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CANADIAN FORCES COLLEGE — COLLÈGE DES FORCES CANADIENNES

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Master's of Defence Studies (MDS) Degree

## **Canada and US Missile Defence:**

The Case for Participation in, and the Case Against, Space Weaponization

By/par

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## ABSTRACT

The issues surrounding Ballistic Missile Defence are critically examined beginning with a historical background on SDI and how the events of September 11, 2001 acted as a catalyst in expediting the implementation of a Ballistic Missile Defence System. The basic system is described and a brief illustration is provided of how the system will work. The paper then examines various arguments in support of and against Canadian BMD participation, such as the continued value of deterrence and arms control, and acknowledges the impact that the Anti-Ballistic Missile (ABM) Treaty and the Missile Technology Control Regime (MTCR) have had on these issues.

The author provides a threat assessment which provides justification for BMD development and implementation. The latter part of the paper focuses on Canada's participation in BMD from a Canadian/United States Bilateral perspective and looks at some of the economic considerations that need to be considered when deciding whether Canada should participate in the BMD programme.

The use of space for military purposes and the American pursuit to weaponize space for control purposes are examined. The paper concludes that participation in the BMD programme is in Canada's national interests and that, through its continued relationship with the US, *vis-à-vis* NORAD, it will be in a better position to influence the non-weaponization of space, a position held by Canada ever since the issue has been around.

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**Canada and US Missile Defence:  
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The U.S is determined to improve its homeland defence and is certain to approach this subject, as it must, from a continental perspective.... Canada can choose to either stand back and allow the Americans to plan for the protection of Canadian territory, or to participate in the decision.<sup>1</sup>

— Jack Granatstein, Chair of the Council  
Canadian Defence and Security in the 21<sup>st</sup> Century

## **Introduction**

The control of space and the deployment of a missile defence system are at the centre of the debate in future US military defence policy. Many nations have used and will continue to use space for military purposes; however, the US Secretary of Defense, Donald Rumsfeld, and others have proposed that the US move toward “weaponizing” space for control. Notwithstanding Canada’s opposition to the weaponization of space, Canada shares US and NATO concerns regarding the continued proliferation of missiles and weapons of mass destruction. Indeed, this proliferation of mass weapons combined with the ever-increasing spread of international terrorism is creating a more dangerous and complex security environment both at home and abroad.

Although the ballistic threat to Canada is low, Canadian and American intelligence sources predict that the range and accuracy of ballistic missiles will improve

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<sup>1</sup>Canada, *The Standing Senate Committee on National Security and Defence, 8<sup>th</sup> Report*, Sep 2002, p 11.

with technological advancements made available to 'states of concern' and non-state actors, that weapons of mass destruction will continue to proliferate, and that the threat to Canada and Canadian interests will increase. A 'wait and see' attitude to determine, before acting, whether an adversary has acquired, and is prepared to use, ballistic missiles would be irresponsible; such would fly in the face of the Government's primary responsibility of providing for the protection and well-being of its citizens.

This paper will argue that Canada should participate in the missile defence of North America, but not get into weaponizing space. The issue will be pursued by providing an historical overview of SDI/NMD including a description of the basic NMD system. A brief illustration is also included of how ballistic missiles function, and how technologies designed to counter them will operate. The author then examines the scientific and engineering challenges confronting BMD.

The author acknowledges the impact that the Anti-Ballistic Missile (ABM) Treaty and the Missile Technology Control Regime (MTCR) have had on these issues and examines the various arguments in support of and against Canadian BMD participation, such as the continued value of deterrence and arms control. The threat posed by the proliferation of ballistic missiles and the development of weapons of mass destruction in rogue, developing or failed states is then analysed, thus providing justification for BMD development and implementation.

The latter part of the paper focuses on Canada's participation in BMD from a Canadian/United States Bilateral perspective and looks at some of the economic aspects that need to be considered when deciding whether Canada should participate in the BMD programme.

Finally, the use of space for military purposes, and the American pursuit of weaponization of space for control purposes, are examined. The paper reviews the potential Command and Control arrangements for NORAD and concludes that participation in the BMD programme is in Canada's national interests; that through its continued relationship with the US, *vis-à-vis* NORAD, it will be in a better position to influence the non-weaponization of space, a position held by Canada ever since the issue has been around.

## **Historical Background**

Announced by President Reagan on 23 March 1983, the SDI programme called upon the scientific community to give the United States “the means of rendering...nuclear weapons impotent and obsolete.”<sup>2</sup> The ballistic programme envisaged by President Reagan was based on a three-tier system, designed to attack enemy missiles in each of the three phases of an approximate 30-minute trip from Russian silos to North American targets. The boost phase was considered the best time to seek and destroy the rocket as it rises through the atmosphere in pursuit of its target. During this phase, which lasts from three to five minutes, the rocket still contains its various warheads, decoys and other penetration aids. With the midcourse phase, warheads and thousands of decoys continue their ballistic trajectory through space for 15–20 minutes before re-entering the atmosphere. Finally, the last opportunity to destroy the missile is in its terminal phase when the missile starts its re-entry and continues its trajectory into the earth's atmosphere.<sup>3</sup> In theory, each defensive layer could be somewhat ‘leaky’ and still contribute to an effective shield. For instance, if each layer destroyed 75% of the warheads leading through the preceding

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<sup>2</sup>Jon Connell, *The New Maginot Line* (Great Britain: The Chaucer Press, 1986), p 175.

<sup>3</sup>William A.B. Campbell and Richard K. Melchin, *The Strategic Defence Initiative, Assured Security For Canada*: (Canada: Canadian Conservative Publishers Ltd. 1985), pp 14–15.

layer, only four out of every 1000 Soviet warheads launched would detonate on target.<sup>4</sup>

Two years later, on March 26, 1985, US Secretary of Defense Caspar Weinberger invited members of the Atlantic Alliance, plus Japan, Australia and Israel, to take part in the Strategic Defence Initiative (SDI) research programme. This invitation intensified the ongoing debates in those countries over the merits of SDI as a “viable strategic concept and as a technological research program.”<sup>5</sup> Subsequent to Mr. Weinberger’s invitation, the issue of Canadian participation was debated in the House of Commons and in public forums across the country, and on September 7, 1985, the government concluded that Canada’s own policies and priorities did not warrant a government-to-government effort in support of SDI research. A key concern was the impact that such support would have on the government’s ability to influence the development of “a more secure world.”<sup>6</sup> In retrospect, the SDI initiative was based on “exotic, futuristic space technologies and intended to counter the entire nuclear arsenal of the Soviet Union.”

The Strategic Defense Initiative was not implemented due to technological challenges, high cost estimates and the end of the Cold War.”<sup>7</sup> However, the SDI initiative resulted in a tremendous arms modernization programme, which, some would insist, ultimately contributed to the fall of the USSR as the world’s only other superpower.<sup>8</sup>

Following a series of missile defense undertakings derived from the Strategic Defense Initiative, the current case for missile defence began in February of 1996, under the

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<sup>4</sup>Scott Armstrong and Peter Grier, *Strategic Defence Initiative: Splendid Defense or Pipe Dream?* (New York: The Christian Science Publishing Society, 1985), p 8.

<sup>5</sup>The Canadian Centre for Arms Control and Disarmament, *The Economics of the Strategic Defence Initiative: Critical Questions for Canada* (Ottawa: Canadian Cataloguing, 1985), p IV.

<sup>6</sup>Canada, *Defence 85* (Ottawa: Minister of Supply & Services, 1986), p 2.

<sup>7</sup>Canada, Department of Foreign Affairs and International Trade. *Backgrounder: Canada and Ballistic Missile Defence*. <http://www.dfait-maeci.gc.ca/departement/focus/bmd-en>.

<sup>8</sup>Charles Babington, “Bush Declares Need for Missile Defense”, *The Washington Post*, May 1, 2001 [<http://www.washingtonpost.com/wp-dyn/articles/A28526-2001>].



