of the cold war has produced a paradigm shift in the organizing principles underpinning the international system. During the Cold War, the central organizing principle for the U.S. national security complex was the containment of Soviet power and influence. Strategic stability, in that context, rested on the understanding by both superpowers of their mutual vulnerability to a reciprocal nuclear attack. MAD was notably codified in the 1972 ABM Treaty, which limited the deployment of active defences to protect the second strike capabilities of both sides.[7] The organizing principles of the second nuclear age, however, are more complex and vastly different. At first, the end of the Cold War was seen as a panacea of positive changes for global security. Optimists point to the decision by South Africa, Brazil, Argentina, Belarus, Kazakhstan, and Ukraine to forgo nuclear weapons. The 1995 extension of the Non-Proliferation Treaty is highlighted as evidence that the end of the Cold War produced a period of denuclearization and a significant move away from the "balance-of-terror."[8] Prior to 1998, no nuclear tests had taken place since 1974, which prompted the Carnegie Endowment to state that "the rate of nuclear proliferation is slowing, the geographic scope of proliferation is shrinking."[9] Vertical and horizontal proliferation was becoming much more manageable.

Another important aspect of the post-Cold War security environment was the important changes in the relationship between the United States and Russia. This shift had a positive impact on strategic stability because it meant a relationship less based on a nuclear balance of forces. Strategic stability in terms of mutually assured destruction gave way to stability in terms of economic viability.[10] In essence, Russian and American officials no longer consider each other as rivals.[11] These positive trends have reinforced a legacy of cooperation, encompassing détente to the fall of the Berlin Wall.[12] Moreover, the attacks of 9/11 furthered the cooperative efforts between the two former rivals. President Putin, for example, was the first head of state to contact George W. Bush following the events. The Russian president also built a five point plan to help the U.S. with future counter-terrorism activities, including opening Russian airspace to U.S. forces for humanitarian assistance; cooperation with Russia's Central Asian allies to provide the U.S. with the same type of airspace access in the region; and participation in search and rescue efforts and more.[13] Cooperative efforts did not end at counter-terrorism. In 2002 Bush and Putin signed the Moscow Treaty, calling for deep reductions in their deployed nuclear

weapons to 1,700-2,200 warheads by 2012. The agreement was for all intents and purposes the predecessor to the New Strategic Arms Reduction Treaty (New START) signed in 2009. Old enmities were being pushed to the background, promising a more optimistic security environment than the previous one.

More pessimistic accounts of the second nuclear age raised concerns about the possibility that nuclear weapons would now be employed for a broader set of circumstances, crises and threats; examples used are the launch of a selective attack to achieve political objectives, the use of nuclear weapons by a new nuclear state to forestall a conventional military defeat or regime change, or the use of nuclear weapons to separate U.S. allies from the American deterrent.[14] In sum, the possibility of superpower nuclear war has diminished, but not the possibility of nuclear use.[15] Moreover, pessimists believe that the balance of terror has not been completely removed. The United States still relies on its nuclear arsenal in its relationship with Russia and China. Both Moscow and Beijing are undergoing socio-political transitions at the moment that could be potentially threatening to Western leaders.[16] The two former rivals may publically announce that they are not adversaries anymore, but it does not mean that they are now allies.[17] In sum, whether the post-Cold War period has brought significant changes is contestable, pessimists argue, because nuclear capabilities, balanced stockpiles and strategic stability are as important today to ensuring peace between Russia and the United States: "capability endures; intentions do not."[18] Therefore, crisis stability as it was understood during the Cold War is still relevant today; for fear that current cooperative relationship could deteriorate very quickly into a serious crisis.

As I will argue below, most accounts privileging a clear cut, simple understanding of strategic stability in the second nuclear age are misguided, because both positions are derived from excessively optimistic or pessimistic accounts of history and contemporary strategy. The system is considerably more complex than conventional accounts have acknowledged - neither a status quo commitment to strategic stability (pessimists) or the zero option as the basis for arms control (optimists) offer realistic policy options, because their models of world politics and strategy are too simplistic. I argue that strategic stability is no longer simply a function of the nuclear balance or the comparative number of

warheads held. Instead, a new set of strategic priorities and policies emerge from a combination of domestic and international factors, political-military relations between allies and rivals, regional politics and pressures, nuclear and ballistic missile proliferation, and socio-economics considerations. All these inter-connected factors intersect to provide a deeper, more complex and more nuanced explanatory and predictive model of strategic stability and nuclear rivalry.[19] The primary objective today is to prevent a limited nuclear attack, but the rules for how to accomplish this have changed in the context of new and aspiring nuclear rivals and belligerent states. Advances in ballistic missile defence technologies produce additional complications.[20] The thesis is designed to unpack all of these variables to provide a stronger account of contemporary nuclear strategy and counter-proliferation and deterrence policy.

The thesis introduces the concept of *complex security* to capture what I regard as a distinct interpretation of the second nuclear age. For decision-makers, complex security means a context in which every tool of foreign policy is necessary to cope with the new strategic environment. A prominent feature of complex security is the emergence of a widespread commitment to ballistic missile defence (BMD). Despite warnings from critics and arms control advocates, the abrogation of the ABM treaty by Washington produced no significant reaction from Moscow and paved the way for deployment of ballistic missile defence systems. The most recent manifestation of the shift can be found in the North Atlantic Treaty Organization's (NATO) revised Strategic Concept (2011), committing alliance members to research, development and deployment of missile defence technologies. There is a growing body of literature which argues that BMD has become an appropriate solution for the United States and its allies to new and emerging threats associated with weapons of mass destruction (WMD) proliferation and accidental launches, and promises to foster cooperation between nuclear rivals.[21] I argue that this new environment is making missile defence the only viable nuclear posture for the United States and other major powers.

My argument will focus on three key causal factors that combine to provide a better account of the changes in the concept of strategic stability in the second nuclear age. First, nuclear relationships have changed. The Cold War is over and the strategic relationship

between the U.S. and Russia is now more cooperative, whereas relationships with emerging nuclear states have deteriorated. Moreover, the reliance on nuclear deterrence has diminished with the lack of great power nuclear rivalries.[22] On the other hand, it is not yet clear whether Iran, North Korea, or terrorist groups seeking nuclear weapons can be effectively deterred.[23] The reduced reliance on nuclear deterrence at the strategic level, and corresponding need for new approaches to security with emerging nuclear states complicates strategic stability today.

Second, reduced reliance on nuclear deterrence has led to a preference for minimum deterrence. Minimum deterrence lies between mutually assured destruction and nuclear abolition[24] and requires that nuclear states "be able to impose sufficient costs on a potential attacker to make the initial nuclear attack appear too costly."[25] The New START is the most recent statement of interests on the matter. Minimal deterrence ensures *mutual* deterrence between Washington and Moscow without basing their entire relationship on strict adherence to some imagined (and substantial) nuclear balance.[26] Of course, there remains a need to deter and defend against unpredictable entities (namely Iran, North Korea, and terrorist organizations) that are not likely to be coerced by nuclear threats.[27]

Third, the primary security focus of major powers has shifted to new threats of nuclear proliferation to emerging nuclear powers and nuclear terrorism. North Korea's 1998 test of a long range ballistic missile and recent test failure has raised concerns. Iran's nuclear enrichment program and Tehran's decision to upgrade its Shehab line of weapons (Shehab-4 and Sajji-2), both long range missiles capable of delivering significant payload over long ranges - both in violation of their Non-Proliferation Treaty (NPT) obligations - has raised significant security concerns shared by the US, Europeans and UN arms inspectors.[28]

1.1 Complex Security and Active Defences

When combined, the reduced reliance on nuclear deterrence, new threats posed by emerging nuclear states, and the proliferation of ballistic missile technology have created a more complex environment that explains the emerging reliance on missile defences. The new approach to nuclear deterrence is expected to facilitate reductions in nuclear arsenals

while retaining adequate protection against ballistic missile threats from emerging nuclear powers. The key challenge faced by decision makers is to concurrently maintain some measure of nuclear deterrence to ensure the non-use of nuclear weapons between the great nuclear powers (U.S.-Russia-China), while addressing new and emerging threats without allowing one or the other priority to dominate decisions in a way that undermines the stability/security of the other.[29] Limited ballistic missile defence can effectively settle this dilemma. Missile defence effectively replaces nuclear deterrence in the crisis stability calculus when dealing with the new threats.

There are several reasons BMD makes sense. To begin, missile defence is much more than simply a defence system. In much the same way that nuclear weapons provide more than offensive capabilities, active defences serve multiple functions as well. In addition to providing a defence against ballistic missile launches, missile defence also provides the necessary flexibility for decision makers to advance other strategic objectives.[30] In other words, missile defence is integral to the deep reductions of nuclear weapons that we have witnessed so far. For example, BMD facilitates intra-alliance bargaining, is a useful deterrent and defensive signal against emerging missile states, serves as a counter-proliferation tool, and fosters cooperation on strategic issues. For example, South Korea might be allowed by the United States to deploy long range ballistic missiles as a trade-off for joining the *Aegis* system.[31] Currently, missile defence has fostered cooperation between the United States with 21 countries, including Russia and the NATO allies. Cooperation ranges from transparency discussions to full implementation of the system in a given country.[32] However, the aim of the system must remain transparent. The system must not be ambitious enough to threaten the second strike (or minimum deterrence) capability of China and Russia.

1.2 The Canadian Anomaly

The Canadian case has been added to this study because it appears, at first glance, to disprove the argument I put forward. According to my theory, decision makers should be reluctant to discard any policy options available to effectively deal with the current complex security environment. The Canadian case seems to refute this assumption. Canada has acknowledged the need for missile defence in Europe (via NATO) to protect European

territory, but has also consistently (and as recently as February 2005) rejected any bilateral and/or bi-national negotiations with Washington on continental BMD for North America. Historically, Canada always rejected BMD on the ground it would violate the ABM Treaty, something Ottawa was not ready to do. However, the 2005 decision to say no came as a surprise to many. From 2001 to 2003, many believed Canada would join missile defence because of the security benefits it provided (especially post 9/11), and as a trade-off following the decision by Chretien not to join the U.S. in Iraq in 2003.[33] Moreover, Paul Martin made clear when he came to power he was interested in BMD. Canada, however, still said no.

The Canadian case is important for this study because upon careful analysis it supports, not disproves, the argument being made here. By agreeing to join the NATO BMD, Canada agreed that missile defence became an important option in the second nuclear age. Moreover, by agreeing to amend NORAD to give it early warning duties, Canada effectively said yes to missile defence. There is little doubt Martin would have accepted direct participation in the American GMD if the domestic context had been different. Public opinion, Parliament, and even the Liberal caucus was divided on the subject, forcing Martin to adopt a more subtle approach to missile defence. The fact, however, that Canadian officials manoeuvre the way they did to join BMD bilaterally, and the participation in the NATO BMD demonstrates how the Canadian government understood (and desired) the various security benefits provided by BMD, and reinforces the argument made in this study. The domestic political spin surrounding missile defence forced Martin to be more strategic in his approach. The Canadian decision had more to do with domestic politics than with disregarding BMD as a sound strategy.

1.3 Organization and Subsequent Chapter

The work presented in this study is a mix between theory building, historical analysis, explanatory work, and a policy paper. It is a work of theory building because I re-assess the value of nuclear deterrence and strategic stability theory in the second nuclear age. Historical analysis is used inductively to support my theory of security by demonstrating the significant changes between the Cold War and the second nuclear age. It is an explanatory thesis because I use the theory of complex security to explain the shift

from MAD to BMD as the security strategy of choice in the second nuclear age. Finally, I propose BMD as the policy of choice in the current complex security environment to effectively and appropriately deal with the new threats that currently face the U.S. and its allies.

My arguments for complex security and the emergence of (and need for) a new BMD paradigm will be presented as follow. Chapter one will review the literature outlining alternative approaches to maintaining strategic stability and make the case for the emergence of BMD as a cornerstone of strategic stability in the new security environment.

Chapter two will develop the argument that BMD is a cost-efficient strategy compared to the available alternatives. Moreover, it will demonstrate how interceptor technology is now advanced enough to be reliable in the field. Both arguments add support to the viability of missile defence as an effective strategy.

Chapter three will develop the argument that BMD is sustained by bi-partisan domestic consensus in the United States, and receives significant international support for development of the technology abroad. The chapter also assesses the numerous cases of cooperation spurred by BMD between allies and former rivals alike. These factors, and the factors presented in chapters one and two, combine to produce a new BMD paradigm.

Chapter four will then address the most salient anomaly relating to Canada's position on BMD - the Canadian support for NATO BMD consistent with expectations underpinning the new paradigm, while simultaneously rejecting any bilateral and/or bi-national negotiation with Washington on continental BMD for North America.

Chapter five will summarize the arguments and reflect on policy implications and prescriptions going forward.

Chapter 2

Complex Security: The Organizing Principles of the Second Nuclear Age

The post-Cold War period has witnessed a changing geopolitical, social, and strategic environment. The purpose of the following chapter is to explore significant changes in the current strategic environment that impact how strategic stability operates. Namely, this chapter will focus on three major changes: the change in the nuclear relationship between Moscow and Washington and how it impacts the relevance (or obsolescence) of nuclear deterrence, the corollary shift towards minimum deterrence and the deep nuclear reductions that followed, and the shift in security focus, by the United States, to new threats of nuclear proliferation to emerging nuclear powers and terrorism. Combined, all three changes create a more complex system that demands a change in nuclear strategy by the United States and the NATO allies to ensure domestic and global security. It will be demonstrated in this chapter that neither a status quo commitment to strategic stability in the form of mutually assured destruction nor the zero option are realistic policy options because they do not take into consideration the complexity of the current security environment. They are, put simply, simplistic solutions to a complex reality. A more realistic solution is a commitment to ballistic missile defence to provide the required tools and flexibility to decision makers in order to cope with the new strategic environment.

The argument made in this chapter will unfold in the following way. The first main section deals with the change in the nuclear relationship between the United States and Russia, and whether nuclear deterrence has become obsolete. Sub-section 2.1a will assess the nuclear traditionalist argument that nuclear deterrence should still be the main U.S. strategy, while sub-section 2.1b assesses the counter-argument that pre-emption has replaced nuclear deterrence. Sub-section 2.1c will discuss a middle ground approach including missile defence. The second main section will deal with the current deep reductions in nuclear arsenals and the shift towards minimum deterrence. Sub-section 2.2a

will demonstrate how low numbers of nuclear weapons has not undermined strategic stability due to BMD, and how commitment to missile defence has played a role in achieving nuclear reductions. Finally, the third main section will assess the current threats to U.S. security. Sub-section 2.3a will explain the role of BMD in the new strategic environment.

2.1 Nuclear Relationships and Nuclear Deterrence

With the end of the Cold War and of the nuclear rivalry between the U.S. and the Soviet Union, is nuclear deterrence still relevant? If not, then what strategy should replace it to stabilize the relationship between existing and emerging nuclear rivalries? The debate is split into three camps. Traditionalists maintain that nuclear deterrence is still the primary strategy to avoid nuclear war among major powers, and therefore believe BMD to be unstable. Missile defence advocates believe nuclear deterrence and mutually assured destruction has reached obsolescence and has been replaced by pre-emption. My argument falls in the middle. Nuclear deterrence does not define major power nuclear relationships any longer, nor has it become completely irrelevant or obsolete - it has simply become more complex and nuanced. Context, and not the nuclear balance of nuclear weapons, determines the form of nuclear strategy that will be used. Within this argument, BMD represents an important part of the transformation and solution, essentially a mixed strategy. The United States cannot completely dismiss nuclear deterrence to sustain some measure of mutual deterrence with nuclear powers such as Russia and China, but needs to develop a limited BMD to effectively deter and defend against emerging nuclear and ballistic missile powers such as Iran and North Korea. In sum, the current uncertainty and complexity of the current system demands more flexibility.

2.1a Nuclear Traditionalists

Traditionalists believe very little has changed (on the nuclear front) and recommend continuity of mutual assured destruction as the guiding principle of nuclear strategy to ensure global security. Gregory and Shaun, for example, believe that credible threats of nuclear retaliation are required to maintain stable relations between nuclear rivals.[1] This balance and strategy is important, according to Leon Fuerth, because of its

"existential, and therefore irrational, fear. This is why nuclear capabilities are so much more important as drivers in the psychological equation of war and peace than are statements of intentions. Capability endures; intentions do not."[2] Nuclear deterrence, therefore, will stabilize any relationships like it did during the Cold War. Following this logic, Paul Chrzanowski posits that strategic stability and nuclear deterrence as used in the cold war would still work between the United States and Russia; his current estimation is that deterrence and crisis stability would hold with an average of 500 strategic warheads per country.[3] Therefore, MAD as enshrined in the ABM treaty remains paramount to ensure global stability. The inclusion of BMD would be destabilizing because it would reduce the effectiveness of nuclear deterrence by making one side less vulnerable to the potential retaliation of the other, unbalancing the relationship in time of crisis and possibility leading to a first launch.

Traditionalists believe deterrence is generally reliable, and it is unlikely that Iran or North Korea would attack the U.S. or its allies "out of the blue." Of course, deterrence is not perfect - a collapsing regime may discard the calculus of deterrence and try one last gamble to remain in power.[4] Moreover, nuclear deterrence is rendered irrelevant against some terrorist groups. As David Yost and Michael Ruhle point out, nuclear deterrence will not work when confronting "zealots bent on martyrdom" or otherwise disconnected from the traditional cost/benefits analysis inherent to deterrence. According to Rhule "once religious fundamentalism is factored into the nuclear equation (witness the debate about a Talibanisation of Pakistan), the chances of erecting a stable, and long-term mutual deterrence regime in a multinuclear world appear slim indeed." Moreover, even terrorist groups making rigorous cost/benefits calculations when planning their attack can fail to be deterred. One scenario often cited in the pentagon is the possibility of a terrorist group stealing a boat armed with cruise missiles and using them to attack the continental United States.[5] For critics who might think this situation farfetched, recall how no one thought it possible for a terrorist group to hi-jack a number of planes and successfully carry out terrorist attacks on U.S. soil. Asymmetrical terrorism is part of the power of the weak, and there is little nuclear deterrence can do against it; threats of nuclear retaliation against terrorist cells make no sense. Moreover, the assumption made by Chrzanowski regarding nuclear deterrence can only apply to the United States and Russia. No other nuclear power

is even close to 500 active nuclear warheads in their arsenals. Therefore, his calculations do not apply to others, which raise questions about the stability of nuclear deterrence at very low number without any other strategy.

Finally, traditionalist accounts do not take context into consideration. Frank Harvey rightly argues that deterrence, and deterrence stability, has never been about the numbers of nuclear weapons a state possesses, but the stability of political-military relationships. Moreover, stability depends on the willingness to cooperate between two states rather than the balance of numbers between the two. In certain contexts the number of weapons may be stabilizing, as the Cold War demonstrated. However, at present the relationship between the U.S., Russia, and China continue to improve, while the relevance of numbers diminishes.[6] Patrick Morgan also emphasize context as an important variable behind nuclear deterrence. Although Russia still places much emphasis on its nuclear arsenal due to the deterioration of its conventional forces, the reductions Moscow agreed upon with the United States are instructive. In the current context, Democracy and market-based economic activities are better indicators of the health and stability of the current relationship between great powers, and the future of deterrence will be determined by how long this system lasts.[7]

2.1b Nuclear Pre-Emptionists

The nuclear pre-emptionists argue that nuclear deterrence became obsolete with the end of the Cold War and has been replaced by the strategy of pre-emptive and/or preventative strikes. It is important to note that both concepts are often used interchangeably. It is, however, improper to do so. A state uses preventative strikes to remove something that would become a threat in the medium to long term. Pre-emptive strikes happen when a state decides to remove an immediate threat to its security.[8] Lawrence Freedman has made this argument, recognizing that the concept of nuclear deterrence became obsolete with the collapse of the Soviet Union and the rise of terrorism as the principal threat to global security. Nuclear deterrence, therefore, has been replaced by a reliance on pre-emption. The conventional and nuclear strategic environment is uncertain and ambiguous, whereas nuclear deterrence needs clear threats and some level of certainty between rivals to work properly. Freedman believes that the current strategy

of choice is pre-emption, as codified in the 1999 and 2002 National Security Strategy. The nature and motivation of the new and emerging enemies of the United States, as well as their determination to possess WMD and the greater likelihood that such weapons will be used against the United States, informs the move towards pre-emption. The uncertainty of the system, according to Freedman, informs the current choice in strategy.[9] Therefore, according to Jeffrey Record, if the United States wishes to stop the proliferating efforts of another state it can launch a pre-emptive strike to destroy its nuclear facilities like Israel did in Syria and Iraq, both times having proved to be an efficient strategy.[10] BMD is not completely out of the question, but the pro-active stance given by pre-emption or prevention can make the investment in BMD unimportant. There are, however, some significant problems with both accounts.

The problem with those who claim obsolescence is that the consequences of being wrong could be devastating. Michael O`Hanlon has summarized this concern well when he stated: "perhaps deterrence has been only a minor factor in preserving peace in the past; the issue is arguable. But policymakers need to be careful, and gradual, about how they run the experiment to test that proposition,"[11] Therefore, more cautious strategies such as BMD can prevent dangerous fallout. The United States can slowly reduce its nuclear arsenal and give less reliance to nuclear deterrence while building the proper defences against emerging powers with which a nuclear deterrence relationship is not established and far from certain. Moreover, as Yost has argued, deterrence by denial (the threat of operational defeat) could offer some chances of success against non-rational adversaries.[12] By stopping the cruise and ballistic missiles of an adversary in the field, BMD can add to deterrence and reduce the likelihood of conflict.

As solution to nuclear proliferation, however, pre-emption and prevention also have significant shortcomings - the consequences of these strategies are far more dangerous than those associated with BMD. First, effective pre-emption demands precise information. As Lindsay and O'Hanlon have rightfully argued, in order for pre-emption or prevention to work, the U.S. has to know where the missiles or the nuclear facilities are located (and a strike becomes harder to complete if the installations are secured underground). For example, the U.S. and its coalition in the 1991 Gulf War were unable

to locate the operational emplacement of the Iraqi Scuds. Therefore, if North Korea or Iran were to hide their ballistic missiles they might prove difficult to find. Finally, a pre-emptive strike could trigger the opposite of its desired effect: a retaliatory attack against the U.S. or its allies.[13] Pre-emption, therefore, does not remove the need for missile defence in the U.S. (and its allies) nuclear planning. While BMD does not mean discarding pre-emption—which could still be a valid option in some circumstances—BMD protects against its possible failure and shortcoming. It can protect against a retaliatory strike. In fact, by raising the cost of developing ballistic missiles, BMD can effectively stop small ballistic missile forces, therefore making their production an unnecessary expense. In sum, BMD provides more protection than pre-emption, and reduces potential drawbacks if used.

2.1c Complex Security, Nuclear Deterrence and BMD

Nuclear deterrence is neither entirely relevant nor completely obsolete. As John Mearsheimer has argued, the uncertainty of intentions is still present and no one can pretend to know how long the current system will last.[14] What do all of these trends and observations mean for BMD?

When relationships are relatively stable and arguably improving, as is the case with the U.S., China, and Russia, the nuclear balance becomes less relevant to maintaining stability. It does not disappear, but it does not require the same level of attention or deserve the same measure of explanatory power when accounting for behaviour and priorities. Alternatively, relations between Washington, Tehran, and Pyongyang are poor and arguably deteriorating. Proliferation by Iran or North Korea will not be viewed by Washington in the same light as proliferation by China or Russia. According to Frank Harvey: “Chinese proliferation is less threatening because leaders in Beijing are motivated by the same combination of economic, political and military pressures that guide relations between rational, mutually dependent/vulnerable states.”[15] The nature of the relationship between the two states is important. If they have a mature economic relationship that is mutually dependent there are fewer threats.[16]

The withdrawal of the United States from the ABM Treaty is evidence of this. At the signing of the START 1 Treaty, the Soviet Union had released a unilateral statement

stipulating that they would withdraw from the START Treaty if the United States were to leave the ABM Treaty. There is little doubt that Moscow would have followed through at the time. It was also feared during the negotiations leading to the START II Treaty that the U.S. continued commitment to BMD, and a possible withdrawal from the ABM Treaty, would jeopardize the negotiations on deep reductions.[17] However, when the Bush administration abrogated the Treaty in 2002 (post 9/11 and post-Cold War), Russia did not withdraw from START because relationships had improved and new threats had emerged.

The complexity of the current strategic environment is reflected in the use of nuclear deterrence. Mutual deterrence became a background issue between the United States, Russia, and China, but it is still relevant to ensure the non-use of nuclear weapons between these states in case of potential crisis. It is not, however, as important a concept as it was during the Cold War. Moreover, the uncertainty and the lack of credibility of asymmetrical nuclear deterrence require the use of more adequate strategies. In this case, BMD is the most efficient solution.

2.2 Nuclear Reductions, Minimum Deterrence, and BMD

This section is the second of three main arguments in favour of BMD and the new complex security paradigm. The purpose of this section is to draw out the relationship between BMD and the new complex security paradigm in relations to disarmament and proliferation strategies. The end of the Cold War, the important changes in the relationship between Moscow and Washington, and the U.S. commitment to missile defence meant a shift away from large nuclear weapons arsenals towards a strategy of minimum deterrence between the great nuclear powers. This section will also demonstrate that this shift has been made possible by the U.S. commitment to limited missile defence systems. The arguments to be addressed in each sub-section, respectively, are how the deep reductions in nuclear arsenals, combined with a commitment to BMD, did not endanger strategic stability by creating a wave of instant proliferation, and how BMD has facilitated the current deep reductions in offensive strategic arsenals (section 2.2a).

2.2a Reductions in Nuclear Arsenals: Stability at Low Numbers

A corollary to the contextual nuclear deterrence argument is whether one or another strategy is better suited to reducing nuclear arsenals. In June 1990, a joint U.S.-Russia declaration pledged:

> Further reduction of the risk of war, especially nuclear war, enhancement of strategic stability, transparency and predictability by way of further stabilizing reductions of the strategic arsenals of both countries. This shall be achieved through the pursuit of arrangements that increase survivability, eliminate incentives for the first nuclear strike, and embody the relevant interrelation between the strategic offensive and defensive means.[18]

Sergey Ivanov, the current Russian foreign minister, has reaffirmed in 2005 the need for nuclear reductions during a conference given to the Council on Foreign Relations:

> Without pretending to be original, I will start by saying that the Cold War era is gone and never to return. The stereotypes of thinking from the times of confrontation are dying away, too, though slowly. The world has changed […] above all; strategic stability in the present-day world is inseparable from the reductions in strategic offensive armaments."[19]

The recent Nuclear Posture Review (2010) commissioned by President Obama made salient the adoption of low numbers as part of U.S. nuclear strategy. As part of the coming into effect of the New START on February 5, 2011, both the United States and Russia have agreed to reach a limit of 1,550 accountable strategic warheads, as well as limiting the amount of deployed intercontinental ballistic missiles (ICBMs), sea-launched ballistic missiles (SLBMs) and nuclear-capable heavy bombers to 700 each, and a combined limits of 800 deployed and non-deployed ICBMs and SLBMs launchers, as well as nuclear capable heavy bombers.[20] The deadline is 2018. In sum, both Russia and the United States are now equating strategic stability with low numbers of nuclear weapons, which is in stark contrast with the cold war, where large arsenals (under the doctrine of mutually assured destruction) ensured strategic stability.

By 2011, the United States had 1,950 active strategic warheads mounted on 798 delivery vehicles, as well as 2,850 warheads on reserve for a total of 5,000 warheads; an additional 3,500 warheads are retired from military usage awaiting dismantlement.[21] As of March 2011, experts estimate that Russia has 2,430 active strategic warheads mounted on ICBMs, SLBMs, and heavy bombers, with 3,700 to 5,400 nonstrategic warheads; an additional 3,000 warheads are about to be dismantled.[22] Although the United States is closer to the agreed upon numbers than Russia, the overall amount of warheads has

significantly diminished from the peak stockpiles both countries harbored during the Cold War (31, 255 for the United States in 1967, and 45,000 by the Soviet Union in 1986).[23]

The United States and Russia are not alone in reducing their arsenals. In October 2010 the United Kingdom stated that it would reduce its stockpile of nuclear weapons to "fewer than 160 to no more than 120," with a current arsenal, as of 2011, of around 225 warheads (from its peak of over 500 in the 1970s).[24] As for France, in 2010 they had in stock 300 warheads from a peak of 540 in 1991-1992.[25] Of the remaining nuclear countries, China and Israel have kept steady numbers in the last ten years (between 232 and 240 for the former, and 72 and 80 for the latter).[26] Of all the current nuclear power, only India and Pakistan has engaged in vertical proliferation, but their arsenals remain fairly small and comparable to the arsenal of Israel (India now has 80 warheads, 50% of which are operational, and Pakistan has between 90 and 110 warheads).[27] Contrary to the argument made by the critics, a robust commitment to BMD by the United States did not trigger instantaneous proliferation. The evidence above suggests the contrary.[28]

Critics are right when they assess that a commitment to BMD during the Cold War would have been unstable; the complete reliance on MAD and its corollaries made the deployment of missile defence too much of a risk (namely for vertical proliferation). However, critics are wrong about the destabilizing effects of BMD now. The aforementioned trends in reductions demonstrate how the critics, and the traditionalist school, misunderstood the dynamics of BMD. Most arguments made against missile defence in the 1990s and early 2000s included predictions of instant proliferation if Washington decided to deploy BMD. Missile defence would fuel an arms race by forcing the Russians to increase and modernize its nuclear forces to "thwart" the U.S. defences.[29] The consequences of BMD would not only apply to Moscow and Washington's relationship, but internationally as well. George Lewis *et al.*, for example, predicted that China would also proliferate to counter the effects of BMD. The Chinese build-up, in turn, could trigger a wave of proliferation in India and Pakistan.[30] Moreover, the abrogation of the ABM treaty to permit the fulfillment of the U.S. plan would halt the nuclear arms reduction process, undermining the viability of the NPT as well.[31]

The argument against BMD made by Leon Fuerth, former national security advisor to vice-president Al Gore, represent well the comments made by the critics of BMD:

> If you combine sharply reduced numbers of nuclear weapons and increasingly effective defenses, one way of looking at the result is that it creates an increased temptation for launching a first strike in a crisis. Why? Because conservative military planners can think of desperate situations in which one side might hope to destroy as much as possible of the other side's nuclear forces before they can be launched, and then rely on defenses to soak up the remainder.[32]

These misguided arguments are taken directly from the Cold War and its reliance on MAD. The fear of an arms race was the reason why Herbert York believed BMD dangerous; they were just another step in the arms race - that the creation of an ABM system would create the need for more lethal and technologically advanced offensive weapons in order to penetrate the system, without a mutual increase in security or strategic stability.[33] Analysts in Moscow at the time held the same arguments. By 1968 the consensus amongst Soviets strategic analysts was that BMD posed a significant danger for increased nuclear proliferation, and how it could lead to miscalculation during a crisis.[34]The argument, although convincing during the Cold War due to the reliance on MAD, was in truth misguided, which tells a lot about the critics still using this argument today.

As the numbers above demonstrate, the traditionalist predictions did not materialize. Moreover, the arms race argument made by the critics simply ignores the actual dynamics of the process. Arms races do not occur independently of a crisis or an increase in tension between two or more rivals. They do not exist in and out of themselves. In the words of Paul Kennedy: “arms races are the reflection of complex political/ideological/racial/economic/territorial differences rather than a phenomenon which exist, as it were, of themselves.”[35] Logically speaking, as international tensions and conflict increase, armaments also increase.[36] At the moment, there is no reason to believe that a limited BMD system would launch an arms race.

Pessimists question the stabilizing effects of deep reductions and raise concerns about the adverse effects the rapid disarmament may have on strategic stability and global security. Henry Kissinger and Brent Scowcroft, for example, have argued that numbers can not be too low and that strategic stability requires forces of sufficient sizes to protect against first-strike attacks. They also point to the important of the type and amount of

delivery vehicles available as part of the deterrent forces.[37] Michael Dunn, the President and CEO of the Air Force Association expressed concern regarding the reduced damage potential that comes with a reduced arsenal. He believes that a low amount of nuclear weapons creates incentives for a potential adversary to deliver a "knock-out" first strike, mostly due to the expectation that at low numbers, either (1) it is possible to nullify the retaliation capability of the adversary, or (2) the adversary would do limited and acceptable damage with its second strike capability, making the benefits of an attack more significant than its cost. [38] In sum, nuclear deterrence and crisis stability are not as secure as they once were because the reductions in nuclear arsenals have significantly weakened the basic principle of MAD: restrain for fear of unacceptable damage from retaliation.

The problem with the pessimists' arguments is that they set aside far too many historical, political, cultural, and geographic realities that now shape the nuclear environment within which nuclear powers function.[39] Nuclear deterrence and stability has always been about relationships rather than numbers.[40] Improved relationships facilitate reductions, and deteriorating relations with aspiring nuclear powers require defences. In contrast to the pessimists' claims, these options are not mutually exclusive.

Optimists and proponents of global zero are also guilty of discarding important factors. They argue that the current reductions are necessary, but not sufficient. Moreover, they argue that emerging threats associated with nuclear terrorism and WMD proliferation to aspiring nuclear states should be met by the strategy of global zero. Ivo Daalder and Jan Lodal are at the foreground of this perspective. Reaching zero requires a combination of strategies, including stating that nuclear weapons are solely used to deter nuclear attacks, followed by deeper reductions towards 1000 warheads (including tactical weapons), a rigorous regime of treaties, arms control (bilateral and multilateral), and a verification protocol to ensure compliance. Finally, it will be Washington's responsibility to begin the diplomatic effort to convince other nuclear states of the benefits of moving towards zero.[41] It is important to follow these steps to avoid instability. If at some point one state has a larger arsenal than the other it would increase its overall strategic significance and increase the potential of cheating in the process.[42] To be successful, the global zero regime has to be a committed multilateral effort and should take on the transparency characteristics that have been so important in the bilateral arms control agreements between the United States

and Russia.[43]Moreover, by placing nuclear weapons under a strict regime, nuclear installations would be better protected and the risk of theft would be diminished. The same applies to state-sponsored nuclear terrorism. In sum, as the availability of nuclear weapons diminishes, so does the risk of nuclear terrorism. The problem with this argument is similar as the problem with the pessimists' account: they do not take into account the current context and the role of BMD.

It is next to impossible to discuss nuclear reductions without taking into consideration BMD, a fact global zero advocates do not take into account. BMD provides an alternative to MAD, and in doing so make disarmament possible. The negotiation on the New START did not happen in isolation from the deployment of the Ground-Based Mid-Course Defense (GMD) nor of the AEGIS system (the basis for the European Phased Adaptative Approach (EPAA)). The failure to implement the Strategic Arms Reduction Treaty II (START II) illustrates this point. When Congress approved the development of the National Missile Defense (NMD) system President Bush began to negotiate the SORT treaty, which would eventually lead to the New START Treaty. President Bush declared, regarding the future reliance on nuclear weapons that "the Cold War logic that led to the creation of massive stockpiles on both sides is now outdated. Our mutual security need no longer depends on a nuclear balance of terror."[44] The addition of active defences to the nuclear triad of the United States made the possession of large stockpiles obsolete. The change in strategy from MAD to BMD, in addition to the changes in the main threats to the U.S., created a favorable environment for deep reductions.

Under the Strategic Offensive Reductions Talks (SORT) and the New START, the United States and Russia have agreed to reach a limit of 1,550 accountable strategic warheads, as well as limiting the amount of deployed ICBMs, SLBMs and nuclear-capable heavy bombers to 700 each, and a combined limits of 800 deployed and non-deployed ICBMs and SLBMs launchers, as well as nuclear capable heavy bombers.[45] The development and deployment of BMD was made possible by a change of nuclear strategy in the United States involving BMD as one leg of the nuclear triad. Without it, it is unlikely that either SORT or the New START would have been negotiated the way they had been.

Advocates of arms control treaties should take this argument into consideration when they discuss the prospect of global zero. There is a tendency to discuss both in isolation from missile defence and it is a mistake. Continued reductions, and the possibility to reach one thousand or possibly global zero will have to be a combination of BMD (to be able to deal with emerging threats), and talk of continued reductions codified through treaties.

The actual text of the New START, and later declarations made by U.S. officials also refutes the critics' claim. The preamble to the New START Treaty contains the following statement:

> Recognizing the existence of the interrelationship between strategic offensive arms and strategic defensive arms, that this interrelationship will become more important as strategic nuclear arms are reduced, and that current strategic defensive arms do not undermine the viability and effectiveness of the strategic offensive arms of the Parties.[46]

This statement codifies the corollary reductions in offensive arsenals with the development of limited ballistic missile defence to counter the new threats. The New START could potentially become the written foundation of this new strategy, the same way the ABM Treaty made MAD the dominant nuclear doctrine during the cold war.

Some advocates of arms control and deep reductions are beginning to acknowledge this linkage. Micah Zenko is one such example. He argues for deep reductions to 1000 nuclear warheads including tactical nuclear weapons between the U.S. and Russia. The author rightly argues that continued reductions are directly tied to the U.S. BMD effort. Zenko rightly argues that cooperation over the missile system is paramount to its success, and the success of continued reductions, and proposes measures such as using Russian radars and sensory systems to demonstrate how the system does not threaten Moscow's strategic nuclear forces, and joint threat assessment activities.[47] Although the author overstates the level of cooperation on missile defence necessary for deep reductions to continue, he nonetheless link the two issues together properly, unlike global zero activists who see disarmament and BMD as mutually exclusive options.

Any argument or policy recommendation surrounding strategic stability will have to account for the reality of lower numbers of nuclear weapons. The extreme arsenals of

the Cold War are gone, as are the imperatives tied to MAD. It seems highly unlikely these numbers will resurface. As with the case of nuclear deterrence, debates regarding the effects on strategic stability of deep reductions encompass two camps: the pessimists who believe current reductions are dangerous and will lead to instability, and optimists who see strategic value in ongoing and deeper reductions. The position developed through this thesis is that current reductions are healthy and are facilitated (rather than damaged) by expanding commitments to BMD.

2.3 Emerging Threats to Global Security

The post-Cold War period has witnessed a changing geopolitical environment, especially the emergence of new threats, which forced an expansion in the understanding of strategic stability.[48] The pace of nuclear enrichment and ballistic missile development by Iran, ongoing development and proliferation efforts by an unstable regime in North Korea, and a wave of proliferation threats emerging from demands on the nuclear black market, combine to make the current security environment uncertain and complex.[49] The terrorist attacks of September 2011 also changed the strategic landscape. WMD terrorism became an important concern, especially following credible reports that terrorist groups such as Al-Qaeda are seeking ways to gain access to WMDs.[50] New actors demand new policies and the literature is divided about which strategies are best to ensure global security. The overall utility of BMD cannot be discussed in the absence of any consideration of the three dominant threats typically covered in the literature: Iran, North Korea, and terrorist groups.

2.3a *U.S.-Iran*

US officials have identified Iran and North Korea as the main missile and nuclear threats to its security, followed closely by the possibility that terrorists groups will acquire nuclear (or other WMD) material for a dirty bomb. Several credible sources, including U.S. intelligence and the International Atomic energy Agency (IAEA), have stated that the current nuclear program designed by Iran for peaceful purposes is being used to enrich and weaponize uranium.[51] At the moment, Iran has not tested any long range missile capable

of intercontinental flight, but credible sources have argued they are developing them.[52] Iran has been building upgrades to its Shehab line, the Shehab-4 and the Sajji-2, both long range missiles capable of delivering significant payloads over long range, and developing a nuclear capability.[53] Moreover, Iran is working on the Shehab-5, which would have a range of 1,800 and 3,300 miles.[54] Building such weapons is contrary to their NPT commitment. None of the missiles Iran currently has can reach the United States, but recent estimates by experts confirm Iran could develop an ICBM by 2015-2018.[55] However, the current arsenals can reach most of Europe and all of the direct rivals to Iran, including Saudi Arabia and Israel.

As such, proliferation by Iran could trigger a wave of proliferation in the region. Experts believe that the most probable response would be for Saudi Arabia, Syria, Algeria, Turkey and Egypt to make efforts to increase their capabilities and nuclearize.[56] The chances of nuclear attacks against the West are fairly slim, but worries are likely to emerge in the Middle-East if Iran goes nuclear. A variety of strategies have been elaborated to deal with Iran and its nuclear program.

2.3b *U.S.-North Korea*

North Korea has sought to develop nuclear weapons since the mid-1990s, and it relationship with the United States on the issue has been non-linear, with periods of stalemate, crisis, tentative denuclearization, and re-nuclearization.[57] Moreover, North Korea has already tested a long range missile in 1998 with success. Their attempt at a second launch recently was less successful, but it is likely the NK regime will try again. The various concerns expressed regarding nuclear proliferation by North Korea include the possibility it would export fissile material and nuclear weapons know-how.[58] The most often referenced policy implication of the North Korean nuclear program is the possible proliferation by Japan or South Korea. It is unclear whether Japan and South Korea will continue to trust U.S. extended deterrence in the future. Japan is currently studying the possibility of transforming its technical “know-how” into an independent deterrent if the geopolitical situation in its region demands it.[59] The possibility applies to Iran and the Middle-East.

2.3c ICBMs

Nuclear weapons and ICBMs provide significant advantages for states like Iran and North Korea. Such states nuclearize because they are unsatisfied with the distribution of power within the region or system. Acquiring WMD is an instrumental means of changing that order, either by having the ability to make coercive threats.[60] Nuclear weapons have subtle powers that are not solely military in nature - possession, for example, may enhance prestige.[61] Nuclear proliferation will continue as long as states believe the benefits outweigh the costs. It is also significantly cheaper than a conventional arsenal. Iran and North Korea essentially want long-range ballistic missiles to deter the U.S. and modify Washington's behavior in possible crises.

2.3d Cruise Missiles

The proliferation of ballistic missile is not the only missile threat facing the United States. The development, by multiple states, of short, medium, and long-range cruise missile (LACM) is equally problematic. Iran is said to be developing such weapons, and they have already provided groups such as Hizbullah anti-ship cruise missiles (which severely damaged an Israeli vessel during the 2006 Lebanon war).[62] Such missiles can delivery chemical, bacteriological and nuclear warheads, and are one more threat the U.S. allies might face, or the U.S. themselves in theatre.[63] Analysts believe cruise missiles could proliferate fairly rapidly to third world countries because they are relatively cheap for the amount of damage they can cause.[64] K. Scott McMahon and Dennis Gormley stated in 1995 "overall, we judge Third World incentives to acquire land-attack cruise missiles to be sufficiently compelling to suggest a threat of some considerable magnitude probably emerging by the end of the decade."[65] Cruise missile is a significant threat in theatre for the U.S. and its allies. It is hard to forget the barrack incident in 1991 where an Iraqi Scud missile hit an American barrack in Saudi Arabia and killed 28 U.S. soldiers. Adequate protection for efficient missions in theatre is more than necessary.

2.3e Terrorism

Another important concern for U.S. security is terrorism. The attack of 9/11 has made salient for the U.S. government their vulnerability. Among these vulnerabilities

comes the specter of nuclear terrorism. Many experts and security analysts within the United States are afraid that (1) a terrorist group could steal a warhead from less secure stockpiles in the Soviet Union or Pakistan and use it on American soil or against American interests, or (2) be given a bomb and the means to launch it by a hostile regime like Iran.[66] Moreover, there is also the possibility of high risk/high reward attacks like 9/11. As we have seen earlier, one possibility is the hi-jack of ship (American or others) equipped with cruise missiles to attack the United States.