Clinton Administration, when China made an implicit nuclear threat against California, telling the US not to interfere into their affairs because Americans “care more about Los Angeles than they do Tai Pei.”<sup>9</sup> This led some in the US defence community to reassess their strategic position amidst the complacency that set in following the end of the Cold War.<sup>10</sup> It was not, however, until North Korea’s partially successful long-range ballistic missile launch in 1998 that there was sparked a new round of ground-based US National Missile Defense initiatives.<sup>11</sup> At the time, Congress tasked the former Secretary of State, Donald Rumsfeld, with chairing a commission to study these and other missile threats. The report of the United States Space Commission found that in addition to North Korea, Iraq was developing short-, medium-, and long-range missiles capable of carrying nuclear, chemical, and biological warheads. The Commission further reported that Iran had the technical capability to test an ICBM capable of hitting America. In light of such developments, Congress passed and Clinton signed the National Defense Act of 1999 that stated it would be the policy of the US to deploy missile defence “as soon as it was technologically feasible.”<sup>12</sup> They also asserted that US intelligence had not been able to track and report upon the speed of technological progress, resulting in the ‘surprise’ of the Taepo Dong launch.

Major objections about another worldwide arms race and continuing doubts about the technical effectiveness of NMD resulted in President Clinton’s postponing further decisions on NMD until the next administration.<sup>13</sup> During the election campaign of Governor George W. Bush in May 2000, Governor Bush, while criticizing the Clinton Admin-

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<sup>9</sup>Brian Kennedy, *Defending the West: Current Debate over Ballistic Missile Defence*, Ashbrook Center, June 2001, p 2.

<sup>10</sup>*Ibid.*, p 2.

<sup>11</sup>Steven Myers, “Choice of Rumsfeld Creates Solid Team for Missile Shield”, *New York Times*, December 29, 2000 [<http://www.nytimes.com/2000/12/29/politics/29Miss.html>].

<sup>12</sup>Kennedy, *Defending the West: Current Debate...*, Ashbrook Center, June 2001, p 3.

<sup>13</sup>Anthony Cordesman, “National Missile Defense with Anthony Cordesman”, *The Washington Post*, May 3, 2000 [<http://www.washingtonpost.com/wplsrvt/liveonline/ii/world/cordesman050300.html>].

istration's security policy, outlined his security agenda, which included the construction of an effective missile defence system.<sup>14</sup> While SDI under Reagan explicitly sought to weaponize space, the missile defence system under Bush is intended to protect the North American continent including Hawaii and Alaska from missile attacks.<sup>15</sup>

Two decades after President Reagan's original SDI proposal, Canada finds itself in a similar dilemma over whether to participate in the American plan to deploy a National Missile Defense (NMD) system to protect the US and, by extension, Canadian territory from limited intercontinental ballistic missile attacks. This plan is under debate in both the United States and Canada. So what has changed to prompt a renewed interest in strategic defence? The horrific events of September 11, 2001, clearly demonstrated how much the international security environment has changed since the end of the Cold War. In the words of Douglas Ross, a professor of political science at Simon Fraser University, "never in history has the global elite of a hegemonic state felt so exposed and vulnerable as do Americans today."<sup>16</sup>

Almost 15 years ago, the main threat to international peace and security was the potential for "mutually assured destruction" in a major war between NATO democracies and the Soviet Bloc. Today, the most serious threat to security is the asymmetric threats posed by the proliferation of weapons of mass destruction, having a global reach, in rogue regimes, failed states, and terrorist networks such as al-Qaida. In both the US and Canada, NMD raises numerous profound strategic questions. Is the US security, and by extension

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<sup>14</sup>*The Washington Post*: "Texas Gov. George W. Bush's New Conference", 23 May 2000, [<http://www.washingtonpost.com/wp-srv/onpolitics/elections/bushtext052300.html>].

<sup>15</sup> Roger Handberg, *Ballistic missile defense and the future of American security*, p 4.

<sup>16</sup> Douglas A. Ross, *Foreign Challenges for Paul Martin: Canada's International Security Policy in an era of American Hyperpower and Continental Vulnerability*, *International Journal* LVIII, no. 4 (Autumn 2003), p 21.

global security, best served by continuing to keep the nuclear peace exclusively or mostly through deterrence ensured by the credible threat of a devastating retaliation to an enemy first strike as during the Cold War? What impact would non-participation in the NMD have on US–Canada relations, especially with respect to the future role of NORAD? Will NMD lead to a new arms race that could eventually result in the weaponization of space? Can NMD be successfully deployed in a manner that guarantees accurate and reliable interception of incoming warheads, including weapons of mass destruction? Addressing these issues requires a greater understanding of NMD, and its impact upon future US security interests, particularly with respect to “deterrence” and “arms control.” Furthermore, no debate would be complete without examining the impact of participation or non-participation in NMD on US–Canada bilateral security relationships and the Canadian economy. In addressing these questions, I will argue that Canada, in the interest of its national security and economic well-being, must participate in NMD.

## **Discussion.**

At the outset, it is important to understand what NMD comprises and to distinguish the differences among Theater Missile Defense, National Missile Defense, and Ballistic Missile Defense, terms which are often incorrectly used by people unfamiliar with the ongoing NMD debate. “Ballistic missile defense as a concept embodies two distinct but interrelated facets: theater missile defense (TMD) and national missile defense (NMD).”<sup>17</sup> TMD is intended to protect US and allied forces on deployed operations from battlefield or regional missile attacks. NMD, in contrast, is intended to protect the continental US in-

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<sup>17</sup>Roger Handberg, *Ballistic missile defense and the future of American security*, p 4.

cluding Hawaii and Alaska from missile attacks.<sup>18</sup> Technologically, TMD defends against shorter-range missiles such as Short Range Ballistic Missiles (SRBMs) and Intermediate Range Ballistic Missiles (IRBMs) with the former having a range of 600 miles and the latter a range of up to 2,000 miles. NMD, on the other hand, defends against longer-range missiles such as Intercontinental Ballistic Missiles (ICBMs), which have a range of 6000 miles, but can also defend against most SRBMs and many IRBMs.<sup>19</sup> In addition, TMD systems have “interceptor missiles that do not exceed 3 kilometers per second in speed” while “missile defense systems with faster interceptors that are tested against longer-range, faster threats are defined as NMD.”<sup>20</sup> The classification of Ballistic Missiles is illustrated in the following Table:<sup>21</sup>

### **Classification of Ballistic Missiles by Range**

Ballistic Missile Type	Range Parameters
<b>Short-range ballistic missile (SRBM)</b>	<b>Under 1,000 km</b>
<b>Medium-range ballistic missile (MRBM)</b>	<b>1,000 to 3,000 km</b>
<b>Intermediate-range ballistic missile (IRBM)</b>	<b>3,000 to 5,000 km</b>
<b>Intercontinental-range ballistic missile (ICMB)</b>	<b>Over 5,000 km</b>

The NMD initiative is separate from the US Theater Missile Defense programme. The design, function, and funding of both programmes are distinct; however, both programmes

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<sup>18</sup>*Ibid.*, p 4.

<sup>19</sup>James M. Lindsay, *Defending America: the case for limited national defense*. Washington, DC: Brookings Institution Press, p 38.

<sup>20</sup>*Ibid.*, p 39.

<sup>21</sup>Roger Handber, *Ballistic missile defense and the future of American security*, p 6.

fall under the newly named Missile Defense Agency<sup>22</sup> (formerly the Ballistic Missile Defense Organization), with technology development a shared responsibility between both programmes.<sup>23</sup> It is also important to recognize that the names of the systems have constantly evolved. ‘NMD’ was a President Clinton term and has been overtaken by the term ‘Ballistic Missile Defense’ which represents a projected worldwide system with a variety of basing modes and affecting all phases of a threat missile’s flight including strategic and theatre defences. Moreover, the Ground-based Mid-course Defense (GMD) is essentially the new name of the NMD system as a component of BMD. It is this system that Canada is considering participating in, as a limited, ground-based, mid-course system designed to protect the North American continent including Hawaii and Alaska.<sup>24</sup> GMD is the near-term capability that will be commanded by USNORTHCOM and be intimately linked to NORAD’s missile warning system.<sup>25</sup> Hence, the term ‘Ballistic Missile Defense,’ will be used throughout this paper.

## **BMD SYSTEMS**

Before establishing a position on Canada’s participation in BMD, it is important to understand how ballistic missiles, and technologies designed to counter them, function. Ballistic missiles are rockets which are designed to travel at speeds that enable them to fly long distances before falling back to earth. They consist mostly of rocket engines, fuel

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<sup>22</sup>Theresa Hitchens, “Weapons in Space: Silver Bullet or Russian Roulette?” *CDI Missile Defense*, Apr 18, 2002, p 6.

<sup>23</sup>US Missile Defense Organization Fact Sheet, JN-00-05, *National Missile Defense Program*, January 2000.)

<sup>24</sup>Gavin Buchan, Deputy Director, Defence and Security Relations Division, DFAIT, *Comments on the Author’s Paper*, 20 May 04.

<sup>25</sup>Maj Kenn Rodzinyak & Maj (CF) Scott Jones, NORAD Plans Directorate provided *Clarification of NMD/BMD terminology following the NSSC FSE Visit to Colorado*, 3 May 2004.

chambers, guidance systems, and warheads.<sup>26</sup> For shorter-range missiles, the entire weapons system consists of a single-stage rocket, which fires until its fuel is exhausted or shut off by a flight-control computer, and then ceases functioning for the duration of the flight. For longer-range missiles or rockets, the system consists of two or three stages, or separate booster rockets, each with its own fuel and rocket engines. The booster rockets are discarded as the fuel is consumed to lessen the weight of the rocket and to increase efficiency.

Once a rocket stops burning, kinetic energy continues the missile trajectory, affected only by on-board manoeuvring systems, resistance and gravity. This makes flight trajectories predictable and essentially parabolic with respect to the earth's surface. Other details of the trajectory vary depending on the speed of the rockets when its boosters stop firing, and the angle at which the rocket is pointed.<sup>27</sup> The missile normally goes through five phases from launch to impact, consisting of boost, ascent, apogee, descent, and terminal phases. During the boost phase, the missile gains “an upward and an outward or horizontal component to its velocity.”<sup>28</sup> For an ICBM, the missile will usually be about 200 to 500 miles down-range of its launch point and have reached an altitude of about 125 to 400 miles at the end of its boost phase.<sup>29</sup> Once the boost phase is complete, the remainder of the upward flight is often termed the ascent phase. Upward flight ends at the trajectory's highest point above the earth. The missile then begins to accelerate back to earth in its descent phase.

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<sup>26</sup>James Lindsay and Michael O'Hanlon, *Defending America: The Case for Limited National Missile Defense*, pp 29–30.

<sup>27</sup>*Ibid.*, p 33.

<sup>28</sup>*Ibid.*, p 33.

<sup>29</sup>*Ibid.*, p 33.

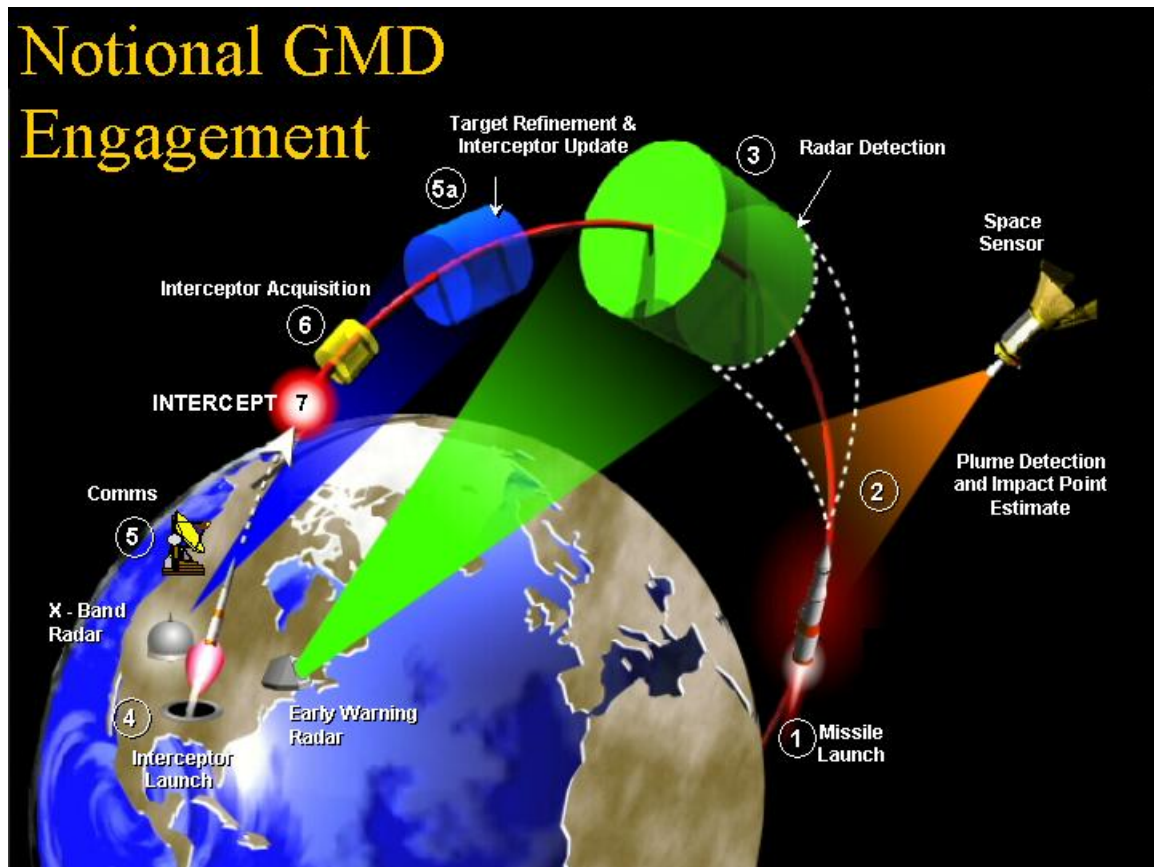
For ICBMs, most of the missile's total flight time is spent outside the atmosphere. It follows a parabolic trajectory until gravity causes it to fall downward. The missile and any objects it releases, including warheads or Multiple Independent Re-entry Vehicles (MIRVs), re-enter the atmosphere or its terminal phase onto their designated target. Generally, rockets use inertial guidance systems to set and maintain their course towards their target. Computers integrate measurements allowing their trajectory, making adjustments as required so that the warheads' ballistic flight will enable them to land within a couple of football fields of their intended target.<sup>30</sup> Inertial systems remain popular due to their internal reliance and lack of dependence upon external aids, such as GPS.

BMD systems can be employed at various phases along an incoming warhead's trajectory. The BMD system being planned by the US will use missiles, launchers and radars to accomplish its mission of destroying incoming enemy missiles. The concept is that intercepts will begin with launch detection by satellites (SBIRS) using infrared sensors that track missile rocket motors until they burn out. Initial tracking data will tell early warning radars where the missiles enter their view. These radars will form more accurate tracks of inbound missiles and pass the data to super-high-frequency radars. The high-frequency radars will, in turn, track incoming warheads and any accompanying objects as they descend toward their impact points. All tracking data will pass through a battle management system that will compute an intercept point and command the launch of one or more interceptor missiles. While on its flight path to the warhead, the interceptor will continuously alter its course via information from the battle management

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<sup>30</sup>*Ibid.*, p 31.

system until the kill vehicle collides with and destroys the warhead.<sup>31</sup> An illustration of this process is depicted as follows.<sup>32</sup>



### Feasibility of Ballistic Missile Defence.

In the era of SDI, there was a common belief that missile defence was technologically unfeasible and strategically dangerous. Such skepticism that surrounded the earlier ‘Star Wars’ programme has been replaced by renewed optimism that missile defence, on a limited basis, is required, is increasingly possible, and is vital to US National Security through the use of new kinetic kill technologies. However, can BMD

<sup>31</sup>Dawn Stover, “The New War in Space”, *Popular Science*, Vol. 261, Issue 3 (Sep 2002), pp 40–47.

<sup>32</sup>NORAD Briefing to NSSC on Missile Defense, Colorado Springs, 3 May 04.



be successfully deployed in a manner that guarantees accurate and reliable interception of incoming warheads, including weapons of mass destruction?

The scientific and engineering challenges confronting BMD, such as the effectiveness of the system to fulfil its mission of “defending a given target set against a particular offensive threat,” as well as its survivability in an environment “in which the offence attempts to suppress the defense,” are no doubt significant.<sup>33</sup> Critics in Congress argue that no system can be 100% effective, thus should not be attempted. Supporters of BMD, while acknowledging the scientific and engineering challenges, contend that with time and money these challenges could be overcome. One must keep in mind that what was only a dream in the past is quickly becoming a reality due to the sweeping advances in technology. Roger Handberg insists that computers, for example, have changed the nature of war “because of their capacity to manipulate immense masses of data well beyond human capabilities to handle them in miniscule amounts of time.”<sup>34</sup> As a result, he adds that BMD has become “a realistic possibility because the variables involved in achieving interception change so quickly that no human observer could anticipate and intercept such hypersonic objects.”<sup>35</sup>

The ambitious programme under way within the US indicates that BMD will be a functional reality by the end of the next decade.<sup>36</sup> Plans are proceeding quickly to launch a multiple missile defence system, which will be able to cover the boost, post-boost, mid-course, and terminal phases of a ballistic missile’s flight, and ones that will be layered into a comprehensive tactical structure through strategic defence. It is important to note

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<sup>33</sup>Ivo H. Daalder, *Strategic Defences in the 1990s: Criteria for Deployment*, New York: St Martin’s Press, pp 14–18.