The channels of communications necessary for strategic stability to function in the Cold War are not present in the context of terrorism. Graham Allison rightly points out how negotiations with groups such as Al-Qaeda are next to impossible, due in part to the non-desire of the group to do so, but by the fact that the U.S. president, for example, has no direct means of communication with them.[67] Whether such group can be effectively deterred from using WMD if they acquire it is still debated, with no argument dominating the other.[68] Patrick and Audrey Cronin concur - the uncertainty of the threats posed by nuclear terrorism makes it incredibly difficult to connect nuclear deterrence to a particular framework of foreign policy to deal with the problem. Foreign policy and strategy are now disconnected due to the uncertainty about the nature of the threat.[69] The United States and the other major powers cannot deal with WMD terrorism the way the U.S. and the Soviet Union dealt with each other during the Cold War: the channels of communications are not the same, and the reasons for possessing nuclear weapons are different. The logic of mutually assured destruction was geared towards the avoidance of nuclear war. Assessing the motives of terrorist groups is harder since they vary on almost all dimensions, including size, structure, ideology, objectives, strategies and tactics.[70] One solution proposed to deal with the risk of nuclear terrorism and nuclear proliferation has been the drive to global zero.

The 9/11 attacks and wars in Lebanon and Afghanistan are reminders of how difficult it is to fight and win asymmetric wars against an organized and efficient opponent. Moreover, nuclear deterrence is not fool proof and can fail. In the current context, there is no credible threat of nuclear retaliation against Iran or North Korea. A certain measure of mutual deterrence exists between China and Russia, but exclusive reliance on Cold War

nuclear deterrence is not adequate. No model of deterrence can cover all possible contingencies necessary to effectively deal with nuclear terrorism, nuclear proliferation, terrorist groups, and ballistic and cruise missile proliferation.[71]

2.3f Summary and Policy Implications: The Role of BMD

In this context, BMD has two main purposes: Defence and counter-proliferation. The obvious benefit is that it provides the U.S. homeland and the NATO allies (with the EPAA) territorial protection against short, medium, and long range launches from state such as Iran and North Korea. Although difficult at the moment, BMD can nonetheless be used to defend against cruise missiles. Missile defence is an insurance policy in the event other policy tools fail. Missile defence can defend against small attacks from states with crude nuclear and ballistic missile technology.[72]

Missile defence is also a counter-proliferation tool that raises the cost of launches for small nuclear states. The overall cost and effectiveness of nuclear weapons compared to conventional weaponry is relatively inexpensive for the benefits they provide. Nuclear weapons provide capabilities that are conventionally unavailable to small states; not only do they provide political prestige to their owner, they can threaten neighbors states for long demanded or awaited concessions on salient issues and force rivals to be more cautious during escalating tensions or through arguments with the newly nuclearized state.[73] Moreover, it enhances the ability of its owners to deter the U.S. and NATO from intervening in their affairs. This particular advantage is the number one reason for proliferation, and the number one reason why non-proliferation measures usually fail. As a counter-proliferation tool, missile defence reduces the likelihood of a missile attack from rivals and adversaries by raising the level of uncertainty surrounding the success of the attack, and the potential consequences. If the attack is deemed futile while triggering an unacceptable response, missile defence increases deterrence.[74] BMD reduces the deterrence of small states' nuclear arsenals while increasing the bargaining and deterrent power of its possessors.

Conclusion

This chapter explored three important factors that define the current strategic environment and have combined to create the necessary conditions for a paradigm shift towards a more widespread commitment to missile defence. The defining feature of the second nuclear age is its complexity and uncertainty. Throughout the chapter missile defence has been shown to be an essential part of the new strategy. However, other factors are necessary to build the necessary commitment to BMD. They will be discussed in the next chapters.

Chapter three will address the critiques used to argue against the deployment of BMD, namely the cost of the system, and its technological deficiencies. The necessary structural conditions are in place for the successful deployment of missile defence, but there is still some degree of resistance for deployment. The chapter will demonstrate how missile defence has become a cost efficient, technologically sound strategy to deal with the new and emerging threats.

Chapter four will focus on the current bi-partisan consensus within Washington, and international support coming from U.S. allies (including Russia for a time). It is impossible to make the case for a BMD paradigm without demonstrating how the system has become accepted both domestically in the U.S. and internationally by its allies as a sound strategy.

Chapter 3

The Case for Missile Defences (BMD) Part I: Cost Efficiency and Technological Advancement

The previous chapter outlined a series of historical and strategic changes that have distinguish the second nuclear age from the strategic environment of the Cold War. Mutually assured destruction (MAD) and the primacy of nuclear deterrence as the cornerstone of US strategic doctrine has become far less relevant. By abrogating the ABM treaty, which codified MAD doctrine, the United States signaled a desire to establish a new strategy with different organizing principles based on minimum deterrence and ballistic missile defence.

The case for a BMD paradigm only makes sense if the system is shown to be technologically sound and financially cost-effective. There would be little incentive to develop the system if it was too expensive for the security benefits provided. This chapter will focus on two main important points in order to demonstrate the cost and technological efficiency of missile defence. First, section 3.1 will assess the current technological level of BMD and demonstrate how the technological argument made against the system are still deeply rooted in the logic of the Cold War, and sub-section 3.1a will demonstrate how and why intercept technology has become more successful. The system now is not perfect, but it is advanced enough to defend and deter against basic missile technology. Section 3.2 will demonstrate that the financial costs of missile defence are reasonable in light of alternatives.

3.1 Technological Limitations of BMD and Responses

The alternative strategy most often preferred by critics of BMD remains MAD. The argument put forward by Bruno Tertais exemplifies the MAD critique regarding missile defence very well:

> Missile defense can play many useful roles. It reinforces the freedom of action of political leaders, acts as a “deterrent by denial”, covers cases where nuclear deterrence does not apply, and can be a

> damage limitation instrument. But deterrence by denial can never be as powerful as deterrence by retaliation: from the aggressor's point of view, the potential costs of the former are nothing compared with those of the latter. And the damage limitation role of missile defense cannot be applied today to massive threats – nor will it be in the foreseeable future. The cost effectiveness of missile defense remains questionable… It is clear that even if it were desirable, the complete protection of such a large territory as the United States by non-nuclear means would remain out of reach. Finally, even assuming the total coverage of one's territory by defensive modes…something that today can only be achieved at a reasonable cost for very small territories such as Israel's, such defenses would not take into account non-traditional modes of employment of nuclear weapons such as terrorism.[1]

Therefore, deterrence remains the best choice available because as it is, the system cannot properly defend the continental U.S. from a missile attack (a problem with the technology). BMD should also be scrapped because it cannot deal appropriately with nuclear terrorism. There are two important logical flaws with these arguments.

First, nuclear deterrence and MAD has never been tested to demonstrate 100 percent effectiveness either. However, as Frank Harvey rightly pointed out, supporters of MAD focus on the technological problems with BMD but overlook the complex technological trial, error and costs attached to the U.S. nuclear program.[2] What these account often set aside is the fact that MAD has never been truly tested. SLBMs, IRBMs, ICBMs have only been tested under controlled environments and never launched over the polar cap. It is impossible to know whether or not they would truly function in a crisis setting. Moreover, the heart and soul of the American nuclear deterrence, the Atlas and Minuteman missile programs, have had their share of technical failures. In a report published by Lt. General Ronald T. Kadish it mentioned that "Atlas experienced 12 failures in its 2 and a half year flight-testing history. And the Minuteman program 1 program suffered 10 failures in a 3 and a half testing program."[3] Missile defence so far has been tested in theater, and since 2003 has demonstrated an impressive track record. And to this day, the U.S. nuclear weapons program has cost close to 5.5 trillion dollars, which accounts for 29 percent of all military spending. On average, the U.S. still spends 35 billion annually on nuclear weapons, 8 or so billion allocated to missile defence.[4] It is far from an inexpensive alternative to BMD.

The underlying assumption of critics similar to Tertais, however, is that the system is technologically incapable of delivering on its promises. Moreover, the technological argument against missile defence today remains surprisingly similar to the argument made during the Cold War, despite advances in the technology being criticised. In the 1950s, the argument was that a missile defence system could not provide adequate protection to the civilian population against a nuclear attack. In 1955 the Security Resources Panel had warned President Eisenhower that the Nike-Zeus system it was developing was a weak defence. They wrote:

> Active defence programs now inbeing and programmed for the future will not give adequate assurance of protection to the civil population. If the attack were at low altitude or at high altitude with electronic countermeasures (jamming), little protection would be afforded. If the attack should come at moderately high altitude and without electronic countermeasures, some considerable protection will be afforded the civil population.[5]

Dr. Killian, who was the supervisor for the Science Advisory Committee, argued that the Nike system could not be a factor against missile attacks before 1964 or 1965, and measures such as dispersal, hardening, and improved warning and detection systems be given priority in the near future.[6] The assessment, as well as the belief by Secretary of Defence McElroy that Nike-Zeus represented too much uncertainty, led Eisenhower to veto the $137 million dollars Congress had appropriate for the production and deployment of the Nike-Zeus system. However, it was decided that the system would remain as an R&D program, with a $237 million budget.[7] Even Kennedy refused to restart the project.

The case of the Nike-Zeus system is important because it defined the entire technological debate regarding missile defence. Robert McNamara, an early skeptic of missile defence, once said "while we have substantially improved our technology in the field, it is important to understand that none of the systems at the present or foreseeable state of the art would provide an impenetrable shield over the United States. Were such a shield possible, we would certainly want it—and we would certainly build it."[8] Although the mission given to missile defence system would eventually change from defending countervalue targets to counterforce sites, the incapacity of BMD to stop countermeasures, including inflatable balloons, multiple re-entry vehicles (MIRV), and decoys, was the main argument against. Safeguard, the system put into place by Richard Nixon to protect U.S. siloed ICBMs suffered the same fate. Among other things, countermeasures and concerns

with the system's radars—it was said to be vulnerable to a direct attack and subject to self-blinding by any explosion from the system's interceptor missiles—was cancelled in 1976.[9] Technological deficiencies were not the only reason that led to the cancellation of the system, but it had an important impact on the decision. The vulnerability to countermeasures was also an important argument used by the opponent to SDI, but most critics simply argued that the system would never be able to satisfy public expectations; it would never defend the civilian population.[10] While the prognostic regarding the technological efficiency of the system during the Cold War was accurate, the technology has significantly improved to make missile defence viable today. However, the same arguments are still made today, despite the important changes in technologies, and most notably the change in the nature and aim of the system.

Critics of missile defences who believe the system is not technologically sound are still present, albeit slowly losing ground. Most critics point to the fact that interceptors have only been tested under controlled conditions, whereas the characteristics of the warheads are known and where there is no significant effort to defeat the system. The question becomes: will the system function as planned in the real world where nothing would be known on the incoming missile?[11] Critics often points to the failure of the Patriot PAC-2 system during the 1991 Gulf War as proof that BMD is not working in theater. After the war, a General Accounting Office report concluded that 9 percent of Iraq's ballistic missiles had been intercepted by the system. While the system truly did not live to the expectations, several reasons explain these shortcomings.

First, the PAC-2 system was rushed into combat, and was not designed for hit-to-kill - PAC was designed to knock incoming missiles off course to protect the launch units from being destroyed.[12] Moreover, the system was largely designed for air defence, and was being used in a novel way.[13] The death of 28 U.S. soldiers by an Iraqi ballistic missile that hit military barracks in Saudi Arabia in February 1991 was the catalyst that led to more funding missile defence capabilities. [14] Following the incident, the U.S. army invested $3 billion into improving the Patriot system between 1991 and 2003.[15] The next section will demonstrate how this investment, and the development of the hit-to-kill technology, greatly improved the system.

Traditional warnings about countermeasures are also still present in the discourse against missile defence. In a 2003 report, Martha Clark made the argument that "that missile defences are technologically unproven and are subject to different types of enemy countermeasures. Enemy missiles can be very inexpensively designed to employ countermeasures to fool a missile defence system, including objects identical to the warhead that are released from the missile launcher simultaneously in the outer atmosphere."[16] More recently, the Union of Concerned Scientists critiqued the MDA assessment of an intercept test that took place at the Vandenberg Air Force Base in Santa Barbara County. The MDA had deemed the test successful, whereas the UCS asserted the test did not reflect reality. The point of contention was the failure of the target's missile to launch its decoys. UCS Spokesman David Wright stated "scientists have looked at missile defence for a long time, and the Achilles' heel has always been decoys." Furthermore, it is, according to Wright, only the fourth successful test since 2002 and none of them deployed countermeasures to simulate a realistic test.[17] This assessment is one among many citing how BMD tests have never been done using decoys, which reduces significantly the credibility of active defences.[18]

There are significant problems with these arguments. Many critics underestimate how difficult it is for emerging nuclear states to include in their missile technology the simplest countermeasures.[19] The fact that the U.S. is having a hard time deploying decoys to test BMD says more about the challenges potential enemies will have to use decoys, and the enormous costs they will have to incur to develop such measures. Critics are quick to claim the U.S. does not have the capacity to build an effective BMD, but are quick to conclude that enemies will have no problems developing and paying for decoys and countermeasures. In reality, the only states with the capability to actually develop such technology are not currently enemies of the U.S. Moreover, if the new nuclear states have the capability of developing ways to circumvent BMD, they do have the capability of developing ballistic missiles, which does not negate the need for missile defence.[20]

3.1a the Efficiency of Missile Defence

What is often forgotten in the accounts described above is how the intercept technology has changed. First, the missile defence technology used by the U.S. is now layered, meaning the system can intercept incoming missiles in boost phase (when it is launched), mid-course (when it is still in the atmosphere), and terminal phase (when it re-enters the atmosphere). This increases the chance of making an intercept at multiple points and times. Second, the current technology used is called hit-to-kill. It uses interceptors without an explosive charge using kinetic energy to destroy missiles at boost phase, before any countermeasures can be launched. It is still problematic whether BMD would be effective against countermeasures launched in mid or terminal phase. However, the main aim of the system is to destroy basic ballistic missiles coming from Iran and North Korean, which nullifies much of the argument regarding countermeasures and BMD because they only possess basic ballistic missile technology lacking countermeasures. Moreover, the U.S. is also developing ascent-phased interception—between boost and mid-course phases -- again to intercept a ballistic missile before it can release countermeasures.[21]

No system is perfect, however, the recent advent in technology provides a sound argument for its deployment. Most critics do not look at the possibility of launching more than one interceptor to stop incoming missiles. The current strategy used by the U.S. is one of shoot-look-shoot, which means they might use from two to five interceptors to stop incoming missiles. As Frank Harvey rightly stated, if the missile defence system is 80% efficient (which can be inferred from the test data from the Aegis system, see below), using two or three attempts can increase the chances of intercepts to 96 or 99 percent respectively.[22] Again, since the system is built to stop ballistic missile attacks from small states with fairly small missile arsenals, such numbers and percentages are significant.

Missile defence technology is like any other technology: if the R&D agencies have sufficient money and the right tools to design the system, it will improve. The current record demonstrates just that. The Ground-Based Midcourse Defence (GMD) system has a test record of eight of 15 intercepts, with three of five tests having used operationally configured interceptors since 1999.[23] Appendix two catalogues the cause of failures. None of the issues are insurmountable, and in fact these tests allowed engineers and contractors to identify the weaknesses and improve on GMD and other systems.[24] The test records

going forward demonstrate that this was indeed the case.

We can observe from the 2003 Iraq war how choice investment in R&D can make missile defence efficient. Iraq launched 19 short-range missiles at coalition targets, 9 of which were threatening to potential targets, and all 9 were destroyed.[25] The same applies for the Terminal High Altitude Area Defence (THAAD) system. Testing began in 2006, and all 9 intercepts attempts have been successfully. It is important to note that the tests all involved operationally configured interceptors.[26] As we move forward, the capabilities of missile defence systems will improve. While preprogrammed interceptors are still used during testing, the successful intercepts in theater during the 2003 Iraq war demonstrate how such programming does not necessarily mean BMD systems are not going to deliver outside of the lab.

Finally, table 3.1 lists the entire Aegis BMD flight test since January 2002:

Table 3.1 – Aegis BMD Flight Tests since January 2002

Date	Country	Name of flight test	Target	Successful?	Cumulative successes	Cumulative attempts
Exo-atmospheric (using SM-3 missile)						
1/25/02	US	FM-2	Unitary TTV short-range target	Yes	1	1
6/13/02	US	FM-3	Unitary TTV short-range target	Yes	2	2
11/21/02	US	FM-4	Unitary TTV short-range target	Yes	3	3
6/18/03	US	FM-5	Unitary TTV short-range target	**No**	3	4
12/11/03	US	FM-6	Unitary TTV short-range target	Yes	4	5
2/24/05	US	FTM 04-1 (FM-7)	Unitary TTV short-range target	Yes	5	6
11/17/05	US	FTM 04-2 (FM-8)	Separating medium-range target	Yes	6	7
6/22/06	US	FTM 10	Separating medium-range target	Yes	7	8
12/7/06	US	FTM 11	Unitary TTV short-range target	**No**	7	9
4/26/07	US	FTM 11 Event 4	Unitary ARAV-A short-range target	Yes	8	10
6/22/07	US	FTM 12	Separating medium-range target	Yes	9	11
8/31/07	US	FTM-11a	Classified	Yes	10	12
11/6/07	US	FTM 13	Unitary ARAV-A short-range target	Yes	11	13
			Unitary ARAV-A short-range target	Yes	12	14
12/17/07	Japan	JFTM-1	Separating medium-range target	Yes	13	15
11/1/08	US	Pacific Blitz	Short-range missile target	Yes	14	16
			Short-range missile target	**No**	14	17
11/19/08	Japan	JFTM-2	Separating medium-range target	**No**	14	18
7/30/09	US	FTM-17	Unitary ARAV-A short-range target	Yes	15	19
10/27/09	Japan	JFTM-3	Separating medium-range target	Yes	16	20
10/28/10	Japan	JFTM-4	Separating medium-range target	Yes	17	21
4/14/11	US	FTM-15	LV-2 intermediate range target	Yes	18	22
9/1/11	US	FTM-16	Short-range missile target	**No**	18	23
Endo-atmospheric (using SM-2 missile)						
5/24/06	US	Pacific Pheonix	Unitary short-range target	Yes	1	1
6/5/08	US	FTM-14	Unitary short-range target	Yes	2	2
3/26/09	US	Stellar Daggers	Short-range ballistic missile target	Yes	3	3
Combined total for exo- and endo-atmospheric above tests					21	26

Notes: TTV is target test vehicle; ARAV is Aegis Readiness Assessment Vehicle. In addition to the flight tests shown above, there was a successful use of an SM-3 on February 20, 2008, to intercept an inoperative U.S. satellite—an operation called Burnt Frost. Including this intercept in the count increases the totals to 19 successful exo-atmospheric intercepts in 24 attempts using the SM-3 missile, and 22 successful exo- and endoatmospheric intercepts in 27 attempts using both SM-3 and SM-2 Block IV missiles.
Source: Ronald O'Rourke, "Navy Aegis Ballistic Missile Defense (BMD) Program: Background and Issues for Congress," *Congressional Research Service* (2012): 34

As the table shows, out of the 24 tests performed between 2002 and 2009, 19 were successful and 5 were failures, for an intercept percentage of 79 percent. Compared to the numbers provided above on BMD tests during the Cold War, the current percentage of intercepts are showing the continued improvement of the system. Moreover, in December 2011 the Department of Defence director of Operational Tests and Evaluation declared that the Aegis BMD demonstrated, for the first time, the capability to engage and destroy an intermediate range ballistic missile (IRBM) mid-course.[27] The current BMD efforts are not perfect, but the current record shows they are becoming reliable tools. Moreover, the

current investment in missile defence also demonstrates how political support of the system, with the right appropriation of resources, can make the technology successful.

In the end, it is unlikely that critics of missile defence will be satisfied with the case made above. At the moment, BMD represent 2% of the defence spending of the United States, and the intercept test data shows a lot of promises.[28] However, unless the system is perfect, its most hardcore detractor will not concede the point. But for policymakers, the data showed above demonstrates how missile defence is now a viable option.

3.2 The Cost of Missile Defence

Cost has always been one of the main criticisms of missile defence. The point often made is that the system is too costly monetarily. BMD is said to be too expensive for a technologically inefficient system, and destabilizing because of the potential risk for an arms race. In order to make a proper case that missile defence is not too high, it is imperative to contrast the cost of the alternatives, and the potential cost of failure.

With respect to benefits, reductions in arsenals have mostly occurred in conjunction with the deployment of active missile defences. Cost may appear high, but if the system means significantly reduced nuclear arsenals while still providing a healthy level of security against ballistic missile threats, then these costs should be viewed in the context of security benefits. Moreover, the increased reliance on missile defence would help reduce the current spending of the United States on nuclear weapons. By increasing its reliance on BMD, the United States would make significant savings by reducing its levels of strategic offensive forces. By 2007 the reductions included in the START II Treaty produced $700 million in savings throughout the year 2008, and about $800 million a year thereafter.[29]

Assessing the possible savings from the New START is more difficult. On May 9, 2012, House Republicans pushed an amendment to the National Defense Authorization Act (NDAA) that would block funding for the New START implementation if higher spending targets for the National Nuclear Security Administration (NNSA) nuclear weapons production facilities are not met. The amendment would increase, and not

decrease, the allocated funds for nuclear weapons.[30] It makes it difficult to calculate the actual savings the New START would ensure. There are no doubts, however, that the implementation of the Treaty promises significant savings if implemented as-is. The New START has a target of 1,550 deployed warheads (the U.S. currently has 1,900). For fiscal year 2011, the maintenance and support cost of the U.S. strategic arsenal was $4 billion.[31] By reaching the New START targets, the U.S. would remove 400 weapons from its maintenance budget, effectively saving $842 million.

Cooperative efforts surrounding BMD are also an important source of savings. The cooperative and multilayered research and development efforts increase the chances of technological advances and breakthrough while reducing individual cost for the countries involved. And the knowledge and capital gained through this venture are kept by the U.S. For example, with the MEADS system, Italy and Germany are respectively expected to shoulder 27 percent and 17 percent of the total cost.[32] As for the Arrow program, the United States and Israel have shared the cost of the system evenly, although all the technology comes from the United States.[33] The same applies to the NATO BMD. The current cost of the system is estimated to $650 million for the TMD system, and an additional $200 million is expected to fulfill the counter-value objective of the system.[34] The cost is to be shared among the 28 allies, but no data is available to verify which percentage will be paid by which nation. Therefore, although it may seem as if the U.S. are overspending on missile defence, they are in fact saving money, and increasing allied satisfaction, by co-deploying and sharing some of the cost burden with their allies.

In order to demonstrate how BMD is a cost efficient counter proliferation measure, it is important to contrast its cost with the cost of current non-proliferation measures employed by the United States to prevent proliferation and increase global stability. The cost of the NMD system, since 1996, has been $35.4 billion and the current allocation by Congress for FY2013 (including both the GMD and EPAA system) is 7.75 billion.[35] Table 3.2 shows the projected funding for the Aegis BMD, the system currently favored by the Obama administration as part of its EPAA system against Iran and North Korea in Europe.

Table 3.2: Funding for Aegis BMD, FY2012-FY2017

(In millions of dollars, rounded to nearest tenth; totals may not add due to rounding; FY2012 is actual; FY2013 is requested; FY2014-FY2017 are programmed)

	FY12	FY13	FY14	FY15	FY16	FY17
Procurement						
Aegis BMD (Line 31)	565.4	389.6	757.0	834.3	775.7	1,003.0
Research, development, test and evaluation (RDT&E)						
Next-Gen Aegis missile (SM-3 IIB)	13.4	224.1	295.2	455.4	508.4	430.2
Aegis BMD	988.9	992.4	960.9	950.1	1,030.2	958.7
Land-Based SM-3 (LBSM3)	306.2	276.3	127.2	113.7	47.7	56.2
Aegis SM-3 IIA Co-development	473.8	420.6	273.9	200.7	185.0	46.1
Subtotal RDT&E	1,782.3	1,913.4	1,657.2	1,719.9	1,771.3	1,491.2
Total	2,347.7	2,303.0	2,414.2	2,554.2	2,547.0	2,494.2

Source: Ronald O'Rourke, "Navy Aegis Ballistic Missile Defense (BMD) Program: Background and Issues for Congress," *Congressional Research Service* (2012):17.

Critics argue that missile defence should be replaced by nonproliferation measures (including bilateral and multilateral arms control agreement and treaties) in order to prevent proliferation and increase global stability. They argue missile defence is much more expensive, and destabilizing, than nonproliferation measures and should therefore be replaced by the latter. Martha Clark, a critic of BMD, responds with the following observation: "A more stable U.S. national security strategy would combine a reliance on non-proliferation regimes, diplomatic initiatives, and the engagement of rogue states into the international governing structure in order to hold them accountable for their actions."[36] However, the critics suggesting such measures never hold their own proposition to the same rigorous cost/benefits analysis they impose on missile defence. Table 3.3 shows the money spent by the United States on non-proliferation measures over the past three years. Included are most measures funded by the Department of Defense, Homeland Security, and the Department of State to prevent nuclear proliferation and securing nuclear stockpiles, and reducing the global threat posed by the proliferation of WMD and terrorism.

Table 3.3

FY11 International WMD Security Programs
All amounts in $ millions

Program	FY09 Approp.	FY10 Budget Request	FY10 Approp.	FY11 Budget Request
National Nuclear Security Administration				
Nonproliferation and International Security	150.0	207.2	187.2	155.9
International Nuclear Materials Protection and Cooperation	455.0	552.3	572.1	590.1
Elimination of Weapons-Grade Plutonium Production	141.3	24.5	24.5	0.0
Fissile Materials Disposition	41.8	36.4	36.4	138.9
Global Threat Reduction Initiative	395.0	353.5	333.5	559.0
Congressionally Directed Projects	1.9	--	0.3	--
Subtotal, NNSA	*$1,185.0*	*$1,173.9*	*$1,154.0*	*$1,443.9*
Department of Defense				
Cooperative Threat Reduction Programs	433.2	404.1	424.1	522.5
Subtotal, DoD	*$433.2*	*$404.1*	*$424.1*	*$522.5*
Department of Homeland Security				
Domestic Nuclear Detection Office	514.2	366.1	383.0	305.8
Science and Technology Directorate	362.3	361.3	357.0	431.9
Office of Health Affairs	119.6	102.5	102.5	180.5
Customs and Border Protection	149.5	165.4	162.0	84.4
Federal Emergency Management Agency	6.0	6.0	6.0	0.0
Subtotal, DHS	*$1,151.6*	*$1,001.3*	*$1,010.5*	*$1,002.6*
Department of State				
Nonproliferation and Disarmament Fund	118.0	75.0	75.0	57.0
Export Control and Related Border Security Assistance	44.0	55.0	54.0	61.5
Global Threat Reduction	61.0	68.6	70.0	71.9
Weapons of Mass Destruction Terrorism	2.0	2.0	2.0	0.0
U.S. Civilian Research and Development Foundation	~3.8	~3.8	~3.8	~3.8
Subtotal, State	*$228.8*	*$204.4*	*$204.8*	*$194.2*
TOTAL	*$2,998.6*	*$2,783.7*	*$2,793.4*	*$3,163.2*

Source: Kenneth Luongo, "Funding the Fight Against Nuclear Terrorism," *The Will and the Wallet (Stimson Center)*, http://thewillandthewallet.squarespace.com/blog/2010/3/16/funding-the-fight-against-nuclear-terrorism.html (assessed July 2nd, 2012)

As the table illustrates, these security measures are not cheap, yet they have not stopped Iran or North Korea from acquiring the bomb, nor have they completely alleviated the fear of nuclear terrorism. In fact, the total cost of these measures reach a higher price tag that the appropriation for the EPAA system in any given year. While it can be argued that missile defence did not prevent Iran and North Korea from acquiring nuclear weapons, BMD offers added benefits (defence and deterrence) that are not offered by nonproliferation measures. The point is not that these measures are completely bad or should be abolished. Rather, without missile defence, there is nothing to protect against threats that emerge when these other multilateral and national security programs fail to prevent WMD and ballistic missile technology from spreading. While the aggregate spending on nonproliferation measures is significantly lower than on missile defence, the actual results do not justify the price tag.

Moreover, the track record of multilateral non-proliferation agreements or treaties is rather bleak. The Non-Proliferation Treaty (NPT) did not yield the desired results in the end and it did not stop signatories and non-signatories alike from testing new nuclear technologies, or to simply become nuclear. India, Pakistan, and Israel are cases in point. All three countries never signed the NPT and when they actually nuclearized and proceeded to test nuclear weapons, no long-lasting sanctions were taken against them. Furthermore, North Korea used the NPT as leverage for many years before finally pulling out in 2003.

Nonproliferation measures did not stop the sharing of nuclear and missile technology between states. It has not stopped Moscow from providing nuclear technology and expertise to Tehran.[37] Nor has it stopped China from selling missile, nuclear, biological and chemical weapons technology to Pakistan, North Korea, and Iran.[38] Moreover, China provided help to Pakistan's nuclear program in 1974 following the detonation of India's first nuclear weapon. Among its contributions to the program, China gave Pakistan the plans for a 20-kiloton nuclear warhead, and enough enriched uranium for two such nuclear devices.[39] North Korea has supplied missile parts (including cruise and medium range ballistic missiles) to Pakistan, Iran, Libya, and Egypt.[40] Israel provided significant assistance to the nuclear program of South Africa during the 1970s. Israel's contribution included enriched uranium and technical expertise.[41] Despite many efforts, disarmament and arms control could not eliminate the spread of WMD technology.

It may be argued that treaties like the NPT have significantly reduced the pace of nuclear proliferation, thus justifying investment in multilateral measures, but it is important to keep in mind that only one nuclear weapon is necessary to create the type of catastrophe the NPT was built to avoid.[42] Nuclear weapons offer significant benefits to the state holding them (deterrence is the prime example) which makes it hard for multilateral initiatives to work. Economic benefits and removal of sanctions can be offered as a trade-off for disarmament, but the deterrence factor nuclear weapons provide cannot be found elsewhere at such a cost. Therefore, investment in multilateral measures will, on the whole, be incapable of providing a cost-efficient outcome. Moreover, without a defensive

mechanism, nonproliferation measures provide absolutely no alternative in case of failure.

The case of North Korea demonstrates the weaknesses with diplomacy and preventive approaches. Appendix three outlines the entire diplomatic process between North Korea and Washington related to denuclearization. From 1994 to 2000 the Clinton administration gave more than $600 million dollars in foreign aid to Pyongyang in order to curb their nuclear project and send inspectors to verify whether the North Korea leadership had kept their engagement. Despite numerous efforts the U.S. were never able to verify the two sites where plutonium was rumored to be stored.[43] Washington's multiple agreements with Pyongyang in this timespan, including the Agreed Framework (in which North Korea would stop its production of plutonium in return for oil and economic benefits, as well as nuclear reactors for energy purposes) were being negotiated. The launch in 1998 of a *Taepodong*-1missile, and the secret uranium enrichment program discovered in 2001, sabotaged the accord.[44] From 2001 to the present the same pattern continued, where Pyongyang agreed to verification taking place on its soil, and a few weeks, months, or year later pulled out to continue its program. Talk stopped, resumed, and stopped again, while North Korea kept its nuclear program. Diplomacy and positive engagement did not yield the desired results. Missile defence, although more expensive than other counter-proliferation methods, have so far proven that they can be efficient at what they do when compared to the alternatives.

Conclusion

The cost effectiveness of a nonproliferation or counter proliferation measure has to be weighed against the available alternatives, and the actual security benefits it provides. The technological advancement of missile defence, and its success in the field, has demonstrated how the money invested in the system has produced significant security benefits. On the other hand, the track record of nonproliferation measures in recent years has not yielded the desired outcome. Iran is still on the way to becoming a nuclear state, while North Korea has continued its ballistic missile proliferation.

It has been demonstrated in this chapter how BMD is now a viable strategy. It is technologically sound, cost-effective, and politically stable. With the logic of the Cold War gone, the sole reliance on MAD as nuclear strategy can be modified. BMD can effectively be used to settle the dilemma outlined in the previous chapter: it can be used as part of a mixed strategy to ensure a level of mutual vulnerability between the great nuclear powers while providing adequate security measures against new and emerging nuclear and ballistic missile threats. The next chapter will assess the last element of this thesis: the current domestic consensus in the United States and the international support of U.S. allies for missile defence that make the paradigm shift possible.

Chapter 4

The Case for Missile Defences (BMD) Part II: Domestic and International Consensus.

The purpose of this chapter is to further demonstrate the shift towards a BMD paradigm by examining the sustained bi-partisan support for BMD since the end of the 1990s, and the growing international support for the system. It would be impossible for any strategy to be implemented on mass without domestic support. MAD became the strategy of choice during the Cold War because it had been accepted as such by policy-makers in Washington and Moscow. The same support is therefore necessary for a shift in strategic stability thinking from MAD to BMD. And it was this reliance on MAD that made BMD unstable at the time and continuously stopped the development of the system. With the paradigm shift at the end of the Cold War, the option of a limited missile defence system to counter new and emerging threats viable. In sum, I argue that there is now robust bi-partisan support in the U.S and significant international support (including U.S. allies and Russia) for BMD that confirms the emergence of a BMD paradigm.

This chapter will focus on several important points in order to make my case. In section 4.1, evidence will be presented to show that missile defence currently enjoys a high level of bi-partisan political support in the U.S. Section 4.2 will discuss how the BMD strategy has also received strong international support from allies and former rivals. Sub-section 4.2a will assess 8 case studies of BMD cooperation in order to demonstrate the robust international, and domestic, commitment for the strategy. It will also address the current stalemate with Russia on the issue.

4.1 The Evolution of U.S. Domestic Support for Missile Defence

The following section is a carefully constructed history of political support for BMD in the United States. The information provided below traces the formation of a bi-partisan consensus on missile defence. Such consensus is important to ensure the continued funding of the system. During the Cold War, BMD received little support outside of the

Republican Party. And even Republicans understood the destabilizing potential of missile defence while MAD was the primary nuclear strategy between Moscow and Washington. The shift in threats, however, consolidated missile defence as a viable strategy for both Parties. The historical account below illustrates how the need to deal with different emerging threats prompted the search for additional strategy, namely BMD. Without a domestic consensus, the system would suffer from continued reductions (or termination) of funding whenever Congress or the Oval Office would be filled with opponents to the system.

The idea of being able to stop incoming ballistic missiles armed with nuclear warheads has always been an ambition of American leaders, albeit with varied levels of support. While supporters continually believed a technological breakthrough was around the corner, they were not the majority.[1] The Safeguard ABM system, for example, was shut down after being operational less than four months, because Congress revoked its funding. Numerous events following the end of the Cold War led to the current acceptance and consensus on missile defence in Washington. The reluctance and fear regarding BMD gave way over time to a consensus over the desirability of fielding such a system, first to defend the continental U.S., and then to protect European allies via NATO. It is important to note that the domestic consensus on missile defence happened concurrently with the acceptance of more modest aims for active defences. Whereas the Cold War debate on missile defence culminated with Reagan's SDI system and its impossible promises, the discussion in the 1990s focused mostly on limited ballistic missile threats, with a focus on Iran and North Korea as the targets of the system.

The roots of missile defence support in Congress can be found in the 1994 *Contract with America*. The *Contract* was a set of promises made by the Republican Party to try and win a majority in Congress, a bid they won. The statement regarding missile defence read as follow:

> The National Security Restoration Act addresses this problem (the rogue states) by: restoring defence spending "firewall" that prohibit the transfer of Defence Department funds to other departments and agencies in order to fund social spending programs unrelated to military readiness. Future defence spending cuts are to be used only for deficit reduction*; renewing America's commitment to an effective national missile defence by requiring the Defence Department to deploy antiballistic missile systems capable of defending the United States against ballistic missile attacks*.[2]

The *Contract with America* was well received, even if the stipulation that an NMD system should be deployed as soon as practical was defeated by a narrow margin in 1995.[3] Support for missile defence only went up from this point on.

Between 1995 and 1999 three important events would increase political support for BMD: the 1995 National Intelligence Estimate (NIE) report and its rebuttal by the Rumsfeld commission, and the 1998 missile launch by North Korea. The NIE of 1995 had three key aspects that influenced missile defence deployment. First, it estimated that the current long-range missile force of North Korea had a range of 4000 to 6000 km, enough to reach Alaska and Hawaii but not the continental United States. The report found it unlikely that North Korea would want to, or had the capacity to, develop more long-range missiles. Second, estimating the possibility of Iranian ICBMs it stated "we have no evidence Iran wants to develop an ICBM. Even if Tehran wanted to, we assess that it would not be able to do so before 2010 because it lacks the economic resources and technological infrastructure." Moreover, it would be hard for Iran to develop an ICBM because of its economic situation. The international sanctions and the intrusive U.N. inspection and monitoring regime was too constraining for ICBMs effort. If, however, these two elements were gone, Iran would have the possibility to build ICBMs. Third, the report declared that land-attack cruise missiles (LACM) were the number one threat to the U.S. They were being developed by nations hostile to Washington in the Third World (the report does not include state names).[4] Long-range ballistic missiles were not the primary threat to the U.S., and Clinton adapted its missile defence strategy as such, putting more emphasis on theater missile defence (TMD) to protect soldiers in the field and European targets.

Congress, however, did not see the NIE 1995 report the same way and passed a key piece of legislation dictating the future of missile defence. The Missile Defense Act of 1995 made it U.S. policy to deploy, as soon as possible and affordable, BMD and TMD systems against limited, accidental, or unauthorized ballistic missile attacks. The system was to be fielded when possible and would be "augmented" over time, meaning the system would be updated with better technology as it became available. This strategy became known as spiral development. Moreover, the Act demanded that Washington negotiate

with Russia for the implementation of the BMD system.[5] The Clinton administration, therefore, adjusted their BMD effort accordingly by introducing the 3 + 3 system. Under this strategy, the U.S. would develop BMD to protect against a small number of ICBMs from hostile states, and as protection against accidental launches from Russia and China. The strategy proposed the deployment of BMD technology during the first three years (1997-2000), followed by a deployment decision in 2000 if the system was functional and if warranted by potential threats. If a decision was taken on deployment, it would do so over the next three years (2000-2003) and would be conducted within the purview of the ABM treaty. The system was modified along the way to allow for a longer deployment plan (2005).[6] In sum, the system was a massive research and development project as long as Congress felt ballistic missile threats possible in the future. The NIE created cautious support for missile defence but not yet for full deployment. The 1998 Rumsfeld commission made the strongest case in favour of funding, development and deployment.

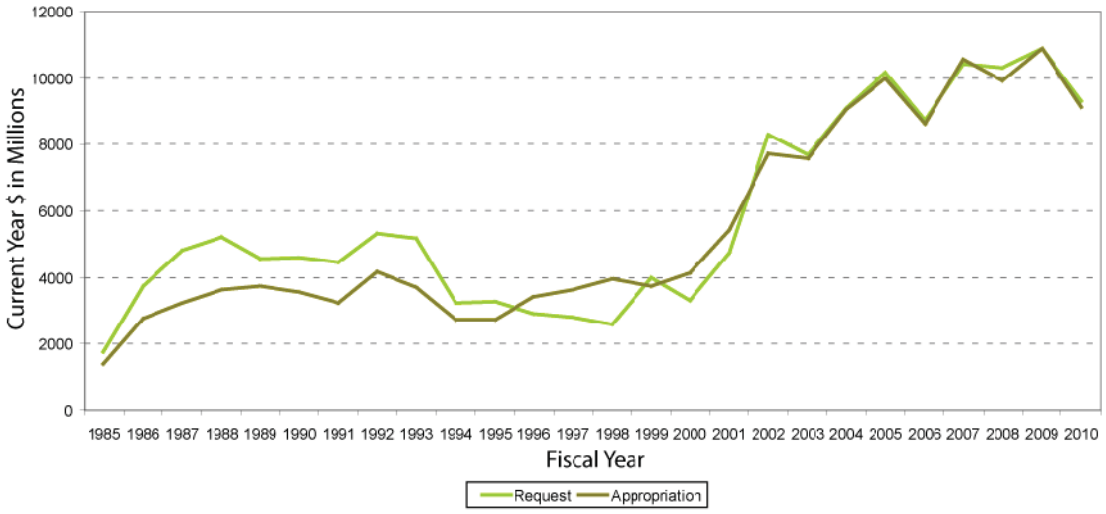
The 1998 Rumsfeld's commission challenged the more cautious estimate found in the 1995 NIE. Namely, the report stated "the newer ballistic missile-equipped nations [North Korea, Iran, and Iraq]…would be able to inflict major destruction on the U.S. within about five years of a decision to acquire such a capability (10 years in the case of Iraq). During several of those years, the U.S. might not be aware that such a decision had been made."[7] Following the report, the North Korean launched the *Taepo Dong-1* long range ballistic missile over Japan. As a result, Congress passed a series of measures committing the U.S. to deploy a national missile defence "as soon as technically possible," which by then was being slated for 2005. Democrats dropped their opposition both to avoid being cast as soft on the North Korean threat, and in return for a renewed commitment on arms control. The bill, titled *National Missile Defense Act*, was passed with 97 votes in the Senate, and 317 votes in favor (105 against) in the House. [8] The act, as well as the Rumsfeld report and the North Korean launch, galvanized support for missile defence.

The attacks on September 11th 2001 produced a massive shift in public and political attitudes towards national security. As Bertel Heurlin argues, 9/11 demonstrated the vulnerability of the American society and created enormous pressure on U.S. officials to

address new and emerging threats.[9] In 2001, Congress allocated roughly $5 billion to BMD programs, followed by a 61% increase in 2002.[10] The 9/11 attacks galvanized domestic political support for active defences and provided sufficient justification for Bush to defend withdrawal from the ABM treaty.

Some skepticism remained, however, especially over the proposed BMD deployment in Poland and the Czech Republic. In June 2007 the U.S. House of Representatives passed legislation reducing funds in the fiscal year 2008 defence authorization bill for construction of the interceptor missile sites in Poland and for deployment of the X-band radar in the Czech Republic. The U.S. Senate Armed services Committee, for its part, decided to delay funding for the European BMD sites. In its report on the defence authorization bill, the committee cited Russia's opposition to the East European deployments and indicated that funding for deployment should follow talks between the two governments.[11] When Barack Obama came to power he quickly removed the two sites and re-launched a new round of disarmament discussions with Russia. The system proposed by Obama was renamed the European Phase Adaptive Approach (EPAA). It contains four phrases of deployment (described in annex one) and is based on the *Aegis* naval system designed to protect Europe and the North American continent from missile launch by states such as Iran and North Korea.

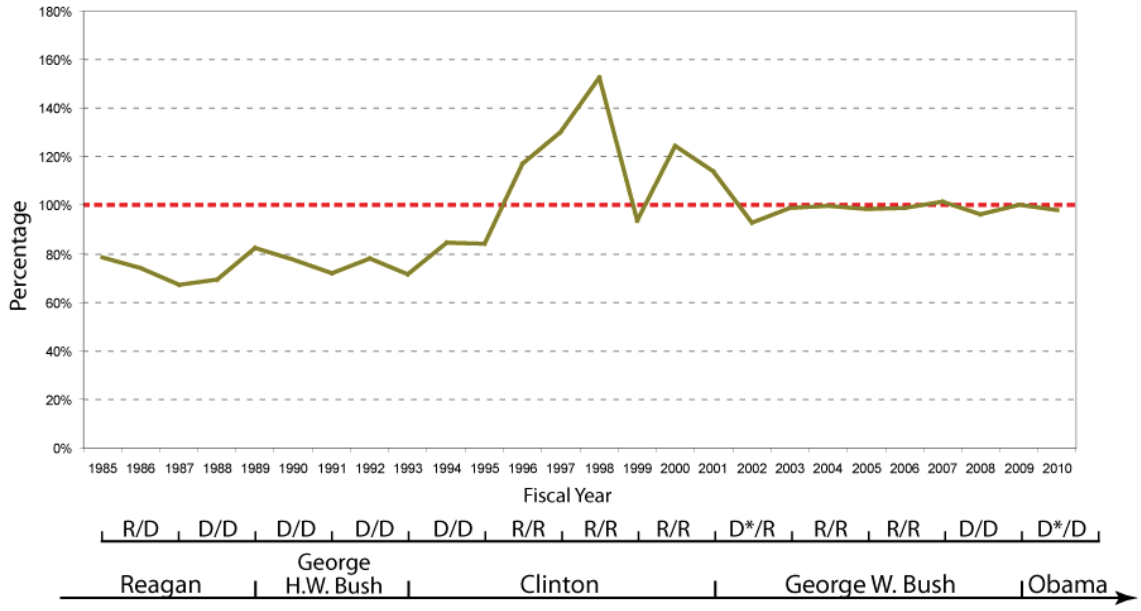
Figure 4.1: BMD: Percentage of PB vs. Appropriations – FY 1985 – FY 2010



Source: Steven A. Hildreth and Amy F. Woolf, "Ballistic Missile Defense and Offensive Arms Reductions: A Review of the Historical Record," *Congressional Research Service (CRS)* (2012): 19.