<sup>34</sup>Roger Handberg, *Ballistic missile defense and the future of American Security*, p 22.

<sup>35</sup>*Ibid.*, p 22.

<sup>36</sup>*Space Appreciation*, p 11.

that BMD deployment will not include space-based interceptors for the foreseeable future, although research and development will continue.<sup>37</sup>

While government has a fundamental responsibility for the safety and security of its citizens, what is the right balance between safety and security on one hand and the cost of a defensive missile system on the other? At some point, the US may find BMD unaffordable. For example, the testing of ballistic missile defence systems over the last year has had mixed results. Five of eight ground-based interceptor tests have been successful; however, US authorities claim that testing is gaining in complexity and precision.<sup>38</sup> It should also be noted that early tests were criticized for their artificiality in employing transponders and tracking mechanisms to assist with their intercept. Plans to improve on the testing process are based on evolving technologies, which according to the US should improve system efficiency and effectiveness.<sup>39</sup>

It is important that the public see some early successes in the development of BMD; otherwise, opposition is likely to grow as other areas of the economy compete for these highly sought-after funds. This will also be important for Canada, from a cost-effective perspective, as it decides on whether to participate in BMD. There would be little value in participating in the development and deployment of a system that is ineffective, is vulnerable, and/or lacks robustness. Notwithstanding this, virtually anything is possible given the resources and the pace of technological change. However, the success of the

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<sup>37</sup>*Space Appreciation*, p 11.

<sup>38</sup>Theresa Hitchens, *Technical Hurdles in U.S. Missile Defense Agency Programs*, Center for Nonproliferation Studies Occasional Paper No. 12, p 11.

<sup>39</sup>DFAIT Backgrounder: *Canada and Ballistic Missile Defence*, p 2–3.

BMD programme will be determined in large part by how quickly the systems can be proven effective, and its costs against a mounting budget deficit and a mixed economy.<sup>40</sup>

## **Treaties and Regimes.**

The primary arms control issue that surrounded SDI involved the provisions of the ABM Treaty. Signed between the US and the Soviets on May 26, 1972, it marked the beginning of an arms control process which places limits on the number of anti-ballistic missile systems held by the respective parties and is also viewed by many countries as the “bedrock of regional and world security.”<sup>41</sup> Article 1, Paragraph 2, of the ABM Treaty addresses, in general terms, the limitations that “each party undertakes not to deploy ABM systems for a defense of the territory of its country and not to provide a base for such a defense, and not to deploy ABM systems for defense of an individual region except as provided for in Article III of this Treaty.”<sup>42</sup> The Treaty, as amended in 1974, limits ABM deployment to only one site of 100 interceptors and 100 launchers, to be located around the national capital or an intercontinental ballistic field. It is agreed in Article V that each party undertakes “not to develop ABM systems or components that are sea-launched, air-based, space-based, or mobile land-based.”<sup>43</sup>

According to President Bush, the ABM Treaty was seriously flawed in that it perpetuated a relationship based on distrust and mutual vulnerability. In today’s security environment, President Bush sees it as ignoring the fundamental breakthroughs in

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<sup>40</sup>Center for Arms Control and Non-Proliferation, *Briefing Book on Ballistic Missile Defense*, May 2004.

<sup>41</sup>Gronlund and Lewis, “How a Limited National Missile Defense Would Impact the ABM Treaty”, *Arms Control Today*, November 1999.

<sup>42</sup>Sidney D. Drell, Philip J. Farley, and David Holloway, *The Reagan Strategic Defense Initiative: A Technical, Political, and Arms Control Assessment*. Cambridge, Massachusetts: Ballinger Publishing Co., 1984, p 118.

<sup>43</sup>*Ibid.*, p 8.

technology against threats that face the World. As a result, the US has walked away, exercising its option of withdrawal from the Treaty.<sup>44</sup> On December 13, 2001, President Bush announced that he had given notice to Russia's President Putin that the US would withdraw from the ABM Treaty. With the mandatory six-month notice required by the Treaty, the withdrawal officially took effect in June 2002.<sup>45</sup> This, in effect, eliminated constraints that would impinge on planned US missile defence tests.

A related and equally important initiative was the Missile Technology Control Regime (MTCR). Formed in 1987 by the G-7 governments (Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States), its aim was to control global nuclear missile proliferation by countries that produce and develop ballistic missiles, related technologies and support equipment. The MTCR has 29 signatories.<sup>46</sup> The provisions of the MTCR are implemented through each member's export control mechanisms that prohibit the sale of material related to ballistic missiles or cruise missiles with a payload exceeding 500 kilograms over a distance of 300 kilometres.<sup>47</sup> In 1993, the MTCR was expanded to include all delivery systems for chemical and biological weapons; however, regrettably, it did not include delivery systems capable of carrying weapons of mass destruction.

Although the MTCR is not a binding treaty, its record of achievement has been mixed. The regime is credited with helping to terminate three ballistic missile development programmes, including the joint Argentine-Egyptian-Iraqi Condor II, Brazil's MB/EE

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<sup>44</sup>*Bush Remarks to Students and Faculty at the National Defense University*, May 1, 2001.

<sup>45</sup>Erin V. Causewell, *National Missile Defense, Issue and Developments*, New York: Novinka Books, p 17.

<sup>46</sup>Department of National Defence, *Extract from Arms Control and Disarmament, Arms Control and Disarmament* (Ottawa: Library of Parliament 1994).

<sup>47</sup>*Ibid.*

and SS series, and two projects in South Africa, and slowing down a number of others.<sup>48</sup> However, the voluntary pact has been unable to halt the general trend in ballistic missile proliferation, which has seen a trend toward systems of increasing range, payload and accuracy. Even Countries like China and Russia, which agreed to adhere to the MTCR, continued exporting missile technology and equipment. For example, the People's Republic of China (PRC) is known to provide export missile technology, having provided technical assistance to Iran, Pakistan, Libya and North Korea.<sup>49</sup> Indeed, the Rumsfeld report [2001 Quadrennial Defense Review] cited the PRC's active role in missile proliferation as a direct threat to the US.<sup>50</sup> Meanwhile, a black market in missile technologies has helped to "circumvent the pact altogether."<sup>51</sup> Hence, the Canadian position on adherence to the International regime, while principled, has not kept pace with reality.

## **Deterrence**

Since supporters and opponents of NMD alike have hinged some of their arguments on "deterrence," it is critical that we look at the strategy of deterrence within the North Atlantic Treaty Organization (NATO) framework for international peace and security. Currently, NATO's security policy is based on the twin principles of deterrence and defence as the primary means of preventing war. A secondary aim, should an aggression occur, is to respond at the right level to make the aggressor cease his attack and withdraw. This strategy is founded upon a "flexible and balanced range of responses, conventional and nuclear, to all levels of aggression or threats of aggression."<sup>52</sup> The military elements of "flexible

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<sup>48</sup>Scott McMahon, *Pursuit of the Shield: The U.S. Quest for Limited Ballistic Missile Defense*. University Press of America, pp 147–148.

<sup>49</sup>Don Feder, "Beijing's Missile Menace", *The Washington Times*, 31 January 2002, A16.

<sup>50</sup>Jack Spencer, *The Ballistic Missile Threat Handbook*, p 74.

<sup>51</sup>Scott McMahon, *Pursuit of the Shield*, p 150.