Figure 4.1 and 4.2 provide additional evidence of the current bi-partisan consensus on missile defence in Washington. Figure 4.1 illustrates the growing bi-partisan financial support of BMD over the years. The graph demonstrates how, since 2001, the request for funding (the President's Budget, or PB), has closely matched the actual appropriation for the system. It shows how the House, the Senate, and the oval office have very little disagreement regarding the spending on, and the deployment of, missile defence systems. It is a much different picture than the clear disconnect between the President and Congress during the SDI and GPALS period (1985 – 1994). The graph also illustrates how the bi-partisan consensus on missile defence (and increased spending) began with the Rumsfeld report, 9/11, and the abrogation of the ABM Treaty. We can see from the year 1995 to 1997 how it was the Republic House and Senate who appropriated much more funding to missile defence than the President intended to in the first place.

Figure 4.2: BMD: Percentage of PB vs. Appropriations



Source: Steven A. Hildreth and Amy F. Woolf, "Ballistic Missile Defense and Offensive Arms Reductions: A Review of the Historical Record," *Congressional Research Service (CRS)* (2012): 20.

Figure 2.2 illustrates more directly the bi-partisan support of BMD no matter which party controls the White House, the Senate, or the House of Representatives. The first row at the bottom of the graph shows which party had the majority in the Senate and the House of Representative respectively. From 1985 to mid-1987, the Republicans had control of the Senate, whereas the Democrats controlled the House of Representatives and so on. The graph shows the percentage of the PB that has been accepted by Congress and allocated to missile defence. From 2002 to the 2010, the ratio of PB vs. appropriation is almost the same, illustrating the bi-partisan consensus on missile defence. The Clinton years are a salient exception. Congress increased its spending on missile defence (appropriation) despite the actual requests of the Clinton's government (PB).[12]

In sum, the 1998 Report by Rumsfeld, the 1998 missile launch by North Korea and the events of 9/11 have all combined to produce robust domestic support. However, Congress has recently decided to reduce funding for the EPAA system and the numerous cooperative ventures with its allies, including the MEADs system with Italy and Germany and the Arrow and Iron Dome system in Israel.[13] However, for the moment the support for a limited BMD system targeted at Iran and North Korea still remains and there is nothing

in the foreign policies of these states that will likely shift these preferences.

The brief history above clearly demonstrates a clear and consistent increase in political and domestic public support for BMD protection in the face of missile threats, balanced by a preference for arms control and disarmament (outlined in the previous chapter). In essence, and in direct contrast to the expectations of almost all BMD critics, we have witnessed a stable transition from Cold War strategic stability to a new BMD paradigm that has avoided major power conflict and tension.

4.2 International Support for BMD

Prior to the early '90s there was actually very little international support for missile defence by U.S. allies. Missile defence was generally perceived as dangerous because it undermined nuclear deterrence, the technology was underdeveloped and prone to failure, and the price tag too high.[14] The same two events that played such a role in solidifying U.S. domestic support for BMD (1998 missile launch by North Korea and 9/11) also spurred international support for the program. Perhaps the most important events to increase international support for missile defence were the 1991 Gulf War, in which multiple SCUD attacks were directed at Israel from Iraq, and the launch of the *Taepodong-1* ballistic missile by Pyongyang over Japan in 1998. Proliferation was no longer being viewed as a gradual process that would provide advance warning as new missile states developed their capabilities. India and Pakistan tested their nuclear capability that year, adding two more nuclear powers to the equation. Moreover, 1998 saw the collapse of the inspection regime in Iraq, leading to operation Desert Fox and the bombing of suspect sites in Iraq.[15] U.S. allies in the Middle East and Europe began to fear a nuclearized Iraq and demanded U.S. involvement to find a resolution. The 1999 *Missile Defense Act*, in part, stipulated how the U.S. would provide financial support to any ally interested in developing a missile defence system.[16] Italy, Germany, Australia, Japan and Israel were among those allies requesting support.

This was the important message behind the Rumsfeld commission report: states like Iran, Iraq and North Korea could very well be developing their missile capabilities

without clear evidence until testing, as was the case of North Korea. Prior to 1994, Japan had continuously refused to participate in bilateral discussions of missile defence,[17] but officials became far more interested in deploying a theatre missile defence system in response to North Korea's missile launch. Since then, multiple cooperative ventures surrounding missile defence began to emerge, to be described in more detail in section 4.2a.

However, it took a little time for NATO allies to embrace U.S. missile defence plans. Prior to 2002, many allies considered BMD to be destabilizing, for reasons tied to strategic stability.[18] The consensus within NATO in the late '90s was that missile defence was a bad idea, because the U.S. presented BMD as a *fait accompli* without concerns for allied reactions, it was a technological solution to a political and a diplomatic problem (the rogue states), and the quest for 100 percent security was as futile as it was possibly destabilizing.[19] Charles Grant summarizes the argument critics were making:

> Europeans are more sanguine than the Americans about the potential threat: North Korea is a long way from Europe, while Iran seems to be becoming democratic. Second, they regard the ABM Treaty as a cornerstone of international disarmament agreements, and they do not want the U.S. to provoke the Russians by disregarding it. Third, if NMD prompted Russia and China to improve their ABM systems, the British and the French deterrents could be devalued. Fourth, they worry that if the U.S. had NMD, and Europe had no equivalent, their security could be "de-coupled:" rogue states might try to blackmail Europe rather than the U.S.[20]

In an effort to prompt a broader consensus on missile defence internationally, Bush sent several senior officials to Europe in 2001 to explore the issue raised by NATO allies. The delegation was led by Deputy of Defense Secretary Paul Wolfowitz. Moreover, similar trips were planned for Moscow to open channels of communication on BMD with Russian officials.[21] As a direct result of these efforts, Moscow agreed to negotiate the 2002 NATO territorial agreement on missile defence,[22] which, among other things, allowed for the development of a limited BMD system for Europe.

Other events further challenged the critics' case against BMD. On August 14, 2002, it was revealed that Iran was building two new nuclear sites.[23] The IAEA demanded access to the sites, which was granted in 2003. Their report stated that Iran had failed to meet its obligations, under the Safeguards Agreement, to disclose any enrichment of uranium imported from China,[24] although diplomatic missions led by France, Germany and Britain

did not yield the desired results. When Iran began building a heavy water nuclear reactor in 2004 (described by experts as a "plutonium bomb factory"[25]), and then declared in 2006 that the regime had successfully enriched uranium, concerns were further elevated.[26] The specter of a nuclear Iran reduced significantly the aversion to missile defence in Europe. The following section discusses 8 cases of cooperation on BMD.

4.3 Cooperation on BMD

Whereas BMD was decried internationally during the cold war, the current level of cooperation surrounding missile defence is unprecedented and demonstrates the international acceptance of missile defence. However, talk of cooperation surrounding missile defence did not begin until recently. At the United Nations (UN) in January 1992, Boris Yelstin, the Russian President at the time, proposed the possibility of modifying the Strategic Defense Initiative (SDI) in such a way as to take advantage of Russian technology, and in so doing Washington and Moscow could build together a joint Global Defence.[27] U.S. President H. W. Bush did not accept the proposal, but this event was a precursor to the cooperative talks that would surround the GPALS and EPAA systems.

The 2010 *Ballistic Missile Defense Review* acknowledges the increased desire of allies to join missile defence and the burden-sharing it entails. It states:

> Other allies already own or are working with the United States to acquire specific capabilities, such as naval vessels equipped with the Aegis defensive system that could be adapted to include a missile defense capability. . . . A primary U.S. emphasis is on ensuring appropriate burden sharing. The Administration recognizes that allies do not view the specifics of the missile threat in the same way, and do not have equal resources to apply to this problem, but there is general recognition of a growing threat and the need to take steps now to address both existing threats and emerging ones.[28]

There are over 20 bilateral and multilateral efforts between the United States and other countries on missile defence. All of these systems are being deployed in zones where the United States would have desired a system of its own. It further increases the efficiency of missile defence and further increases the pressure on North Korea and Iran to rethink their proliferation scheme. What follows is a list of current cooperative efforts surrounding BMD.

Case 1 - Multilateral Cooperation and the Medium Extended Air Defence System (MEADS)

This BMD project is pursued trilaterally between the United States, Germany, and Italy. It is designed to be a mobile terminal phase theatre missile defence system which is to complement deployed American and European troops. The MEADS Design and Development Memorandum of Understanding was signed in September 2004 between Italy and the U.S., whereas the Germans joined in 2005. Deployment of the system was planned for 2014.[29] The target of MEADS is similar to EPAA and the NATO BMD, namely the emergence of amorphous missile threats from the developing world. Italy had been the target of SCUD attacks from Libya in 1986 wanted added protection for the future, and Germany feared that the U.S.'s extended deterrent commitment would eventually wane, especially after the attacks of 9/11.[30]

The U.S. interests in MEADs are twofold. First, Washington is concerned with the threat of Iran and its Shehab-3 missile (and its development of Shehab-4) to U.S. troops deployed in Europe. Second, the Department of Defense, via MEADS, is fulfilling its obligation under the 1995 Ballistic Missile Defense Act, which stipulates that the U.S. would provide technological assistance to allies seeking BMD technology.[31] However, the deployment of MEADS is uncertain at the moment. Congress has scrapped the Obama administration's request of $400 million to complete funding for testing of the new BMD system. The White House has threatened to veto the defence spending bills for FY2013 over the issue.[32] At the moment, the stance of Congress seems to be a maneuver to ensure that Italy and Germany will fulfill their agreement on cost sharing. Or, Congress believes the EPAA is sufficiently funded, and existing funding is sufficient to cover its engagement regarding missile defence with Italy and Germany. The cooperation so far on the system, however, remains high.

Case 2 - Bilateral Cooperation and U.S.-Israel Development of the Arrow System

Israel's push for a BMD system was primarily the result of sustained SCUD bombardment of its population centers by Iraq in 1991, and the threat that they could be armed in the future with nuclear or chemical warheads.[33] Moreover, Syria (with 600 missiles) and Iran (with the 1,400 km range Shehab-4) all possessed the means to strike Israel.[34] Israel sought to protect not only its population centers, but energy and economic

centers as well, as the 1991 strikes had caused significantly more disruption to the economy than they did loss of life.[35] The Arrow promised also to protect airfields, military depots, and staging areas from enemy attacks at the beginning of a conflict.[36] Israel sought active defence because, with its rear areas vulnerable to ballistic missiles, it had lost its escalatory dominance, and Israel did not want to be compelled to take pre-emptive action.[37] Israel turned to Washington for the funding of their program. The U.S. accepted to share technology and the cost burden with Israel on May 28, 1996 through the 1996 Presidential Determination memorandum. Most of the interceptor and launcher developments are the responsibility of the U.S., though Israel would pay for the estimated 350 interceptors sought.[38] The first successful test intercept took place in June, 1994,[39] later followed by an interception test against a Shehab-3-like target in 2007.[40] Since its inception, the U.S. and Israel have conducted multiple joint BMD exercises, including the Juniper Cobra test.

Case 3 - U.S. and the Gulf Cooperation Council

Since 2005, the members of the Gulf Cooperation Council (GCC); Saudia Arabia, Kuwait, Oman, Qatar, Bahrain, and the United Arab Emirates, have explored a whole range of solutions, both collective and individual, to deal with the growing threat of Iranian missile capabilities. While searching for options, the GCC has shown interest in buying and deploying Washington's PAC-3 system. Kuwait and the UAE combined have requested 368 PAC-3 systems for a total of $1.4 billion. This amount also includes other missile technology requested unrelated to missile defence (including the GEM-T missiles). Moreover, Saudi Arabia has given two contracts to Raytheon for more than $100 million for air defence missile systems, which includes providing training, technical, and logistics support for the Saudi *Patriot* and HAWK air defence systems.[41] Added to the commitment of extended deterrence to many of these countries (especially Saudi Arabia), missile defence will provide adequate protection against possible missile strikes while halting any possible temptations to nuclearize.

Case 4 - U.S.-Japan Development of the Aegis and PAC-3 systems

Japan became interested by missile defence in 1998 following the launch of a long-range *Taepodong*-1 missile by North Korea over Japanese airspace. Japanese analysts at

the time believed the missile to be capable of carrying a 1,000kg nuclear, chemical, or conventional warhead.[42] A TMD system was agreed upon between Washington and Tokyo, and its first iteration was deployed in 2009 in order to counter an anticipated Taepo-Dong-2 launch from the DPRK. The system consisted of two PAC-3 batteries in Honshu and two at the Ministry of Defence in Tokyo (of its 18 batteries total), as well as five Aegis BMD-capable destroyers deployed at sea (in addition to five US Aegis cruisers deployed in the region).[43] Moreover, Japan is contributing financially to the development of a new missile, the SM-3 block IIA. The prototype is expected to have a greater velocity, and range, than the current SM-3 interceptor. So far, Japan has completed one intercept exercise off the coast of Hawaii with success using the Aegis Destroyer Kongo.[44] As of 2011, the Japan Maritime Self-Defence Force (JMSDF) has operated four Kongo class destroyers upgraded with Aegis capability.[45] The upgrade allows the JMSDF to fulfill its commitment to its New Defence Program Guidelines, which demands the deployment of six Aegis BMD-equipped ships to defend the country from ballistic missile threats, in conjunction with U.S. Navy warships.[46] Japan has long used nuclear energy as its main source of electrical power and is one country who has explicitly stated it might seek to transform its nuclear know-how into a nuclear deterrent if other means to oppose a nuclear North Korea were not found.[47] So far, they have not developed nuclear weapons, and likely will not in the near future. The latest blunder by North Korea while testing a new ICBM, and the current success of the Aegis and PAC-3 system combine to explain their decision.

Case 5 - U.S.-Australia Cooperation on BMD

Australia made its plan to develop a missile defence system to counter ballistic missile and WMD proliferation official in 2003. That year, Prime Minister Canberra signed a bilateral memorandum on naval warfare with Washington, which set the stage for closer technology and communication cooperation, and preceded the 2004 memorandum of understanding that defined U.S.-Australian cooperative effort for missile defence over the next 25 years,[48] though this agreement is still at the discussion stage. Whether the Australian early warning sensors located at Pine Gap and the ground-based *Jindalee* radar could be used as part of a missile defence system is still under review. It is also possible that Australia may wish to deploy interceptors near Australian cities due to the increased threat of ballistic missile proliferation.[49] In 2007, Australia, Japan and the U.S. signed a

trilateral agreement to further missile defence research. One of the points under discussion was whether Australia could equip its navy destroyers, slated for deployment in 2013, with SM-3 interceptors.[50]

Case 6 - U.S.-South Korea Development of the Korean Air and Missile Defence (KAMD)

South Korea has been discussing missile defence since 1998 and the North Korean missile launch. The KAMD is to be controlled by South Korea, while the United States will provide the intelligence data and the missile detection technology.[51] Moreover, the system is expected to combine other U.S. and South Korean technology, including the PAC-2 Patriot missiles, the medium-range Cheolmae-2 surface-to-air missiles, the Hyunmu-3 cruise missiles, the Aegis destroyers from South Korea, and the USFK's Patriot missiles and surveillance system in a system set to be different from the U.S-Japan missile defence system.[52] The PAC-2 and PAC-3 systems are to be used as the basis of a defence against the threat of cruise missiles launched from North Korea.[53] South Korea has agreed to build six 5,600-ton KDX-IIIA Aegis-equipped destroyers for roll-out in 2019 to complement the three *Sejon-Daewan* KDX-III Aegis destroyers that are presently in service (2012).[54] The system will be able to use both land and sea interceptors against any ballistic missiles launched from North Korea. Therefore, with the capabilities provided with a missile defence system, South Korea should have the desired protection without continuing its proliferation of offensive missile technologies, advances that have already been opposed by China and Japan.

Case 7 - NATO BMD and the European Phased Adaptive Approach (EPAA)

At the 2010 Lisbon Summit, NATO stated its intention to deploy a missile defence system to deal with the increasing threat of ballistic missile proliferation:

> The threat to NATO European populations, territory and forces posed by the proliferation of ballistic missiles is increasing. As missile defence forms part of a broader response to counter this threat, we have decided that the Alliance will develop a missile defence capability to pursue its core task of collective defence. The aim of a NATO missile defence capability is to provide full coverage and protection for all NATO European populations, territory and forces against the increasing threats posed by the proliferation of ballistic missiles, based on the principles of the indivisibility of Allied security and NATO solidarity, equitable sharing of risks and burdens, as well as reasonable challenge, taking into account the level of threat, affordability and technical feasibility, and in accordance with the latest common threat assessments agreed by the Alliance.[55]

Although the statement promises something akin to a national missile defence system, the capabilities of the system are closer to theatre missile defence systems, mostly built to protect soldiers in the field from short range ballistic missiles and cruise missiles. The system is using the same development and deployment strategy used for the NMD and GMD system (which was then called spiral development); the system will field an interim capability and will continue to improve as new technologies and assets are made available. In May 2012, it was announced by NATO that the system had reached this interim capability and was currently operational.[56]

Table 4.1 illustrates the level of cooperation between the NATO allies on BMD, and also who shall provide what with regards to the system. As the table shows, this level of cooperation on strategic issue is unprecedented. More apt similarities would be the nuclear sharing agreement between the U.S. and NATO in the 1960s. However, the nuclear warheads and missiles were all supplied by the United States to be used under a dual-control system with the allies (and some, like France, were not included in the venture until late into the Cold War).[57] Under the current agreement, the allies are providing money and technology to the system. This type of cooperation demonstrates the value of missile defence.

The contribution of the United States to the system is the European Phase Adaptive Approach system (EPAA), the sea-based BMD system developed by the United States using the Aegis system. The system is designed to deal with short- and intermediate range ballistic missile threats from Iran and North Korea to U.S. assets, personnel, and allies.[58] The EPAA is also fully funded by the United States. Annex three shows the current capabilities and projected capabilities of the system.

Table 4.1: BMD Cooperation within NATO

Countries (including NATO as a whole)	Involvement
NATO	Missile Defence Architecture Analysis. Working with ALTBMD to demonstrate connectivity between NATO and U.S. missile defence systems.
Czech Republic	BMD Framework Partner: RDT&E Cooperative Projects
Denmark	BMD Framework Partner; Thule Upgraded Early Warning Radar
France	Missile Defence Discussions
Germany	PAC-3
Italy	BMD Framework Partner
Netherland	PAC-3, Maritime BMD studies
Poland	Agreed to host Aegis Ashore
Romania	Agreed to host Aegis Ashore
Spain	Hosting BMD-capable ships to support NATO BMD and other missions
Turkey	AN/TPY-2 radar host
UK	BMD Framework Partner; Fylingdales Upgraded Early Warning Radar, Joint Project Arrangements for Cooperative Projects.

Source: Missile Defense Agency, "International Cooperation: Europe" http://www.mda.mil/system/international_cooperation.html (assessed July 2nd, 2012)

In 2009, Presidents Obama and Medvedev had agreed to cooperate on the European missile defence shield through transparency talks and possible technology transfers.[59] The issue is still ongoing but one of the main points of contention is the target of the system. While the U.S. has been transparent regarding the intended targets of the EPAA (namely Iran and North Korea), Moscow has disagreed with this perspective numerous times and claimed Washington sought to undermine the Russian nuclear deterrent.[60] Any serious examination of the technology behind the EPAA disproves this assessment. However, Russia has very little to offer considering the state of its radar system, which means they have little leverage to bargain with the United States on concessions they would like to see (such as dual control of the system, which Washington has refused). The next section uses this failed cooperative effort between the U.S. and Russia on missile defence to illustrate how missile defence per se is not causing the instability between the two ex-rivals.

Case 8: Washington, Moscow, NATO and BMD

The counter case to the current flow of cooperation on missile defence is, without surprise, between the Russian, the U.S. and NATO plans of deploying missile defence in Europe. The whole project began under optimistic tones, but the Russians are now claiming that the system is undermining its nuclear deterrent. It has been the most-often heard critique on BMD aside from the fear of another arms race. Many observers believe that the issue between Washington and Moscow is one of threat perception: the Americans claim that the system is aimed at Iran and North Korea whereas in Moscow, the missile threat is believed to come from the United States. Russia is building its own defensive systems geared towards the U.S. and NATO, whereas NATO and the U.S. are building their defence against Iran and North Korea.[61] Russian Foreign Minister Sergei Lavrov recently declared in Beijing that the U.S. and NATO BMD system was an "attempt by some states to ensure security at the expense of other states."[62] This rhetoric is gaining traction in the mainstream media and amongst policy analysts, but it does not withstand close scrutiny.

First, the Russians have already admitted that the first two phases of the EPAA system -- the deployment of the three Aegis BMD ships in the Mediterranean Sea and the North Sea to cover southern Europe, and the twenty-four Aegis Ashore land-based interceptors in Romania -- do not concern them, and did so numerous times.[63] What Russia is concerned with is the fourth phase of the system, in which interceptors will be placed in Poland and Romania. The fourth phase is planned for 2020. However, financial considerations are eroding this argument. The current budgetary deficit in the U.S., which is curtailing strategic force modernization programs, and current efforts to reduce spending on BMD programs, makes it implausible.[64]

But for the sake of argument, let us imagine that the system continues as planned, without budgetary cuts.[65] Technologically speaking, even at phase four, the system does not threaten Russia. In a recent article, Dean Wilkening makes a very convincing case that under phase four, the EPAA system's footprint is not large enough to pose a threat to the Russian deterrent. The footprint of the system is the area in which a missile can be stopped. Currently, the Spy-1D radar used as part of the EPAA system cannot track Russian missiles

in or around Europe. However, Wilkening believes that the U.S. will have the capability to track Russian missiles by 2020. Notwithstanding this possible advance in the footprint of the system, it will not overlap the United States, which means it would be physically impossible for an SM-3 interceptor launched from Poland travelling 5km/second to intercept a Russia ICBM heading towards the United States. This would only be feasible if the interceptor would be launched from the sea. However, estimates show it would be very difficult for the Aegis system to make the intercept even if it was located off the coast of Iceland. Wilkening concludes that, "It appears, then, that BMD interceptors with speeds below approximately 5.0km/sec launched from sites in or around Europe cannot intercept Russian ICBMs or SLBMs without violating the laws of physics [...] Moscow's concern with phases III and IV of the European Phased Adaptive Approach BMD architecture, therefore, lacks technical merit."[66] In sum, technologically speaking, the Aegis system cannot stop Russian missiles. Moreover, Russia has an extensive ICBM arsenal complete with sophisticated countermeasures, which can easily overwhelm any conceivable EPAA system.