<sup>52</sup>The North Atlantic Treaty Organization, *Fact and Figures* (Brussels: NATO Information Service, 1984), p 52.

response” include conventional forces to enhance deterrence by providing a link between conventional and strategic nuclear forces to provide the ultimate weapon. Each of these elements is mutually supportive and is essential in providing an effective deterrence.<sup>53</sup>

In the 1970s, the US adopted a “countervailing strategy” which emphasized a policy of retaliatory strikes on Soviet military forces and war-making capabilities, as opposed to attacks on civilian and industrial targets.<sup>54</sup> They also allowed for the possibility of limited attacks on smaller targets. This strategy sought to provide the President with more flexibility, with respect to the timing, scale, and the targets of the attack, than he would have had in earlier years. This ‘extended deterrent’ also sought to convince the Soviet Union that any level of aggression against the US allies could escalate into a nuclear conflict that could involve attacks on the Soviet Union. Consequently, the US has not ruled out the possible ‘first use’ of nuclear weapons in a conflict. However, in the late 1970s, the US issued a “negative security assurance,” in conjunction with the Nuclear Non-Proliferation Treaty (NPT), in which it stated that it would not threaten or attack with nuclear weapons any non-nuclear weapons state that were parties to the NPT, unless these states were allied with a nuclear nation in a conflict with the US. After the demise of the Soviet Union, the US retained the policy on “first use” as “a disincentive to those who would contemplate developing or otherwise acquiring their own nuclear weapons.”<sup>55</sup>

During the 1990s, the NATO alliance altered its nuclear strategy to reflect the demise of the Soviet Union and Warsaw Pact, but, like the US, did not adopt a “no-first use” policy. Although nuclear weapons play a smaller role in Alliance strategy than they did

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<sup>53</sup> Annex C to A/AWGAF/RR, *The Western Approach*, p c-11.

<sup>54</sup> CRS Report for Congress, *US Nuclear Weapons: Changes in Policy and Force Structure*, Feb. 23, 2004.

<sup>55</sup> *Ibid.*, p 7.

during the Cold War, the NATO allies reaffirmed the importance of nuclear weapons for deterrence. Nuclear weapons have made a strong contribution in rendering the risks of aggression against the Alliance “incalculable and unacceptable.”<sup>56</sup> Assuming NATO maintains its will and capability to execute its declared strategy, an adversary will not launch a nuclear attack for fear of an equally devastating response, a punishment that inflicts extraordinary damage upon the violator after the transgression. For over five decades, this nuclear deterrence has been the basis for keeping peace in the nuclear world, particularly between the US and the former Soviet Union.

With respect to BMD, the deployment of a robust and highly effective missile defence system could act as a major deterrent, even to the point of perhaps persuading rogue or failed states, or non-state actors, that it is not worth the investment to proceed with ICBM development. Another important reason for developing a missile defence system is that the US will not allow its ability to project its foreign policy in all areas of the world to be influenced by ‘blackmail’, either stated or perceived, by any rogue nation. No matter what the cost, or technological difficulties, the US does not want to have to ‘clear’ its foreign policy stance with countries such as North Korea, Iran, or the like. Non-proliferation has arguably failed, and therefore the US must assume that at some time in the future all rogue nations and perhaps even terrorists groups will have the potential ability to launch IBMs. Therefore, keeping the peace exclusively through deterrence ensured by the credible threat of a devastating retaliation to an enemy first strike, as during the Cold War, is not an effective threat against rogue or terrorists groups. To this end, the US needs more than an

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<sup>56</sup>*Ibid.*, p 9.

annihilation response. It wants to stop the missile early in its flight path and then have a measured response.<sup>57</sup> Thus, a limited BMD system can be asserted as a stabilizing initiative.

## Arms Control

A related but equally important feature of the Cold War environment is arms control. As one of the “pillars of Canadian Security Policy”, it complements those measures the West must take, such as maintaining weapons and forces necessary for an adequate deterrent.<sup>58</sup> It embraces three principal objectives: to reduce the risk of war; to reduce the extent of damage should war occur; and to reduce the burden of peacetime defence preparation.<sup>59</sup>

A primary objection to BMD has always been that it would undermine disarmament and reignite a new nuclear arms race. So will BMD stimulate a new arms race that could lead to greater international instability? The point here is that sustaining nuclear nonproliferation has proven more difficult in the post-Cold War era than expected. Roger Handberg, in *Ballistic Missile Defense and the Future of American Security*, contends that nuclear technology is now more available than ever before although the slowdown in commercial nuclear power has helped to reduce dissemination. According to him, national leaderships are driven by domestic agendas that emphasize their independence, even defiance, of any foreign government dictatorships. From this perspective, “seeking such weapons becomes rational as a tangible measure of acquiring international prestige and power.”<sup>60</sup> Consequently, the possession of nuclear weapons in itself may provide a

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<sup>57</sup>*Discussions with Maj Murphy*, NORAD Ops Center, Colorado, 3 May 2004.

<sup>58</sup>Canada, Department of National Defence, *Challenge and Commitment, A Defence Policy for Canada* (Ottawa: Canadian Government Publishing Centre, 1987), p 26.

<sup>59</sup>Colin S. Gray, *Strategic Defences: A Case for Strategic Defence Survival* (Mar/Apr 1985), p 5.

<sup>60</sup>Roger Handberg, *Ballistic Missile Defense and the Future of American Security*, p 117.



measure of re-spect among one's enemies. According to the latest US National Intelligence Estimate, "the proliferation of ballistic-related technologies, materials and expertise — especially by Russian, Chinese and North Korean entities — has enabled emerging missile states to accelerate missile development, acquire new capabilities and potentially develop even more capable and longer-range future systems."<sup>61</sup> Other emerging missile states include Iran, Libya, Iraq, Syria, and Pakistan.

While it was expected that both Russia and China would react to expand their arsenals to "ensure a capacity to overwhelm any defensive capability that the Americans might deploy," this has not happened.<sup>62</sup> Conversely, both Russia and China appear to be less concerned with missile defence than originally anticipated. Russia, on one hand, is focused on its new strategic relationship with the US, the most recent Russian–US arms control agreement, the May 2002 Strategic Offensive Reduction Treaty known as the "Moscow Treaty." This Treaty acts as not only an arms reduction measure but a strategic reform agreement that changes the fundamental relationship between the US and Russia.<sup>63</sup> On the other hand, Russia sees no challenge from BMD to Russia's offensive capacity; ie, it will retain the ability to mount a credible deterrent. Russia is no longer required to reduce its nuclear weapons under the Non-Proliferation Treaty and is able to maintain a significant number of nuclear weapons on high alert.<sup>64</sup> Similarly, China's reference to BMD at the Non-Proliferation Treaty (NPT) Preparatory Committee avoided a vigorous denunciation of the proposed NMD in favour of simply noting that "missile defence programmes

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<sup>61</sup>The Honourable John N. Hostettler, *ABM Treaty, Post 9-11 Deterrence and the Need for Missile Defense*, April 24, 2002, p 1.

<sup>62</sup>Project Ploughshares, "Canada and Missile Defence", *Canada and BMD*, May 2003, [www.ploughshares.ca/content/abolish.p.3](http://www.ploughshares.ca/content/abolish.p.3)

<sup>63</sup>*Ibid.*, p 4.

<sup>64</sup>Ernie Regehr, *Canada and Ballistic Missile Defence*, p 23.

should not undermine global strategic balance or disrupt international or regional peace and stability.”<sup>65</sup>

In view of these developments, the fears that US missile defence will be met with radical rearming by Russia and China are now *cautiously* discounted considering the US could conceivably expand its limited system to a more comprehensive capability that would affect Russian and Chinese strategic arsenals. This may indicate that BMD may actually contribute to an end of the efforts of some nations to pursue weapons of mass destruction. Conversely, there may be evidence that BMD has been responsible for the unraveling of certain gains made in the arms race such as:<sup>66</sup>

- ◁ North Korea’s having renounced the nuclear Non-Proliferation Treaty, the first state to do so since it was signed 35 years ago.
- ◁ Iran’s admission to undeclared nuclear activities.
- ◁ Libya’s revelation, while dismantling its unsuccessful weapons of mass destruction programme, of its weaponry work as far more advanced than first thought.
- ◁ Pakistan’s senior nuclear scientists’ admission to selling its nuclear expertise [advanced centrifuge techniques for fissile material and complete nuclear weapon plans] to other countries.

Furthermore, in 1972, nine countries had possessed ballistic missiles while in 2001 at least 28 nations had possessed ballistic missiles according to December’s Nuclear Posture Review. The Review also notes that the proliferation of nuclear, chemical and biological weapons and ballistic missiles continues unabated given that:

- ◁ 12 nations have nuclear weapons programmes;
- ◁ 16 nations have chemical weapons programmes;
- ◁ 13 nations have biological weapons programmes.

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<sup>65</sup>*Ibid.*, p 4.

<sup>66</sup>Graham Fraser, “Canada to call for ban on arms in space”. *Toronto Star*. [www.thestar.com](http://www.thestar.com) p 2.

Based on the foregoing information, one could conclude that “arms control treaties and non-proliferation efforts have not produced the desired results.”<sup>67</sup> The world is still a dangerous and unstable place. More nations have nuclear weapons while others have nuclear aspirations and still others have chemical and biological weapons. According to President Bush, some have already developed the ballistic missile technology that would “allow them to deliver weapons of mass destruction at long distances and at incredible speeds.”<sup>68</sup> And according to President Bush, a number of these countries are spreading these technologies around the world.<sup>69</sup>

### **Threat Assessment.**

With the end of the Cold War, the threat posed by the proliferation of ballistic missiles and the development of weapons of mass destruction (WMD) in rogue, developing, or failed states is disconcerting. Under growing concerns that certain rogue states are undeterred by the “threat of nuclear retaliation”, a full spectrum of missile defences is seen by the US as essential to its new strategic environment, particularly following the events of 9/11. With the total disregard for the lives of innocent victims in the attack of the World Trade Center, it is safe to assume that al-Qaida or other fundamental extremists would not hesitate to use nuclear devices including ballistic missiles against the West if they were to acquire such weapons of mass destruction.

Attempts by al-Qaida to procure WMD technology was evident in the testimony of Sultan Bashiruddin Mahmood, a prosecution witness and a former nuclear scientist at the

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<sup>67</sup>John N. Hostettler, *ABM Treaty, Post 9-11 Deterrence and the Need for Missile Defence*, April 24, 2002, p 2.

<sup>68</sup>*President Bush's Remarks to Students and Faculty at National Defense University*, May 1, 2001 p 3.

<sup>69</sup>*Ibid.*, p 3.

Pakistan Atomic Energy Agency. He admitted, in the February 2001 trial for the bombings of two American embassies in East Africa, to having met with Bin Laden and other al-Qaida members for two to three days in August 2001 to discuss WMD. According to his testimony, Bin Laden was interested in nuclear, biological, and chemical weapons and sought advice on how to build a ‘dirty bomb’ to spread radiological debris.<sup>70</sup> Although ballistic weapons are not mentioned in his testimony, there is no doubt, based on Bin Laden’s planning and execution of the attacks on the World Trade Center in September 2001, that he wouldn’t hesitate to use a ballistic missile against the US if he had the means of acquiring and launching it.

In the opinion of Denis Gorley, a senior consultant at the Center for Non-Proliferation Studies of the Monterey Institute for International Studies in Washington, for those “impelled toward this new brand of terrorism, there exists a complementary relationship between apocalyptic aims and weapons of mass destruction.”<sup>71</sup> Accordingly, while one of the purposes of a ballistic missile defence systems would be to dissuade a “rogue” state or group from using ballistic missiles and WMD to advance its interests, it is hoped that it would detect and destroy those weapons of a ballistic nature which may someday come into the hands of terrorist groups. Furthermore, it will address the possibility of an accidental or unauthorized launch of a ‘legitimate’ weapon system, thus enabling the US to undertake a ‘shoot-look-shoot’ approach, which could alleviate the need to exercise the US Single Integrated Operational Plan (SIOP) and massive retaliation.<sup>72</sup> Fundamentally, this could save millions of lives which would otherwise be lost if the US were forced to exercise its current limited options under a ballistic missile attack.

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<sup>70</sup>*Ibid.*, p 4.

<sup>71</sup>*Ibid.*, p 4.

<sup>72</sup>Strategic War Planning System (SWPS-SIOP) [<http://www.fas.org/nuke/guide/usa/c3i/swps.htm>] p 1.

To illustrate the point of ballistic missile acquisition and usage, Thomas Schelling, an American strategist, warns that September 11, 2001 should serve as a “harsh reminder” that planners should avoid confusing “the unfamiliar with the improbable.”<sup>73</sup> For example, any person with the appropriate scientific and mechanical knowledge and skills can build a simple, self-guided cruise missile with the capacity of carrying a significant payload. While recognizing that it is not a ballistic missile, it demonstrates how technology and the information age could facilitate and fuel the proliferation of these and more sophisticated types of weapons such as ballistic missiles in the hands of terrorists. To demonstrate the ease of building a cruise missile, Bruce Simpson, a New Zealand Engineer, runs a popular technical web site on which he documents his ongoing effort to build one for under \$5000.<sup>74</sup> When the Command Director of NORAD was questioned on the validity of this threat, he expressed grave concern that cruise missiles could be constructed for less than \$10,000. He added that it is cruise missiles that still posed one of the greatest threats to North America because of the difficulty in detecting and destroying them.<sup>75</sup> While the fundamental rationale for BMD remains to counter ICBM and other emerging ballistic missile threats, work will need to proceed on BMD to include the acquisition of a broader overall aerospace defence capability to defend against all aerospace threats/potential threats from cruise missiles and UAVs.

In Oct 2002, the Bush Administration announced that North Korea had been pursuing a “clandestine uranium enrichment program” and that Pakistan and other countries

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<sup>73</sup>Denis M. Gormley, “UAVs and Cruise Missiles as Possible Terrorist Weapons”, *Center for Nonproliferation Paper* No. 12, p 7.

<sup>74</sup>Gormley, “UAVs and Cruise Missiles as...[New Challenges in Missile Proliferation, Missile Defense, and Space Security]”, p 4. Bruce Simpson’s web site can be found at [<http://www.interestingprojects.com/cruisemissile>] and [<http://aardvark.co.nz>].

<sup>75</sup>NSSC/FSE *Colorado Springs*, 3 May 2004.

were implicated.<sup>76</sup> Indeed, Dr. Abdul Qadeer Kahn, father of the Pakistani nuclear programme, admitted in early February 2004 to the Pakistani Authorities his involvement in extensive proliferation of nuclear weapons technology to Iran and Libya. Interviewed on Feb 17, 2004, President Musharraf noted that Pakistan's investigation had not uncovered evidence of transfers to other countries.<sup>77</sup> The *Washington File*, however, has further implicated Khan in leading an international network operating in Europe, Asia, and Africa that sold uranium enrichment technology and equipment to rogue states.<sup>78</sup>

This development and potential employment of long-range ballistic missiles by rogue, developing or failed states promotes increasing concerns about the vulnerability of the US as the sole remaining superpower and its vital in-orbit space assets. Because of this ever-growing threat, "ballistic missile proliferation is one of the key drivers behind current trends in ballistic missile defence and, more importantly, space control."<sup>79</sup> As confirmed by the US State Department, at least 27 countries possess, or are in the process of acquiring or developing, ballistic missiles. As well, US intelligence estimates suggest that during the next 15 years, new ICBM threats will most likely emerge from North Korea and, probably, Iran.

Russia, the United States, China, Ukraine, India, Israel and Japan all possess space launch vehicles capable of launching a nuclear warhead into orbit. In addition, Pakistan, Iran, North Korea, and Saudi Arabia possess medium-range ballistic missiles

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<sup>76</sup>Sharon A. Squassoni, *Weapons of Mass Destruction: Trade Between North Korea and Pakistan*, CRS Report for Congress, 11 Mar, 2004, p 2.

<sup>77</sup>*Ibid.*, p 2.

<sup>78</sup>*Washington File*, U.S. Embassy Ottawa Information Resource Center, 31 Mar 2004, p 11.

<sup>79</sup>*Space Appreciation*, p 10.

that could drive a nuclear warhead into space.<sup>80</sup> The likelihood of terrorists acquiring both a nuclear weapon and a ballistic missile to explode it is judged remote at this time.<sup>81</sup> However, the complexity of the Khan network illustrates the need for a multifaceted approach to ultimately defeat the Weapons of Mass Destruction on the black market.