Third, recent reports are now making the case that the threat posed by Iranian ballistic missiles is slowly being understood by Moscow. Many analysts have cited the leaked diplomatic cables summarizing the December 2009 U.S.-Russian joint threat assessment meeting to demonstrate how government officials on both sides are in agreement that the Iranian Shehab-3 represents a threat to the continental U.S. Moreover, the officials also agreed that the Iranian Sajji-2 surface-to-surface missile, a solid-fueled propelled ballistic missile, could reach a distance of 2000km and deliver a payload of 700 to 1000kg.[67] When taken together, the concerns of the Russians are either unfounded, or have been made moot by either the technological capability of BMD, or by the acknowledgment that the threat posed by Iran to the U.S. is not a sham. What, therefore, motivates the current Russian stance?

There are many possibilities, but two that stand out. First, the intensity of Russia's opposition to missile defence is based on domestic political concerns rather than threat perception. Pavel Podvig explains:

> As it turns out, missile defense is a very personal subject for the Russian president, who spoke passionately about it during his recent campaign. This passion, however, serves a very pragmatic

> political purpose: It paints a picture of Russia as under siege, which helps deflect challenges to the legitimacy of the Russian political system. As such, there is little incentive for the current Russian leadership to change its position on missile defense, and it is no surprise that Russia has been consistently dismissive of recent -- though admittedly limited -- attempts by the Obama administration to demonstrate that US defense does not have the capability to counter Russian missiles. Russia wants to keep the controversy alive, not to resolve it.[68]

In such an environment, there is little that the U.S. can do above what they have done so far. Aside from making compromises the Russians could not refuse without losing face (making the system dual control for example), the U.S. should continue to engage the Russians on the international stage, continue to make the capabilities of the system as transparent as possible, and clearly demonstrate how current BMD systems in Europe are aimed at Iran and North Korea.

Second, the Russians are more likely to be afraid of U.S. encroachment into states in its sphere of interest and influence, namely Poland and Romania. Moscow has always responded harshly to any attempt made by NATO to increase its foothold in Eastern Europe. The recent case of Georgia and the display of force made by the Russians at the time is a case in point.[69] Russia will continue to threaten the missile defence system in Europe, and continue posturing launches as long as they believe they might stall the U.S. deployment of the system. Again, it might be best for the U.S. to continue its confidence-building measures, continue its diplomatic effort with Moscow, propose joint threat assessment ventures and deploy its system nonetheless.

4.4 Summary of Cooperation and Conclusion

Nuclear weapons have been used in the past as part of intra-alliance bargaining, a level of bargaining that usually results in deeper interoperability and integration between allies. President Eisenhower made the decision in 1957 to share nuclear technology with the NATO allies because his administration wished to reduce the U.S. defensive effort in Europe to make U.S. disengagement possible while maintaining deterrence against the USSR; disengagement required a policy that would reassure the European allies of the U.S. security guarantees.[70] The strategy called for the deployment of large amounts of tactical nuclear weapons in Europe with shared control of the weapons with NATO allies.[71] This strategy led to deeper strategic relations with Britain as a result, to the point where the dual control system that had been implemented to control the nuclear weapons was

barely used.[72] Both states found benefits in this trade off. Moreover, although Britain and the U.S. already had good relations, it further developed the interoperability of their forces. Today, the prospect of the U.K. and the U.S. to be potential rivals is seen as impossibility.

BMD as a cooperative venture has similar benefits. For example, the BMD system under development is in part a compromise between Seoul and Washington on the potential range of ballistic missiles owned by South Korea. Under a 2001 agreement between the two countries, Seoul has been banned from developing missiles with a range higher than 300 km and a yield of 500kg. Since North Korea has been developing technology to launch missiles to greater ranges, South Korea has repeatedly demanded from Washington the possibility of developing a 1000km range missile.[73] By agreeing to join missile defence, South Korea may be able to develop the long-range ballistic missiles it has sought for some time. For the United States, they increase the foundation of their sensor/shooter (interceptor) mix by increasing the footprint (that is, the area of interception) to counter the threat of North Korea.[74] The same can be said about Japan and Australia for example. As for NATO, by providing the main system for the BMD venture, the United States makes good on their security promises while creating expertise on the use of its system, and partners to reduce the cost of research and deployment.

The next chapter will focus on a contentious case of intra-alliance bargaining surrounding missile defence by explaining the Canadian involvement in missile defence. The Canadian case is anomalous when compared with the record of cooperation outlined above. Admittedly, there has been more cooperation between Russia and Washington on BMD than between Washington and Ottawa. The next chapter will assess this paradox and demonstrate how the Canadian case is not as anomalous after a careful analysis.

Chapter 5

The Anomalous Case of Canadian Involvement in BMD: A Subtle Yes

On February 24, 2005 after two years of negotiation that at one time indicated Canada might for the first time join the United States on a bilateral missile defence system, Paul Martin announced Ottawa would not take part in BMD. He declared "Let me be clear: we respect the right of the United States to defend itself and its people" and added how "Canada remains steadfast in its support of NORAD" but nonetheless revealed Canada did not want to be involved.[1] Many observers agree Martin had very little options on the matter. Although he came to power expressing an interest on missile defence, stating "if somebody is going to be sending missiles over Canadian airspace, we want to be at the table," but this decision would have to be taken with "full input" from Canadians, Martin still said no Washington.[2] Moreover, Martin took in position in 2003 with good will towards missile defence, which he considered a mean of improving defence cooperation with the United States following the Canadian decision to refuse to participate in the 2003 war in Iraq, a decision that had strained the relationship between Washington and Ottawa. In other words, missile defence would be a good start towards fixing the relationship.[3] In the end, the Canadian government still said no to its most important ally.

Within Canada, the reactions to the decision were split. Many in government, academia, and activist circles believe Martin's negative response was the right thing to do. More specifically, they argued the Canadian no meant no to an arms race in space, high cost for a deficient system, and most of all no to George W. Bush's brand of foreign policy.[4] However, perhaps the most inflammatory conventional wisdom stemmed from those who thought Canada should have said yes to missile defence; yes to a better relationship with Washington, yes to the survival and continued relevance of NORAD, and yes to being involved in the decision-making process if a ballistic missile is launched at North America.[5] Saying no, according to this conventional wisdom, was a terrible blunder by Canada. James Fergusson qualified the decision as "the worst military decision ever

taken by any Canadian government."[6] He was not alone in this assessment. Michel Fortmann, strategic studies specialist at l'Universite de Montreal, argued in front of the House that saying no to missile defence was in fact saying no to Canadian sovereignty over North American security concerns. The no to missile defence would ensure the U.S. would take "charge of defending Canada as if it were part of their territory. Is this what you want? Do we want to become a Liechtenstein or a Principality of Monaco?"[7] Not only would the decision to say no to BMD strain further the relationship with Washington, according to Lieutenant-General George E.C. Macdonald it meant that "Canadians therefore will be denied positions previously shared by both nations and moreover be excluded entirely from missile warning and defence."[8] In sum, Canada would lose its sovereignty on security affairs by saying no to missile defence.

Roy Rempel summarizes the argument made by the critics, and the potential downfall of the Canadian decision, succinctly when he states:

> What Ottawa said no to was the political process that it itself had initiated. In doing so, it forfeited any role in the further development of BMD. It also abrogated any right to a role in potential launch decisions. In essence, Ottawa signaled Canadian ambivalence to a matter, which in Washington, was perceived as a key issue for the defence of North America…whatever its domestic merits, this decision (to say no) has significant negative implications for Canada's national security policy. It leaves the United States to take all decisions on missile defence unilaterally. Even if missiles are heading towards Canadian cities, whether deliberately or through error or malfunction, the absence of Canada from BMD chain of command gives it no say in decisions whether to try to shoot them down. The fact that such a strategic posture could be adopted based on transient domestic political considerations shows how entirely Canada lacks a "strategic culture" that takes national interests seriously. The broader political repercussions of this decision for Canada are even more unattractive that its immediate strategic consequences. That such a major decision to opt out of BMD could be made in a way so offensive to our main ally, on the basis of such transparently weak excuses, sent the message to Washington that the Canadian government was simply not to be trusted on major defence issues.[9]

Historically, Canadian officials have tried to avoid making clear decisions on bilateral missile defence to avoid two undesirable outcomes: alienating its most important ally, and because Parliament was clearly divided on the policy.[10] Canada has always been wary of high-level bilateral security cooperation with the United States for fear of losing its sovereignty on a critical issue.[11] But by adopting this approach, Canadian officials have relegated NORAD to obsolescence.[12] At first glance the decision made by Canada is truly puzzling, and potential hazardous for Canada in its relationship with the U.S. moving forward.

Why did Canadian officials elect to support the NATO BMD programs but rejected any bilateral and/or bi-national negotiations with Washington on continental BMD for North America?[13] Why have Canadian officials recognized the value of missile defence for European and U.S. territory but refuse formal commitment to work with Washington to enhance the protection of the Canadian territory? Paradoxically, there is arguably more cooperation between Washington and Moscow on BMD than there is between Ottawa and Washington. Why? According to my theory, policy makers would not want to limit the options they have to deal with the new strategic environment. The case of Canada, if we agree with the aforementioned comments, goes counter to the argument I make throughout this thesis.

The argument I outline challenges the conventional wisdom. The Canadian decision to say no to direct participation was a strategic decision made by the Martin government. The Liberal government played a successful two level game by signing the NORAD agreement on early warning radars (a subtle yes to missile defence) while saying no domestically to satisfy the Canadian constituencies and elected officials.[14] Martin's government was able to appease the controversy at home over the issue, and by making other concessions to the United States on top of the NORAD agreement—adding more defence spending in the budget, agreeing to the Kandahar mission, agreeing to deeper collaboration and investments on boarder security issues, and supporting the Bush government when it sold BMD to the NATO allies—the Martin government was also able to appease the Americans by showing Canada was serious on security issues, and that it could be a trusted partner over defence issues. The case made by the artisan of the conventional wisdom has been overstated from the beginning. The scenario they etched did not happen, and the collaboration between NORAD and NORTHCOM on missile defence issues does not stop at the intelligence phase. Canada, in sum, would not be "kicked out" of the room during the intercept decision if a ballistic missile is launched against North America like many have argued. Thus, Canada does not go against my argument. They collaborated bilaterally and multilaterally on missile defence, but did so the way they did because of powerful domestic considerations.

The subtle yes to missile defence is the result of many interrelated factors that forced Martin's hand. Namely, the divided domestic climate on the issue, Martin's divided caucus on the question, the fact that Martin had a minority government at the time, and the statements by both President Bush and Frank McKenna, former Canadian ambassador to the U.S., who forced Martin to expedite his decision on missile defence to prevent a massive political fallout for his government. I will discuss these elements in the following order: first, I will discuss the domestic and political climate Martin had to contend with. Second, I will discuss the way in which Martin gave a subtle yes to missile defence. Third, I will provide evidence against the case of the critics showing how the U.S.-Canada security relationship is still strong, and how their assessment of a no to missile defence was overstated. The conclusion will bring the sub-section together.

5.1 The Domestic and Political Background to the Decision

Many observers have made the claim that the Martin government was never that interested in missile defence because they never took the time to fully explain the system to the Canadian population. Since there was no indication that an operational GMD system would require any component to be stationed on Canadian territory, that weapons in space were a myth at the time, and that the Canadian contribution to the system in term of monies would be minimal, it should have been possible to overturn public opinion.[15] According to Pierre Martin "how difficult would it have been to defend a cost free decision of no real global strategic consequence (Canada's decision, that is) in the name of maintaining good relations with the country's most important ally and economic partner, when about 90 per cent of all Canadians, including Quebecers, agree that it should be an important goal of Canada's foreign policy?"[16] If the leadership had been interested in the process, then approval from the House of Commons could have been secured.[17] Paul Cellucci, the former American ambassador to Canada, made a similar argument stating he was convinced "that with leadership from the prime minister, making the case that participation in missile defence was in Canada's security and sovereignty interests."[18] Bill Graham, former Foreign Affairs and National Defence minister, went in the same direction in an

interview he gave to Janice Stein. Graham explains "to have done BMD would have required investing some political capital, to use that overworked phrase. It was never very popular. It required a pretty sophisticated explanation of what it is we would be doing. This was something that would have required the Prime Minister's personal leadership to say 'Well, this is the right thing to do and we're going to do it.'"[19] Former Canadian ambassador to the United States Allan Gotlieb also came to a similar conclusion. He argued that it was "generally held that the program was unpopular in Canada and in the Liberal party, but no one ever tried to explain it to the people."[20] This lack of effort can be seen in Martin's decision to leave Bill Graham alone to sell the BMD project, which in turn showed very little faith for the actual BMD effort.[21] This argument, however, discards very important variables and events that explain the delicate situation faced by Martin.

This assessment dismisses some important evidence. Martin had shown some interest for missile defence early on. When he took office in 2003 he had the firm intention of normalizing relations with Washington and he believed missile defence would be one way to achieve this. In 2003, as part of his interest in BMD, Martin appointed David Pratt, who is known as a supporter of the Canadian military, and a proponent of missile defence, as the new minister of National Defence. Pratt quickly opened the channels of communication with Donald Rumsfeld, the former U.S. Secretary of Defense, requesting formal negotiations regarding a possible participation in the GMD system.[22] With the support of the Privy Council Office, both Foreign Affairs and National Defence agreed on negotiation on missile defence and in January 2003 led a delegation to the Missile Defense Agency. DND would later submit a Memorandum to Cabinet recommending the start of negotiations on possible participation.[23] There was a certain willingness from the Martin government to negotiate on the issue from the beginning. It is not to say Martin was ready to say yes and he was only waiting for some specification to agree to join. However, to argue there was no political will to agree to missile defence is misguided. It is important to take into account the political climate in Canada to understand why the negotiations on missile defence took the turn they did and led to a subtle yes instead of direct participation.

The case underestimates the strength of the Martin government at the time. Martin went into the 2004 election hoping for a majority government. However, events such as the Ad scandal in Quebec greatly undermined the credibility of the Liberal government. Martin was re-elected, but he was re-elected with a minority government. This has important ramification for the missile defence decision. In fact, Martin knew the issue was polarized and contentious with the Canadian constituency, and he had told the Americans he would push the issue until after the elections.[24] It was a good strategy at first. If Martin had won a majority government, he would have been able to negotiate a GMD agreement with the United States the way he would have more or less wanted. With a minority government, however, he had to negotiate with the opposition parties in order to get anything done, and missile defence was unpopular with two of the parties (BQ and NDP), and the Conservatives were ambivalent on the subject. Martin had to tread lightly.

Other factors influenced the Martin government's strategy. Canadians were divided on the subject, and the Liberal caucus was polarized. Moreover, the consensus on missile defence by the opposition parties disapproved of cooperation on BMD. And there was the Bush factor. The American president was highly unpopular in Canada at the time, and the opposition to missile defence was in a way a no to American foreign policy. With all of these factors combined, the task of selling missile defence to the Canadian politicians and citizens alike was far from easy, unlike Graham, Cellucci, Fergusson, or Gotlieb would make us believe. All four factors are discussed below.

5.1a Poor Ratings for Missile Defence in Canada

Missile defence did not enjoy sustained support in Canada. Polls shows that 52 percent of Canadians were against cooperation on missile defence in 2004, and this result increased to 54 percent in 2005. Moreover, only 34 percent of the population, by 2005, supported cooperation on BMD. Even more telling, following the announcement by the government that Canada would not participate in the missile defence project with the United States, polls showed that 57 percent of the Canadian population approved the

decision made by the government, whereas 27 percent of the population disapproved.[25] Moreover, at its peak, the opposition in Quebec reached 69 percent. Pierre Martin rightly points out that the disparity between Quebec and the rest of Canada should not be overstated.[26] However, these results are telling: Paul Martin faced a population that was mostly against the system. Considering Martin had a minority government at the time, and no doubt wanting a majority government in the future, taking an unpopular decision on missile defence was definitely a gamble. Things might have been different if his caucus and Parliament were behind him but they were as divided as Canada on the issue.

5.1b Division within the Caucus

Going into the 2004 elections, it was well known that Paul Martin wanted a majority government and that he did not want to create a revolt within his own party prior to the March 4th caucus meeting.[27] Martin knew that he would face a vote on missile defence during the party convention, and that he would have to face the anti-missile defence coalition supported by the Quebec caucus, the Women's caucus, the Liberal Youth wing, and most of the party's grassroots membership.[28] Moreover, most MPs in Quebec were against the proposal and Martin needed their votes if he wanted a majority government.[29] Martin could have whipped a vote on the issue in a majority government, but in a minority government he ran the risk of losing his support base.

In fact, in 2003, 38 Liberal MPs has voted against a motion put forward by the Canadian Alliance in favor of participating to BMD.[30] This clearly demonstrates the unwillingness of many within the party to support missile defence. It was estimated by Patrick O'Brien, a Liberal MP, that two-thirds of the party at the time was against participation by 2004.[31] Moreover, the Young Liberals were planning to put forth a resolution opposing Canadian participation in BMD at the Liberal Party Convention in March 2005.[32] Such division within the party could possibly have been dealt with if the party had a majority government, but within a minority it was a more problematic. Additionally, Martin did not have the support of the House on missile defence.

5.1c Parliament and Missile Defence

The Martin government also had to compose with the fact that two of the opposition parties, the Bloc Quebecois and the New Democratic Party, were against missile defence. The Conservative Party was mostly ambivalent on the subject. With a minority government, Martin had a very narrow space to manoeuver on the issue, and a vote of non-confidence supported by all three opposition parties could have toppled the government. Paul Martin had initially decided to withhold any announcement concerning missile defence until after the 2004 election. As the 2004 election approached, and with it the possibility that the Liberals could be defeated over the Ad scandal,[33] Martin began a campaign that's main strategy was to portray Stephen Harper and the Conservatives as having values alien to Canadians, namely American values. By painting the Conservatives as the proponents of the Bush Republican agenda, Martin was re-elected.[34] Unfortunately, upon re-election Martin was handed a minority government, which limited his choice of actions in matters pertaining to missile defence, and Martin began to distance himself from the issue.[35]

The New Democratic Party (NDP) had threated to withhold its support for to any Liberal legislation if the Martin government agreed to Canadian missile defence, and the Bloc Quebecois had always been extremely vocal about their opposition to BMD.[36] Even the Conservatives, who had been supportive of BMD early on, now adopted a more prudent approach. In 2004, Harper announced that the Conservative Party would make up its mind when the details of Canada's participation were placed in front of the House.[37] When Paul Martin announced that the Canadian government would not participate in BMD, the Conservatives did not disagree.[38] Martin's minority government was in a very precarious situation, and was getting picked apart by both sides of the political spectrum.[39] The relatively small support Martin had on missile defence in Parliament in 2004-2005 is one part of the puzzle that led to a subtle yes on missile defence.

5.1d George W. Bush and American Foreign Policy

Saying no, for the Canadian population and politicians, was also a way to say no to American foreign policy. In part, the radicalization of U.S. foreign policy explains in part

the lack of approval on missile defence.[40] By 2004, the public disapproval in Canada over the war in Iraq had transformed into direct opposition to Bush's foreign policy to the point where it was increasingly difficult for the Bush administration to get any Canadian support for its policies.[41] The anti-Americanism was palpable throughout the entire debate over missile defence. In fact, by 2004 polls indicated that near two-thirds of Canadians has an unfavorable view of the American president.[42] Bush did not help the cause of missile defence in Canada during an official visit in 2004. The President made a point to discuss the BMD issue in public, even though he had been told in advance Martin did not want to touch the issue.[43] This event was widely discussed in the media and did not help the negotiating position of Martin within Parliament.[44] Martin's options were shrinking.

5.2 A Subtle Yes to Missile Defence

The events and positions described above forced Martin, who had some interest on BMD to begin with, to adopt a two-level strategy in order to satisfy everyone. Namely, Canadian officials had to work to achieve domestic and international goals concurrently, pleasing the Canadian constituent and Parliament on the one hand, while demonstrating to the U.S., Canada's number one ally on security issues, that Canada was dedicated to the security and defence of North America.[45] Historically, Canada had always used the ABM Treaty to be able to politely refuse to discuss missile defence, while providing some trade-offs to keep Washington satisfied. For example, On 7 September 1985, Ottawa declined the U.S. offer to have direct Canadian involvement in the Strategic Defense Initiative (SDI) research, but the government allowed private Canadian firms to compete for SDI contracts. At the same time, the government did not completely dismiss the possibility of a role within SDI if the research ultimately led to deployment.[46] Jean Chrétien established the same type of policy with the NMD project. The government supported the ABM Treaty openly in public, but Ottawa did not oppose a Canadian role in research and development, and a possible future role in BMD was never completely taken off the table.

Martin's goal regarding Washington was quite clear: he wanted to fix the relationship that had been damaged by the recent events over Iraq. Chrétien had refused to join the 2003 war effort in no uncertain terms, which had irritated Washington.[47]

Moreover, Martin also wished to increase Canada's security relatively to the new and emerging ballistic missile threats. On the other hand, Martin wanted more than a minority government and he had to contend with the overt disagreement over missile defence in Canada. The next section on the amendment of NATO will demonstrate the bargaining process.