Douglas Ross, a foreign policy advisor to Prime Minister Martin, also argues that “the world cannot live indefinitely under the nuclear threat without someday experiencing a major nuclear war.”<sup>82</sup> He points out that the risk of accidental or inadvertent nuclear warfare is just too high because of the human element or potential mechanical vulnerabilities of nuclear command and control systems. To this end, he points out that the “awareness of command vulnerabilities drove the Soviet military in the waning years of the USSR to construct a fully automated ‘Dead Hand’ launch system that, when turned on in crisis, would ensure a massive retaliatory launch of most Soviet long-range weapons even if Moscow had been incinerated in a no-warning American/NATO attack.”<sup>83</sup>

In this context, it makes sense that the US deploy an effective Missile Defense System to defend against the inadvertent release of a ballistic missile from Russia or a rogue country such as North Korea. Moreover, while the impact of BMD deployment on relations with Russia and China may be problematic, the new strategic concerns as generated by the events of 9/11 appear to outweigh the traditional ones of arms build-up with those two nations.

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<sup>80</sup>Denis J. Baines, “Prospects for “Non-Offensive” Defenses in Space”, *Center for Nonproliferation Studies Occasional Paper* No. 12, p 36.

<sup>81</sup>*Ibid.*, p 36.

<sup>82</sup>Douglas Ross, “Foreign Policy Challenges for Paul Martin”, *International Journal* LVIII, no. 4 (Autumn 2003), p 29.

<sup>83</sup>*Ibid.*, p 29.

## **BMD and Canada.**

Debates in the press and among our political leaders concerning Canada's participation in BMD has generated considerable public attention and will likely generate even greater debate as the nation heads for a Federal general election this summer.

Central to the discussion, as defined by most submissions to various defence forums and the media, is the effect of BMD in fuelling the global arms race and its effect on East-West relations. Lloyd Axworthy, Sheila Copps, and others cast the BMD programme, and any Canadian participation in it, as undermining the arms control and disarmament agenda that they see as the foundation for international peace and security. In their view, BMD will bring back the "darkest days of the Cold War era, with the atomic clock moving inexorably toward midnight."<sup>84</sup> Indeed, Philip Coyle, a former senior Pentagon official, has stated that the system is potentially "destabilizing," because it could lead Russia and China to build up arms in response. Russia has already announced that it is producing "maneuvering warheads" in response, and it could push China to follow suit.<sup>85</sup>

In a recent vote of parliament on BMD participation, 30 Liberals broke ranks and voted with the Bloc Quebecois in Feb 2004 in support of a motion to end negotiations with Washington. Nevertheless, the motion for Canadian participation in the proposed US antimissile shield passed 156 votes to 73 votes with the Alliance and Conservative

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<sup>84</sup>Scot Robertson, "The Missile Defence Debate: Beyond the Dialogue of the Deaf", *Policy Options*, August 2003, p 69.

<sup>85</sup>Tim Harper, Washington Bureau, *Toronto Star*. "Canada Warned of Untested Defence System", March 17, 2004, [www.thestar.com](http://www.thestar.com).



party joining a majority of Liberal MPs in support of the motion.<sup>86</sup>

The critics were quick to call the government's decision "atonement" to the US, not only for sitting out the war in Iraq, but also for Prime Minister Jean Chretien's criticism of the budget deficits run up by President Bush.<sup>87</sup> Critics of BMD also often compare it to the doomed "SDI" programme that was the cornerstone of President Reagan's Defence Policy. Gen Henault, Chief of the Defence Staff, has stated that it is wrong to portray the BMD system as the "ambitious Star Wars plan of the Reagan era."<sup>88</sup> Unlike the "Star Wars" system portrayed by Reagan which proposed a massive, space-based platform capable of intercepting a massive nuclear attack by the former Soviet Union, the current proposal is a much more "modest, land-based system, capable of intercepting a limited missile attack by a terrorist group or rogue regime."<sup>89</sup> In any case, until the initial system has been successfully deployed and proven, it will be difficult to convince the critics of the merits and the need to move on with other phases of the BMD system.

Notwithstanding the overwhelming parliamentary support for participation in BMD, it is worthy to point out that the Canadian Government has been in discussions for years with the US State Department on its participation in Missile Defense — the problem lies in the slow rolling of the final government decision and the prospects for Canada's being shut out of the process and its influence on the final Command and Control and deployment system. Based on recent discussions with NORAD staff during an NSSC FSE,

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<sup>86</sup>Daniel Leblanc, "Missile Defence gets Boost in House", *Globe and Mail*, June 4, 2003, [www.theglobeandmail.com](http://www.theglobeandmail.com).

<sup>87</sup>Aileen McCabe and Robert Fife, *Canada in Talks to join missile defence system*. May 30, 2003, [www.canada.com/nati](http://www.canada.com/nati).

<sup>88</sup>Alberta Sheldon, ed., "Support missile defence or be seen as weak link by U.S., Henault says", *National Post*, June 11, 2003.

<sup>89</sup>*Ibid.*, p 2.

it was learned that it may be too late for Canada to influence the Command and Control of NORAD since the mission of intercept has already been given to NORTHCOM.<sup>90</sup>

## **Canada/U.S. Bilateral Security Relationships**

Canada's historical development of its Defence Policy has always been marked by a heavy reliance on others with common interests and values. Both NORAD and NATO are elements of Canada's collective defence that contribute to Canada's national security. From the US perspective, according to the US Department of State, "the bilateral relationship between the United States and Canada is perhaps the closest and most extensive in the world.... U.S. Defense arrangements with Canada are more extensive than with any other country."<sup>91</sup> Indeed, LGen MacDonald's presentation to the Senate Standing Committee on National Security and Defence in May 2002 reiterated that the "United States is Canada's most important ally and defense partner."<sup>92</sup>

The long-standing and well-developed defence and security relations between the US and Canada reflect a unique and vital partnership which is in the interest of both countries to maintain. The approximately 200 treaties and agreements governing Canada-US relationships have provided a solid legal basis for cooperation on a wide range of issues from defence to the environment and has brought unequalled prosperity and security to both countries.<sup>93</sup>

With Bush's announcement in December 2002 that a ground-based missile defence

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<sup>90</sup>NORAD Briefing, Colorado Springs FSE, 3 May 04.

<sup>91</sup>U.S. Department of State, "Background Note: Canada," [<http://www.state.gov/r/pa/ei/bgn/2089.htm>] Bureau of Western Hemisphere Affairs, June 2002, p 2.

<sup>92</sup>LGen George Macdonald, *Canada-US Defence Relations, Asymmetric Threats and the US Unified Command Plan* [[http://www.forces.gc.ca/eng/archive/speeches/2002/may02/vcd\\_s\\_e.htm](http://www.forces.gc.ca/eng/archive/speeches/2002/may02/vcd_s_e.htm)], 6 May 2002, p 1.

<sup>93</sup>DFAIT, *Canada-United States, A Strong Partnership* [ [www.can-am.gc.ca](http://www.can-am.gc.ca) ], 18 May 2004.

would be fielded to achieve initial operational capabilities in 2004, Canada can no longer put off indefinitely the decision to participate in BMD.<sup>94</sup> The way in which the Martin Government handles the issue could have a profound effect on the larger Canada–US relationships, particularly in view of the strained relations with the US as a result of several political *faux pas* under the Chretien government. A negative response by Canada to a US request for support would, therefore, further weaken existing bilateral security relations between Canada and the US, particularly as they relate to NORAD and “Canada’s ability to influence U.S. defence planning.”<sup>95</sup> In recognizing these sensitivities, John McCallum, the Minister of Defence, on May 29, 2003 announced “The Government has decided to enter into discussions with the United States on Canada’s participation in ballistic missile defence.”<sup>96</sup> The Minister emphasized that Canada’s decision to begin discussions was about the nature and importance of Canada’s future relationship with the US.

As Mr. Mason states, the Canadian missile defence decision will significantly affect Canada’s partnership approach on cooperation. On the one hand, participation will further strengthen cooperation which would be consistent with more than 60 years of defence policy — Canada would continue to accept the notion that North America is a single defence theatre and both countries should work together to defend it in an agreed manner even though their capabilities are considerably different. Conversely, a decision not to participate will change Canada–US relationships radically: for the first time in 60 years, Canada will have excluded itself from an important aspect of North American

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<sup>94</sup>Union of Concerned Scientists, *Technical Realities: An analysis of the 2004 Deployment of a U.S. National Missile Defense System*, 2004.

<sup>95</sup>James Ferguson, *Deju Vu: Canada, NORAD, and Ballistic Missile Defence*, p 17.

<sup>96</sup>Dwight N. Mason, “Canada Alert: Canada and Missile Defense”, *CSIS Hemisphere Focus*, Vol XI, Iss. 22, June 6, 2003.

defence. Mr. Mason adds that such a decision would change the mission of NORAD. Canadian access to US military space programmes and activities and related information could be further diminished or vanish, and Canadian research and development opportunities relative to space could be reduced.