5.2a The NORAD Agreement: Giving Washington what it Sought

The connection between NORAD and missile defence has been made as early as the mid-1990s. During the 1996 renewal process a consultative clause was added to allow for the expansion of NORAD's mission without the need for a complete renewal process.[48] Missile defence was once again an important topic in Washington, with Bill Clinton and Congress discussing the implementation of the GPALS system (which would eventually become the basis for NMD). Ann Crosby rightfully notes that the NORAD clause may hint at the possible addition of missile defence function to NORAD in the near future—a position accepted by the most cautious wing of Foreign Affairs in Canada.[49] NORAD made sense as a platform for missile defence cooperation between Washington and Ottawa. Not only does NORAD control the North American early warning system, but it is also an accepted platform of defence cooperation by Canadians. The Canadian military also recognized this fact. By 1999 the Canadian Army began to make their case for involvement in the American BMD system. The Army had in mind an asymmetrical approach, where no funding would be directly provided to the system, but a variety of space and ground equipment for surveillance would be used to support NORAD.[50] The Army and Foreign Affairs were not the only one sharing this perspective.

The American administration also saw NORAD as a cornerstone of any cooperation on BMD between Ottawa and Washington. In fact, the negotiation on radar systems began during the Clinton administration. To properly deploy and use their missile defence system, Washington needed to use radar sites in Greenland, Alaska, and North Dakota. These sites were controlled and operated by the U.S., but they were also nominally under NORAD command. Deputy Secretary of Defense John J. Hamre, in a speech

delivered in Calgary in 2000, declared that the radar sites were important for the deployment of American BMD, and if Canada refused to cooperate on the issue Washington would have to find a way to do it at NORAD and exclude Canada.[51] Therefore, what the American sought above all else was NORAD participation on missile defence. There is no doubt Washington would have preferred a direct participation by Canada, but NORAD would be sufficient.[52] Canada also understood it that way.

On January 15, 2000, the former National Defence Minister, David Pratt, wrote to the incoming U.S. Secretary of State Colin Powell to propose increasing industry and governmental cooperation on missile defence with Washington. In the letter Pratt designed NORAD as "a key focus of our cooperation in missile defence" and that Canada wished to "move on an expedited basis to amend the NORAD agreement to take into account NORAD's contribution to the missile defence mission." NORAD provided, according to Pratt "a mutually beneficial framework to ensure the closest possible involvement and insight for Canada, both governments an industry, in the U.S. missile defence program."[53] Jean Chretien had already stated that he would listen to what the Americans had to say on missile defence, but this letter shows the Canadian leadership at the time understood the importance of the survival of NORAD with missile defence.[54] This preliminary work done prior to the Martin administration would be the basis for the upcoming amendment of NORAD which took place in 2004.

The first indication that the Martin government understood it might not be possible for Canada to give a direct yes to the United States on participation was the splitting of negotiation on missile defence between the participation through NORAD, followed by negotiation for direct participation later on.[55] In doing so, Canada would streamline the NORAD amendment, ensuring a subtle participation, while keeping all of its options open. On January 15 2004 David Pratt sent a letter to Donald Rumsfeld stating "the two countries (U.S. and Canada) should move on an expedited basis to amend the NORAD agreement to take into account NORAD's contribution to missile defence."[56] It was imperative for Canada to negotiate properly the radar situation. The GMD system was slated to become operational in late 2004, and it was necessary to have an agreement in place that would let

Canadian personnel at NORAD be able to support BMD, whether the Canadian government opted for direct or subtle participation. Once again, if NORAD could not be involved in providing early warning assessment for the GMD system, the U.S. would have to move the ITW/AA capabilities out of NORAD, which would have *de facto* "gutted" the command.[57] However, the Canadian government was also preparing a possible participation on missile defence if the political climate in Canada would come to pass. In a follow up letter to Rumsfeld Pratt wrote "it is out intent to negotiate in the coming months a Missile Defense Framework Memorandum of Understanding (MOU) with the United States with the objective of including Canada as a participant in the current US missile defence program and expanding and enhancing information exchange."[58]

On August 5, 2005, Washington and Ottawa agreed to amend the NORAD agreement to share access to tracking data and incoming missiles. It was the first time the agreement had ever been amended, and it was done via an exchange of diplomatic notes.[59] Under the agreement, Canadian NORAD personnel could be involved in providing warning of missile launch for the GMD system.[60] In fact, following the agreement the Canadian personnel at NORAD began receiving familiarization training followed by direct access to missile defence related systems within the Cheyenne Mountain Operations Center. From there the Canadian personnel would continue to fulfill its ITW/AA role alongside, and in support, of the new GMD operations.[61] Canada, however, was keeping its options open and still thought it might be possible to directly join GMD.

Following the agreement Bill Graham, the new Defence Minister at the time, declared that the NORAD was a "necessary but not inevitable step toward participation. We're keeping all options open."[62] Canada was not ready to settle for a subtle yes just yet, but it would prove to be impossible to go forward for Paul Martin if he wanted to remain in power. As David McDonough rightly assesses: "the only remaining step for full participation now seemed to be how NORAD (and thereby Canada) would be involved in the GMD system itself. Yet the political climate (described above) would make it impossible to move towards direct participation. However, by having ensured the amendment of the NORAD agreement, Martin made sure the command would continue in

the future while demonstrating to Washington its commitment to continental defence. It also opened the door for a greater Canadian role within NORAD, which was left for a future round of negotiation.[63]

In an interview to Janice Stein, Paul Martin admitted that NORAD had been his number one priority. He told Stein that once the NORAD amendment was signed in August 2004, which permitted the sharing of missiles warning data, he had accomplished all he wanted to.[64] This statement, added to the reports on the importance of NORAD for Canadian participation to missile defence, and the early division of the negotiation on BMD supports the assumption that Canada acted strategically in negotiation its BMD participation. Canadian officials new early on they would probably not be able to give formal participation to the U.S., but by making NORAD a priority it would please, although in a reduced fashion, everyone involved.

The negotiation of the NORAD agreement and its implementation provided a subtle yes to the United States that ensured Canadian participation in missile defence, albeit in a more indirect role than previously anticipated. In fact, no more rounds of negotiations took place between Washington and Ottawa on the subject following the amendment. Instead, Martin began making public demands to the U.S. if Canada was to join GMD. First, the system should come at no cost to Canada. Second, no interceptors should be placed on Canadian soil, and third, no weapons should be placed in space.[65] These demands by Martin can seem puzzling since it was already clear for the United States that Canada would not pay a dime for the system, that there would be no interceptors on Canadian soil, and that weapons in space were not part of the GMD system in the near future.[66] Martin knew the demands he was making were unrealistic.[67] If we combine these statements with the climate in Canada surrounding missile defence, and how the NORAD amendment had been a long time coming and understood by both side as the most important piece of the missile defence puzzle, we can infer that the demands made by Martin were aimed at his domestic audience instead of Washington. Martin had given to the Americans what they wanted, and he was in the process of giving Canadians, Parliament, and his own caucus, what they wanted.

5.2b Frank McKenna and Missile Defence

The statement made by Frank McKenna on whether Canada would say yes or no to missile defence also supports the assumption made in this chapter, but it also makes salient the polarization of the debate on BMD. McKenna stated:

> We're part of it now. There's no doubt looking back that the NORAD agreement has given, has created part—in fact, a great deal—of what the US means in terms of being able to get the input for the defensive weaponry."[68]

The statement made by McKenna was accurate by all standards. Washington had sought the full cooperation of NORAD in missile defence to complete the early warning mission. Moreover, the agreement made it so NORAD's structure became an integral part of the missile defence system while Canada would continue to provide early warning and battle command posts for the American system.[69] This statement, however, was met in the House of Commons with its lot of criticism, demonstrating once again the animosity towards missile defence in Parliament.

Comments made by Michel Gauthier, a Bloc Quebecois MP at the time, summarizes well the criticism levied at the McKenna statement. He stated "they don't want to tell the population that we've got our arm in the wringer of the washing machine and it's sucking us in."[70] The comments forced Bill Graham to insist the decision on missile defence was not a done deal, and that Canada had not agreed on how the system would work or how it would be deployed. The Conservative party led by Stephen Harper also criticized the government on what they believed was a weak distinction. Harper stated "how could this prime minister secretly make this decision, so clearly breaking every commitment he's made to this house and to Canadians?"[71] It is clear now that the rhetoric used by Martin was aimed at the House and at Canadians. The statement made by McKenna ensured a no from the government, but a no that had already been prepared.

Following the political pressure put on Martin by the statement made by McKenna, it was announced two days later that Canada would not join the U.S. in the GMD system.

It was Pierre Pettigrew who announced the decision in front of the House, stating "after careful consideration on the issue, we have decided that Canada will not participate in the U.S. ballistic missile defence system."[72] This no, however, was a subtle yes for missile defence, as Frank McKenna rightfully pointed out.

5.3 Canada and BMD

Many critics believed that the subtle yes to missile defence was not sufficient. The fact that Canada was part of the early warning part of missile defence did not mean we would have full say in the decision to launch an interceptor against a ballistic missile launch towards North America. Many, including James Fergusson, Joseph Jockel, and Paul Celluci argued that Canadian officials would be pushed out of the room if an intercept decision had to be made, and that eventually the Americans would move the ITW/AA capabilities out of NORAD and fully under NORTHCOM command, which would ultimately make NORAD defunct.[73] In retrospect, however, it seems that their warning was overstated. Not only did Canada give a subtle yes to missile defence through NORAD, but it also made other trade-offs that kept the Americans happy.

NORAD was relatively secure following 9/11 and the emphasis it placed on air threats ranging from hijacked planes to cruise missiles. Moreover, following the creation of NORTHCOM in 2002, Canada had created a Bi-National Planning Group co-located with NORAD with the objective of reviewing all continental defence arrangements (expect missile defence). This decision reinforced the impression that Canada shared the U.S. concern for continental defence following 9/11.[74] The NORAD agreement could only reinforce this statement and add missile defence to the mix

It is unlikely that Canada would ever be pushed out of the room if an intercept decision had to be made. By agreeing to participate in providing warnings, Canada was already involved in missile defence, and in fact, some Canadian groups would eventually chastise the government for it.[75] There is also the fact that NORAD and NORTHCOM share the same headquarters. The current NORTHCOM commander stated that "I can tell

you that the Canadian deputy commander sits at my side and had full access to information" and that "he would not be frozen out. In fact the NORAD deputy commander plays a very key role."[76] If there was a missile strike, the NORTHCOM commander would be on the phone with the President, while the Canadian deputy would be on the phone to the Chief of Defence staff.[77] Both the warning and intercept phase would be done jointly. It would be next to impossible to divide the two because the battle management of missile defence would be closely linked to providing warning and assessment.[78] Canada became a direct participant in BMD business within NORAD.

Moreover, the main problem with the argument made by critics such as Fergusson, Jockel and Celluci is that it is hard to know where an incoming missile might fall. If Iran for example wants to launch a missile on the U.S., it will have to do so over the polar cap, which means it will fly over Canada nonetheless. It will be possible to know the trajectory but not the final target. In fact, the layered system would technically try and intercept in boost or mid-course phase to avoid possible countermeasures, which would *de facto* made it irrelevant where the missile was headed (beside knowing it is aimed at North America). Therefore, the argument that the U.S. would prioritize one missile over another does not make sense: chances are they will not know where the missile is headed until it is too late. In this case, they will proceed with the intercept anyway.

Targeting a location with simple ballistic missiles and nuclear weapons is not easy. Accuracy is measured by the Circular Error Probability (CEP) of the missile. The CEP is the radius within which 50% of the missiles will fall, measured in meters, on repeated firing.[79] The U.S. MX missile, which is one of the most accurate, has a CEP of 110 meters.[80] On average, 50% of the missiles will fall within 110 meters of the intended target, but it is impossible to assess where the rest will end. It is virtually impossible to assess whether some of these missile will hit a city or not. American strategists are well aware of this fact. It is therefore unlikely they would "wait and see" as most critics are wont to argue.

Third, the Americans were mostly angry at the way in which Canada had said no to missile defence, not that they had actually said no to direct participation (since NORAD had been agreed upon). Martin had requested that Mr. Pettigrew (incidentally a MP from Quebec) call his colleague Condoleezza Rice to tell her (and not the President) that Canada would not be joining the United States with the missile defence initiative.[81] Many in Washington thought this was careless and that Martin should have called Bush directly to tell him the news.[82] Moreover, the decision came at a difficult time for the United States. Bush originally wanted Canadian participation in the system to gain broader legitimacy for the system, especially after many of his post 9/11 policy had received little acceptance abroad and reduced the international good will towards the United States. Moreover, U.S. European allies were not sold on missile defence yet, and Bush knew the "perceived value of having a previously recalcitrant country like Canada endorse or participate in this initiative."[83] Therefore, the no could have been given at a better time, but it was not an overwhelming issue following the NORAD agreement. It would have been better delayed and done properly, however.

Supporting this explanation is the reaction of Paul Wolfowitz when Bill Graham told him that Canada would not join the missile defence system. In a conversation that Graham described as surprising, Graham informed Wolfowitz that Canada would not join the GMD because of the political climate in Canada.[84] In a "respectful way" Wolfowitz informed Graham that the United States were going forward with the project regardless, and that they did not need Canada in BMD from an operational perspective. According to Graham "Wolfowitz basically told me 'We don't give a damn.'"[85] During an interview with Janice Stein, Martin recalled that he got the same kind of reaction from Bush when he called him to give him the news. Martin said "I called Bush later. He took a week to get back to me, but my call with Bush was fine. BMD was much bigger here than it was there (in Washington)."[86] It seems that the previous outrage of the United States regarding Canada declining to join BMD was more about the way in which it was declined, rather than the "no" itself.[87] Washington and Canada easily moved on.

Furthermore, Canada made some trade-offs with the United States to reassure them that despite a subtle yes, Canada was still committed to sound security and defence

cooperation with the United States. In the first place, Martin added a defence spending package to the 2005 budget that included $12.8 billion in increased military spending over five years. In addition, Martin included $650 million for border and port security. In doing so, Martin was creating enough room for his subtle yes to be accepted while demonstrating to Washington the Canadian commitment to do its share on the international security front.[88] Those spending were not the only trade-off made by Canada.

Following the military spending increases, Canada also agreed to join the U.S. in Kandahar and to join the NATO BMD system. Stein and Lang have argued that another possible trade-off in the missile defence policy was to send Canadian troops to Afghanistan.[89] Janice Stein argues that the Foreign Policy and Defence establishment in Canada felt the relationship with Washington had been strained by the BMD refusal. She posits that said officials felt a sense of urgency to do something in order to please the American, and that Afghanistan seemed like a good place to start.[90] Moreover, a few weeks before the official decision to say no to a direct participation on missile defence was announced, Canada became one of the handful of nations leading the decade BMD effort from NATO through projects like CAESAR and MAJIIC. As Steven Staples explains "these efforts to increase "interoperability" among NATO's leading military nations have repeatedly used simulated data from Canada's RADARSAT-2 satellite during major BMD war-games, in preparation for future war-time use of BMD technologies.[91] Canada was part of missile defence abroad AND at home.

Conclusion

In the end, NORAD was renewed in 2006 with added features, including its maritime security mandate. Relations between Canada and the U.S. are mostly positive, and far from the level they were at right after the 2003 decision to refuse participation in the Iraq war.[92] Early warning radars and all of the missile defence apparatuses have not been taken out of NORAD, and it is unlikely at this point that it will happen. As for Canadian participation in missile defence, it is unlikely to change. Prime Minister Harper had expressed the possibility to re-open discussion on the subject with Washington if

asked, but this admission was not well received in Canada.[93] Therefore, the subtle yes should remain for the time being the stance of Canada on missile defence. In fact, it would probably be a political blunder by the Harper administration to put missile defence back on the table. Although Barack Obama is much more popular than George W. Bush with the Canadian constituents, the issue of missile defence is still polarized. The status quo is the best policy going forward.

Chapter 6

Conclusion

BMD is an integral part of the complex calculus of modern strategic stability. While nuclear deterrence is still relevant in a reduced fashion between China, Russia, and the U.S., it is less so against the current threats facing the U.S. A threat of full retaliation against a small nuclear (or proliferating state) is simply not credible. Moreover, deterrence can fail. BMD effectively replaces nuclear deterrence and crisis stability when dealing with states like Iran and North Korea. In times of crisis, it acts as a deterrent and a defence, while giving more flexibility to strategists to adequately resolve the situation. The current nuclearization of Iran is a good example. Without BMD, the U.S. (and Israel) might have already proceeded to a pre-emptive (or preventive, depending on which reports you ask) against Iran nuclear facilities. The hawkish wing of U.S. foreign policy certainly entertained the notion, and Israel clearly stated that it would proceed with a strike if Iran did not stop its uranium enrichment program.[1] Scholars also joined the debate by voicing that the time might be right to strike Iran.[2] BMD, however, provides another set of options. For now, it protects the Middle-East and Europe from any potential strike from Iran and North Korea. Moreover, it increases the cost of proliferation for Iran because of its effectiveness. In this case, diplomatic (coercive or not) efforts to disarm Iran have a higher chance of succeeding. BMD provides leverage for possible disarmament. It does not mean pre-emption will not be used, but it makes it less likely. BMD is a much less destabilizing option.

6.1 Perception, BMD, and Appropriate Policy Prescriptions

However, some caution is necessary. The system is bound to be perceived differently by all the actors involved, namely Russia, China, Iran, and North Korea, and the way in which the system is perceived will affect the responses given, negative or positive, to BMD. The concerns of each states have to be carefully evaluated, however, to

separate genuine concern from strategic imperatives. Moreover, the United States and its allies have to carefully weigh the concerns of all the actors involved versus their own security concerns.

6.1a Russian Perceptions and BMD

Russia has expressed a lot of cause for concerns regarding the U.S. system. The primary argument remains the same: the system undermines the flexibility and the effectiveness of the Russian deterrent.[3] The main concern is not whether the actual system can undermine the strength of its deterrent, but whether it might be used as a stepping stone down the line for a more full scale system able to engage complex ICBMs. The notion has certainly been entertained by some proponents of BMD in the U.S. A 2009 report advocated for the continuation of the *Brilliant Pebbles* initiative as the first step towards an unlimited missile defence system capable of protecting the U.S. and its allies from any and all potential threats.[4]

Moreover, as stated in chapter 4, Russia is particularly worried that the current missile defence effort is in a part a way to encroach in its regional sphere of influence. Poland, the Czech Republic and Romania all qualifies as such. According to military analysts, these peripheral countries to Moscow are all worried about a possible resurgence of Russia, which would explain in part why they chose to help the U.S. with missile defence.[5] In doing so, trade their acceptance for missile defence for the assurance that Washington will support them against Russia if need be. In a way, they may be using BMD to soft balance against Russia, something Moscow is not interested in.[6] As such, Moscow first threatened to target interceptor sites in Europe; they are now threatening targeted attacks on interceptor sites.[7] Moscow also tested a new long-range missile able to bypass any interceptors the U.S. currently has.[8] In turn, the only concession Moscow is willing to make is to allow missile defence only if the U.S. are ready to sign a legally binding document stipulating BMD would never, under any circumstances, threaten the Russian deterrent.[9] Of course, there is no plausible scenario in which the U.S. would agree to these terms. The perception of U.S. intent with BMD is directly fuelling its stance on the system.

As demonstrated in chapter four, this is not the case, but, the current domestic and international situation of Moscow pushes it towards such an approach. The current cuts to the BMD budget in the U.S. makes it near impossible that the system could one day become robust enough to threaten the Russia deterrent. However, the Russian concerns seems to be taken seriously by the current U.S. administration. Obama recently told Prime Minister Medvedev to give him some space on missile defence because he will have much more flexibility on the issue after the elections.[10] Some analysts believe he means to significantly reduce U.S. BMD efforts in Europe. They cited the recent cuts on BMD funding passed by Congress as evidence.[11] This, however, is not the right policy to adopt.

It is important for Washington to engage Russia on missile defence issues. However, this engagement should not be done at all cost. We are far from the Cold War where such tension could potentially lead to a nuclear confrontation. The chances of such a scenario at the moment is very close to zero. The United States, therefore, should not negotiate with Moscow as if this was a very real possibility. The United States should continue its BMD effort in Europe, maybe with an increase level of transparency (including more talk of technology transfer and joint threat assessment). Since SDI, the Russians have had little leverage in trying to limit the U.S. BMD effort. The same applies today. Russia has very little to offer in exchange of concessions from Washington. Moreover, Moscow does not have the money to really threaten the U.S. technologically. Washington still has the upper hand on the matter. It is not to say that the U.S. should not make some concessions to Russia (like the unilateral declarations the Russian made during START for example), but any concessions should be carefully weighted. No concessions should come at a price that would reduce the effectiveness of BMD against Iran and North Korea, and at a price that would reduce the significant benefits made possible by missile defence.

Reducing the U.S. BMD effort in Europe would be a poor idea. U.S. allies have invested significantly in missile defence, both monetarily and politically. Some countries, like Japan, have forgone nuclearization due to missile defence. It has created incredible cooperative efforts on strategic issues, and it has helped reduce the stockpiles of nuclear weapons. Moreover, it has given the necessary flexibility to Washington to effectively deal with new and emerging threats. Washington has been trying to foster good relations with

Moscow since the end of the Cold War. While it is certainly not a bad idea, this policy should not be pursued at all costs. The current trust and goodwill towards the U.S. from its strategic partner is perhaps more important at the moment than the satisfaction of Moscow. As noted above, Washington has a sound bargaining position. Moscow has little leverage. The inherent benefits of missile defence should not be forsaken so easily.

6.1b Chinese Perceptions and BMD

China has a similar rhetoric when it comes to the U.S. and allies BMD projects. Chinese ambassador Sha once noted that the U.S. BMD plans "will seriously undermine the effectiveness of China's limited nuclear ability from the first day of its deployment.[12] Argument along those lines are more credible when coming from China, especially since Beijing does not possess early warning systems.[13] If we combine BMD with the addition of the "Asian Pivot" to American strategy, it is easier to see where China could have ground for concerns. The relationship between China and the U.S. is fairly ambiguous and complex, mixing economic interdependence with balance of power antics. From the Chinese point of view, BMD becomes an uncertain issue, especially given some of the hardline military rhetoric concerning China in the U.S.

There is growing concern in Washington and among scholars regarding the possible threat posed by the rapid development of China. In a recent issue, the *Economist* stated: "the Pentagon has described China's programme as 'the most active land-based ballistic-and -missile programme in the world.' Missiles are good value. Compared with a fully equipped aircraft-carrier, which might cost $15 billion–20 billion, a missile costs about $1m. . . . And American strategists are closely watching an experimental anti-ship ballistic missile with a maneuverable warhead, which could make it hard for American fleets to approach the Chinese shore."[14] A recent editorial by the *New York Times* also mentioned the current fear in Washington and abroad regarding the modernization and expansion of Chinese forces. In the editorial, the commandant of America's Pacific forces revealed how China could soon deploy a ballistic missile capable of affecting American aircraft carriers in the Pacific. Sinking ships with ballistic missile is hard, but the concern is mostly about the new Chinese naval strategy; a strategy intended on challenging the U.S. hegemony in the western Pacific.[15] This concern has been an ongoing debate in the

field of international relations, and such procurement will only increase the speculations.[16] It is, more importantly, a question of deterrence.

An open conflict with China remains unlikely, but by modernizing its military and its ballistic missile arsenals Beijing is increasing the potential cost of intervention for the U.S. in the region, namely, the cost for the U.S. to intervene in order to counter a Chinese threat against Taiwan, or the bullying of neighbors over disputed claims in the South China Sea. In doing so, China would significantly reduce the deterrent value of an American intervention.[17] Among the solutions proposed to counter that threat, some have argued for a Global BMD Maritime partnership, with U.S. participation, to create a high-end missile defence ring capable of restraining China.[18] There is little doubt that the relationship between Washington and Beijing is complex, and that BMD may not be making things better. Both side perceives the other as aggressive in security matters and move to secure its assets.

This account of Chinese perception forgets how deterrence goes both ways. This account forgets how deterrence goes both ways. While it is possible that the United States might be more careful with China due to its force modernization, it is much more plausible that Washington is also being careful because of its significant economic relationship with China.[19] Moreover, if we are talking strictly about deterrence, the United States' capabilities are much more formidable than China's. It has an incredibly powerful navy matched with much more missiles than Beijing. The logic would be more plausibly inverted: China might not like the current U.S. presence in the Pacific, but it has been careful when dealing with Washington because of its impressive conventional and nuclear force. Moreover, some measure of modernization for China is a good thing. It might in fact bring more stability. If China is confident that its nuclear deterrent is not affected by BMD due to its level of sophistication (namely, countermeasures and a protected second strike capability), it is less likely that it will seek to proliferate in case of tension and conflict to increase the value of its nuclear deterrent. The same applies for Russia, although it is unlikely it can afford it at the moment.

The thought of a global, unlimited BMD is much more destabilizing than the current modernization of Chinese forces. At the moment, it is possible for Washington to say its system is only aimed at new and emerging nuclear and ballistic missile threats because the system does not have the capabilities to do more. However, the development of an unlimited BMD system might possibly send the wrong signal to Russia and China. There is no significant tension between the triangle at the moment, and it would be a terrible mistake to exacerbate the current situation for little added benefits. If Washington was to begin the research and development of a much broader system, it might no longer be perceived as strictly defensive by Russia and China. If Moscow and Beijing truly believes Washington wishes to devalue their nuclear deterrent, it increases the chances of proliferation. A more accurate policy would be to let China modernize while keeping missile defence limited to reduce the scope of modernization while keeping strategic stability intact. Moreover, by letting Beijing strengthen its nuclear arsenal, it is very likely it would no longer see BMD has a threat to its own security. If it is clear that the system is limited, and that China has the conviction its arsenal is robust enough to defeat it, there is no reasons to fear for strategic stability.

6.1c Iran, North Korea, and BMD

There is also the perception of Iran and North Korea to take into consideration. Is BMD responsible for the increasing pace of proliferation by the two countries? Analysts agree that missile defence is seen by the Iranian leadership as one more step by the U.S. to demonstrate its adversarial stance against Tehran.[20] As such, Iran's ballistic missile production is a way to counter the perceived U.S. aggression towards the regime.[21] The same can be said about North Korea. The perceived aggression of the U.S. by the regime, and the continued support by Washington of Pyongyang's enemies further demonstrate the extent of their relationship. The continued resolution by North Korea to develop ballistic missiles capable of reaching the United States (although recent tests have failed) illustrate how Pyongyang perceives the U.S. as an enemy. The question therefore because: does BMD exacerbates these relationships? If BMD is scrapped, would proliferation continue, or would it stop? In a sense, is BMD directly responsible for the current wave of

proliferation? If it is the case, the system offers little solutions and more problems. It is my contention, however, that this logic is wrong and ultimately dangerous.

The United States has been at odds with Iran and North Korea for some times now, and their relationships has continuously deteriorated since the end of the Cold War. Iran also has some significant shortcomings when it comes to conventional weaponry versus its rivals in the Gulf (with or without U.S. backing), and it uses ballistic missiles (and possibly nuclear proliferation) to compensate. Moreover, Iran has often times made declarations to the confirming their own views as a dominant regional power. [22] As such, it is likely that Iran would continue to proliferate in order to level the playing field, and ascertain its regional position. As such, it is highly unlikely Teheran will forgo nuclear weapons and ballistic missiles.

The same logic can be applied to North Korea as well. Pyongyang has been actively seeking to develop nuclear weapons since 1991 (see Appendix 2). It has sought a way to acquire WMD since the 1950s, when the United States threatened to use nuclear weapons to retaliate against them if they did not stop (including China) their attacks against South Korea. Aside from security considerations, a nuclear weapons would give North Korea "a good seat at the table of the world" while getting significant leverage against South Korea, Japan, and the United States.[23] Chapter 3 showed how North Korea, despite the continued engagement by the United States, continued their nuclear ambitions. Pyongyang seems to believe that the actual benefits of nuclear weapons are much more valuable than the concessions the U.S., Japan, and South Korea were ready to make in order for them to denuclearize.

What this discussion of Iran and North Korea means is the following: nuclear and ballistic missile proliferation provides more perceived benefits for Teheran and Pyongyang than any alternatives. As such, if the United States were to reduce their BMD efforts, it would only make it easier for both countries to proliferate. As it is, missile defence significantly increases the cost of proliferation. In order to develop a robust arsenal able to threaten the U.S. and its allies, it will have to develop countermeasures. As chapter 3 as

demonstrated, doing so is costly, and technologically difficult. However, if BMD does not exist, all Teheran and Pyongyang have to do is to develop a primitive nuclear and ballistic missile arsenal to be able to get full value. With BMD, not only is the monetary cost increased, but the actual cost of use as well. In effect, it nullifies the deterrent value of nuclear weapons for both states, providing more leverage for the U.S. and its allies when discussing disarmaments with Iran and North Korea. And if such talks fails, BMD still provides a defence against possible launch. Put this way, there is very little incentives to forgo BMD.

6.1d Summary

The benefits outlined throughout this thesis only work as long as the system remains limited and unthreatening to Russia and China. Moscow and Beijing might argue otherwise on the international scene, but they are fully aware that the system in its current guise does not threaten their deterrent. It has to remain that way. The complex nature of strategic stability today requires it. At the moment, the relationship between Russia, China, and the U.S. is more based on trade and economic concerns than the nuclear balance. However, it might not always remain this way. At some point in the future, intentions might change, or an event might trigger renewed tensions. Syria, according to some experts, could be such a trigger.[24] The key will be to continue to ensure a level of mutual vulnerability between the three, while maintaining BMD against other threats.[25] As long as the purpose and the target of the system remain clear, the status quo on the matter should prevail.

6.2 Canada and Missile Defence

There are no reasons at the moment for Canada to form a BMD policy above the one already in place. Canada re-affirmed its commitment to NATO by agreeing to the deployment of a European missile defence system. Moreover, it gave Washington what it needed to properly field the GMD system. There is no reason to re-open the question now, especially if Obama goes ahead and reduces funding for the American BMD enterprise. However, it is also possible that Canada would be asked by Washington to be fully

integrated within the GMD system, or a more global system (if the next administration decides to restart *Brilliant Pebbles*, for instance). In this case, forming a definitive BMD policy would be ideal. It would re-affirm Canadian support for the security and defence of North America, while giving Ottawa some leverage on other issues if needed (or required). The degree of leverage available to Canada will depend on how much the U.S. wants to include Canada in the system. However, Washington should be wont to remember the nature of the political game in Canada, and how it might not be possible, again, for the Canadian Prime Minister to directly say "yes" to missile defence. Context, again, will be of the utmost importance.

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Chapter 2 – Complex Security

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Chapter 6 - Conclusion

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APPENDIX 1: THE EUROPEAN PHASE ADAPTIVE APPROACH

Phase 1, Deployed	
Missile Platforms and Numbers	• In March 2011, the USS *Monterey* was deployed to the Mediterranean Sea. This represented "the first sustained deployment of a ballistic missile defense-capable ship" in support of the European PAA. • In fiscal year (FY) 2012, 113 SM-3 Block IA and 16 SM-3 Block IB interceptors will be delivered and 29 Aegis-equipped BMD ships deployed.
SM-3 Variant and Numbers	• SM-3 Block IA interceptors have a velocity of 3 km/second and are designed to engage short- and medium-range ballistic missiles in the mid-course phase. • Block IA has a single color seeker, a 21 inch-diameter booster, and is 13.5 inches in diameter along the rest of the interceptor. • Block IA costs between $9 and 10 million per unit. • Some SM-2 Block IVs (the SM-3 predecessor) will also be retained for use against missiles in the terminal phase.
Sensors and Combat System	• Initially, the system will use sea-based sensors mounted on the Aegis ships, as well as a forward-based mobile X-band radar on land. The first EPAA radar was deployed in Turkey in late 2011. • The mobile X-band radar is the AN/TPY-2 manufactured by Raytheon. The U.S. is planning to deploy a total of 18 AN/TPY-2 radars. So far, seven have been produced, and two are currently deployed in Israel and Japan. • The sensors and interceptors will be brought together under the Aegis combat system. This is a system capable of tracking 100 simultaneous targets. Phase 1 will primarily use Aegis version 3.6.1 software. • According to the Defense Science Board (2011), the current Aegis shipboard radar is inadequate to support the EPAA mission, and the future Navy ship-based Air and Missile Defense Radar (AMDR) is needed. • U.S. and European BMD systems are integrated for battle management at Ramstein Air Force Base in Germany.
Phase 2, Planned Deployment Date: 2015	
Missile Platforms and Numbers	• Phase 2 will see interceptors taken onto land in the first "Aegis-Ashore" deployment in **Romania**. Interceptors will also be mounted on an increasing number of Aegis BMD ships. • In FY2015-2017, the U.S. Navy plans to have 32 Aegis BMD ships.

	• The first "Aegis-Ashore" site in Romania will be equipped with one land-based Aegis SPY-1 radar and 24 SM-3 missiles.
SM-3 Variant and Numbers	• Phase 2 will include the SM-3 Block IB variant, also with a velocity of 3 km/sec. This interceptor differs from the Block IA in its "seeker" technology, consisting of a two color seeker, or "kill warhead," and improved optics. • 100 Block IB interceptors would be purchased by this point, to be deployed along with 139 of the Block IA variant. • The Block IB is estimated to cost between $12 and 15 million per unit.
Sensors and Combat Systems	• In Phase 2, sensors will be integrated with updated versions of the Aegis combat system. By FY2015 BMD ships will carry versions 3.6.1, 4.0.1, and 5.0.
Phase 3, Planned Deployment Date: 2018	
Missile Platforms and Numbers	• Phase 3 will see the introduction of the second "Aegis-Ashore" site in **Poland** with another SPY-1 radar and 24 SM-3 missiles. This will supplement the deployments already underway at sea and in Romania and will extend coverage over a greater percentage of Europe. • By FY2017, there will be a total of 32 Aegis BMD-capable ships.
SM-3 Variant and Numbers	• Phase 3 will include the SM-3 Block IIA. This new variant will be faster than Block I (4.5 km/sec vs. 3 km/sec.), with a 21 inch diameter for the whole length of the missile allowing for more fuel and hence a more powerful motor. This will give the system an "enhanced" capability to address intermediate-range ballistic missiles and a "limited" capability to address intercontinental ballistic missiles (ICBMs). These faster interceptors could potentially increase coverage to the whole European continent. • The United States is collaborating with Japan to jointly develop the Block IIA interceptor. The program is scheduled to begin flight testing in 2014. • Improved seeker and optics will be included. • 19 Block IIAs are scheduled to be purchased by this point; they will complement the 390 Block I variants that are planned for FY2017.
Sensors and Combat Systems	• In Phase 3, the United States will deploy both the Precision Tracking Space System (PTSS) and Airborne Infrared (ABIR) sensor platforms. Both of these systems are designed to track significantly larger numbers of incoming missiles, with the goal of being able to track "hundreds" of missiles simultaneously.

	• Aegis BMD ships are scheduled to be equipped with version 5.1 of the combat system software in this time-frame.
Phase 4, Planned Deployment Date: 2020	
Missile Platforms and Numbers	• The platforms supporting the SM-3 interceptors under Phase 4 will remain the same as those deployed under Phase 3 – sea-based platforms and the "Aegis-Ashore" deployments in Romania and Poland.
SM-3 Variant and Numbers	• The SM-3 Block IIB would be deployed; planned numbers unknown. It is planned to have an improved seeker and a higher performance booster, with a velocity of 5-5.5 km/sec. This is expected to marginally improve the Block IIA's "limited" capability to counter ICBMs. • According to the Defense Science Board (2011), the SM-3 IIB's planned mission to intercept targets prior to the deployment of multiple warheads or penetration aids – known as "early intercept" – requires "Herculean effort and is not realistically achievable, even under the most optimistic set of deployment, sensor capability, and missile technology assumptions." • The Block IIB is still in the conceptual stage, and alternatives may be considered if they can enhance the system's capability to counter ICBMs. • In FY2011, the United States awarded three concept definition / planning contracts for the Block IIB. Based on their concepts and designs, one company will be chosen to finish the project's development. This "down-select" is expected to occur around 2013.
Sensors and Combat Systems	• Space-based sensors will play an increasingly important role in Phase 4.

Source: Tom Z. Collina, "The European Phased Adaptive Approach at a Glance," *Arms Control Association* (2012): http://www.armscontrol.org/factsheets/Phasedadaptiveapproach, (assessed July 15, 2012).

APPENDIX 2 – GMD CAUSES OF FAILURE

Missile	Cause of Failure
IFT-4	Kill vehicle's infrared sensor cooling malfunctioned
IFT-5	Kill vehicle and booster did not separate
IFT-10	Kill vehicle and booster did not separate
IFT-13c	Interceptor failed to launch due to problematic software configuration
IFT-14	Interceptor failed to launch after a silo support arm did not retract, triggering an automatic abort
FTG-06	Kill vehicle and system sensor performance issues
FTG-06a	Kill vehicle guidance error in final seconds of flight.

Source: Fact Sheet, "Ballistic Missile Defense Intercept Flight Test Record – Ground-based Mid-Course Defense (GMD)," *Missile Defense Agency* (2012): 1.

APPENDIX 3 – U.S.-NORTH KOREA NUCLEAR DIPLOMACY TIMELINE

1992 - North Korea agrees to allow inspections by International Atomic Energy Agency (IAEA), but over next two years refuses access to sites of suspected nuclear weapons production.
1994 - Death of Kim Il-sung. Kim Jong-il succeeds him as leader, but doesn't take presidential title. North Korea agrees to freeze nuclear programme in return for $5bn worth of free fuel and two nuclear reactors.
1995 - US formally agrees to help provide two modern nuclear reactors designed to produce less weapons-grade plutonium.
1996 January - North Korea agrees in principle to a meeting on missile proliferation issues, which had been requested in a letter by Deputy Assistant Secretary of State for East Asian and Pacific Affairs Thomas Hubbard. However, Pyongyang contends that the United States would have to ease economic sanctions before it could agree on a date and venue for the talks.
1996 April - The United States and North Korea meet in Berlin for their first round of bilateral missile talks. The United States reportedly suggests that North Korea should adhere to the Missile Technology Control Regime (MTCR), a voluntary international agreement aimed at controlling sales of ballistic missile systems, components, and technology. North Korea allegedly demands that the United States provide compensation for lost missile-related revenue.
1996 May - The United States imposes sanctions on North Korea and Iran for missile technology-related transfers. The sanctions prohibit any imports or exports to sanctioned firms and to those sectors of the North Korean economy that are considered missile-related. The pre-existing general ban on trade with both countries makes the sanctions largely symbolic.*
1997 June - The second round of U.S.-North Korean missile talks takes place in New York, with U.S. negotiators pressing North Korea not to deploy the Nodong missile and to end sales of Scud missiles and their components. The parties reach no agreement but reportedly lay the foundation for future talks.
1997 August - The United States imposes new sanctions on two additional North Korean entities for unspecified missile-proliferation activities.*
1998 August - North Korea launches a three-stage Taepo Dong-1 rocket with a range of 1,500-2,000 kilometers that flies over Japan. Pyongyang announces that the rocket successfully placed a small satellite into orbit, a claim contested by U.S. Space Command. Japan suspends signature of a cost-sharing agreement for the Agreed Framework's LWR project until November 1998. The U.S. intelligence community admits to being surprised by North Korea's advances in missile-staging technology and its use of a solid-rocket motor for the missile's third stage.
1998 October - The third round of U.S.-North Korean missile talks begins in New York but makes little progress. The United States repeats its request for Pyongyang to

terminate its missile programs in exchange for relief from economic sanctions. North Korea rejects the U.S. proposal on the grounds that the lifting of sanctions is implicit in the 1994 Agreed Framework.
1999 March - U.S. and North Korean officials hold a fourth round of missile talks in Pyongyang. The United States again expresses concern over North Korea's missile development and proliferation activities and proposes a deal exchanging North Korean restraint for U.S. sanctions relief. U.S. officials describe the talks as "serious and intensive" but succeed only in reaching agreement to meet again at an unspecified date.
1999 September - During talks in Berlin, North Korea agrees to a moratorium on testing any long-range missiles for the duration of talks with the United States. The United States agrees to a partial lifting of economic sanctions on North Korea. The two parties agree to continue high-level discussions. (Sanctions are not actually lifted until June 2000.)
1999 December - Five years after the Agreed Framework was signed, KEDO officials sign a turn-key contract with the Korea Electric Power Corporation to begin construction on the two LWRs in Kumho, North Korea. KEDO officials attribute the delay in signing the contract to complex legal and financial challenges and the tense political climate generated by the North Korean Taepo Dong-1 test in August 1998.
2000 June - Apparently encouraged by the North-South summit, the United States relaxes sanctions on North Korea, allowing a "wide range" of trade in commercial and consumer goods, easing restrictions on investment, and eliminating prohibitions on direct personal and commercial financial transactions. Sanctions related to terrorism and missile proliferation remain in place. The next day, North Korea reaffirms its moratorium on missile tests.
2001 March - In a New York Times op-ed, Wendy Sherman, former special adviser to the president and secretary of state for North Korea policy, writes that a deal with North Korea to eliminate its medium- and long-range missiles and end its missile exports had been "tantalizingly close" at the end of the Clinton administration. After a working meeting with South Korean President Kim Dae-jung at the White House, President George W. Bush tells reporters that he "look[s] forward to, at some point in the future, having a dialogue with the North Koreans, but that any negotiation would require complete verification of the terms of a potential agreement." According to Clinton administration officials, the issue of how to verify a missile deal remained one of the final stumbling blocks to a successful arrangement. Bush also questions whether Pyongyang is "keeping all terms of all agreements." Just prior to Bush's comments, Powell amended his remarks from the previous day, noting that if "there was some suggestion that imminent negotiations are about to begin—that is not the case."
2001 March - Pyongyang threatens to "take thousand-fold revenge" on the United States "and its black-hearted intention to torpedo the dialogue between north and south [Korea]." The statement, issued by the Korean Central News Agency, called Washington's new policies "hostile" and noted that Pyongyang remains "fully prepared for both dialogue and war."

2002 January - US President George W Bush says North Korea is part of an "axis of evil", along with states such as Iraq and Iran. Pyongyang says Mr Bush has not stopped far short of declaring war.
2002 October-December - Nuclear tensions mount. In October the US says North Korea has admitted to having a secret weapons programme. The US decides to halt oil shipments to Pyongyang. In December North Korea begins to reactivate its Yongbyon reactor. International inspectors are thrown out.
2003 January - North Korea withdraws from the Nuclear Non-Proliferation Treaty (NPT), a key international agreement aimed at preventing the spread of atomic weapons.
2003 April - Delegations from North Korea, the US and China begin talks in Beijing on North Korea's nuclear ambitions, the first such discussions since the start of the nuclear crisis.
2003 July - Pyongyang says it has enough plutonium to start making nuclear bombs.
2003 August - Six-nation talks in Beijing on North Korea's nuclear programme fail to bridge gap between Washington and Pyongyang.
2003 October - Pyongyang says it has reprocessed 8,000 nuclear fuel rods, obtaining enough material to make up to six nuclear bombs.
2004 June - Third round of six-nation talks on nuclear programme ends inconclusively. North Korea pulls out of scheduled September round.
2005 February - Pyongyang says it has built nuclear weapons for self-defence.
2005 September - Fourth round of six-nation talks on nuclear programme concludes. North Korea agrees to give up its weapons in return for aid and security guarantees. But it later demands a civilian nuclear reactor.
2006 July - North Korea test-fires a long-range missile, and some medium-range ones, to an international outcry. Despite reportedly having the capability to hit the US, the long-range Taepodong-2 crashes shortly after take-off, US officials say.
2006 October - North Korea claims to test a nuclear weapon for the first time.
2007 February - Six-nation talks on nuclear programme resume in Beijing. In a last-minute deal, North Korea agrees to close its main nuclear reactor in exchange for fuel aid.
2007 October - Pyongyang commits to disable three nuclear facilities and declare all its nuclear programmes by year-end.

Source: Daryl Kimball, "Chronology of U.S.-North Korea Nuclear and Missile Diplomacy," *Arms Control Association* (2012): http://www.armscontrol.org/factsheets/dprkchron, (assessed July 20, 2012); "North Korea Profile," *BBC NEWS Asia-Pacific,* 17 July 2012, http://www.bbc.co.uk/news/world-asia-pacific-15278612 (assessed July 30, 2012).

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