It could also be argued that Canadian access to billions of dollars' worth of surveillance and intelligence data would suffer, a point that was raised during the National Security Studies Course (NSSC) Field Study Exercise (FSE) to Colorado Springs in May 2004. One cannot ignore the fact that Canada's standing on the world stage is wholly or mostly due to our close ties with the US. Other countries talk to Canada as an intermediary in dialogue with the US. If Canada continues to take its relationship with the US for granted, with Government officials making negative statements, it is highly probable that Canada's "soft power" within Foreign Affairs will likely further erode.

Considering that Canadians and Americans have fought side by side in two World Wars, in Korea, in the Persian Gulf, Kosovo, and Afghanistan, and that they have partnered in defending North America since 1958 with the creation of NORAD, it would be difficult to imagine Canada not participating in a programme aimed at protecting North America from a ballistic missile attack. As stated in *Securing an Open Society: Canada's National Security Policy*, "there can be no greater role, no more important obligation for a government, than the protection and safety of its citizens."<sup>97</sup>

## **Economic Considerations**

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<sup>97</sup>Canada, *Securing an Open Society: Canada's National Security Policy*, Apr 2004, p vii.

Missile Defense is one of the largest research and development programmes in the US, with an annual budget of approximately \$8 billion (US).<sup>98</sup> Canadian firms are anticipating spin-off benefits and are hoping to get in on some of the billions of dollars in contracts to develop the missile shield. Ron Kane, Vice-President of the Aerospace Industries Association of Canada, stated that “it’s an area where Canadian industry has been very successful in the past, supporting U.S. military programs, and hopefully if the Canadian Government decides to participate in ballistic missile defence, that will help lever Canadian industrial participation in the program.”<sup>99</sup> Since the mid-1950s, Canada’s defence industry has increasingly become integrated with the United States defence industrial base. Canada has a privileged access to the American market as a result of its geography and similar values. Canadian companies remain dependent upon such access and as argued by Dr. James Ferguson, participation in BMD could be “extremely significant economically for Canada’s high technology aerospace industry.”<sup>100</sup> To date, Canadian industrial involvement in American missile defence development programmes has been limited. This notwithstanding, the issue pertains to the potential future opportunities for Canadian industry in missile defence and space technology.

Project Ploughshares, an Institute of Peace and Conflict, contends that non-participation in BMD will have little or no effect on the Canadian economy, which currently relies so heavily on cross-border trade.<sup>101</sup> Mr. Ernie Regehr, Executive Director for Project Ploughshares, recognizes an erosion of Canada’s special access to the American Mar-

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<sup>98</sup>DFAIT Backgrounder: *Canada and Missile Defence*, p 3.

<sup>99</sup>CBC News, *Canadian companies lobby for missile shield contracts*, 17 March 2004, <http://www.cbc.ca/stor...4/03/16/canada/missileshield 040316>.

<sup>100</sup>James Ferguson, *Déjà vu: Canada, NORAD, and Ballistic Missile Defence*, Centre for Defence and Security Studies, Occasional Paper #39, p 22.

<sup>101</sup>Project Ploughshares, Ernie Regehr, Ex Director, *Canada and BMD*, [www.ploughshares.ca/content/](http://www.ploughshares.ca/content/), p 7.

ket; however, he attributes this to a shifting of US interests rather than the level of Canadian political cooperation with US Administration. Based on the recent rather rocky relations between Canada and the US under the Prime-Ministership of Chretien, it would be difficult to attribute this erosion in relations solely to shifting “U.S. interests.” Mr. Regehr ignores the fact that Canada and the US share extensive ties ranging from free trade and environment to defence.

Canadian trading relations with the US are the most significant in the world with the annual two-way trade in goods and services between them worth almost \$510 billion (US Dollars) and growing at an average of 8.5 per cent per year since 1993. Moreover, Canada–US trade supports more than two million jobs in each country, and approximately 85% of Canadian exports and over 70% of imports are with the US.<sup>102</sup> Because of Canada’s geographic location in relation to the United States, it is clear that any attack on the US would have a devastating effect on Canada and its economy. To illustrate this, the events of 9/11 had an enormous negative effect on the Canadian economy which is still being felt by service industries including airlines, hotels, etc. Accordingly, regardless of shifts in “U.S. interests”, Canada will be invariably affected due to our close geographic, common economic, and shared democratic values.

While there is no guarantee that participation in BMD will generate business in Canada, the further down the track the programme moves without Canada, the less Canada can expect to benefit from the numerous contracts in constructing/deploying the system. To re-emphasize the potential economic benefits of Canadian participation in BMD, a

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<sup>102</sup>Conference of Defence Associations. *Stability and Prosperity: The Benefits of Investment in Defence*, Sep 2000.

senior Canadian official traveling with the Prime Minister on an 11-day European trip said that Canadian firms stand to partially benefit from the estimated \$8 billion to \$10 billion US in contracts from building the American missile system.<sup>103</sup>

While the US has not asked for either land or money in talks about Canadian participation in missile defence, Jim Wright, Assistant Deputy Minister for Global Security Policy, told the Senate National Security Committee that Canada could contribute by using Canada's existing commitment to NORAD, which amounts to 700 people and \$300 million a year.<sup>104</sup> Moreover, while Canada's involvement need not necessarily involve a cash infusion, its contribution could amount solely to policy and general support of BMD. While it is impossible to predict the full costs for a multilayered missile defence system, a recent study by the US-based Economists Allied for Arms Reduction estimated the total costs at between \$800 billion and \$1.2 trillion.<sup>105</sup> Conversely, if a missile were to hit the US or Canada, the cost in terms of lost lives and the impact on the Canadian economy as a result of even tighter cross-border control could be in the billions.

## **Missile Defence and the Weaponization of Space.**

Any discussion on BMD would not be complete without a look at space as a potential medium for future BMD systems. Under the provision of international law, as embodied in the 1967 Outer Space Treaty, space cannot be "appropriated or owned."<sup>106</sup> The Treaty specifies that space is:<sup>107</sup>

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<sup>103</sup>Aileen McCabe and Robert Fife, *Canada in talks to join missile defence system*, May 30, 2003.

<sup>104</sup>"The US hasn't asked to base missiles in Canada: official", *National News*.

<sup>105</sup>Theresa Hitchens, "Technical Hurdles in U.S. Missile Defense Agency Programs", *Center for Nonproliferation Studies Occasional Paper* No. 12, p 10.

<sup>106</sup>*Space Appreciation 2000: Winnipeg: 2000*, p 7.

<sup>107</sup>*Ibid.*, p 15.

a non-sovereign medium that cannot be possessed by states, including celestial bodies and the moon, and the vessels residing or transiting through space, as well as future celestial installations, are sovereign and the responsibility of the proprietary/launch nation. In addition, beyond the legal prohibition on the deployment of weapons of mass destruction and specifically nuclear weapons, as well as the testing of nuclear weapons, in outer space, there exists by default belligerent rights. Belligerent rights include the option to deploy other types of weapons, as well as the use of nuclear weapons for legitimate self-defence, even though these rights are not formally codified.

While space cannot be appropriated or owned, in reality, those nations who have been able to afford the development and operation in space launch capability and space programmes have been able to control space. Indeed, space has become increasingly recognized for its contribution to quality of life through essential services such as meteorology, communications, navigation, and remote sensing. It is progressively more important for “military space activities which add critical early warning, command, control, communications, computers, intelligence, surveillance and reconnaissance (C<sup>4</sup>ISR) missions upon which space-faring powers rely for their national security.”<sup>108</sup> From a military perspective, space also offers an unrivalled look-down capability, which gives the holder an unparalleled advantage and the ability to fight from the “high” ground. Critical in the provision of actual positioning information to deployed forces, space has also become home to an increasing number of powerful military and civilian earth observation satellites. Space usage in data acquisition, correlation, and distribution will continue to significantly enhance the combat capability of those forces able and willing to exploit them.

Space, which was once perceived as a safe haven, regrettably “is increasingly taking on high seas characteristics: integral to global commerce, essential in military

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<sup>108</sup>Philip J. Baines, *Prospects for Non-Offensive Defenses in Space*, p 32.



Space affairs, and attractive as a target in its own right.”<sup>109</sup> Weapons that are not covered by the Outer Space Treaty include high-energy directed lasers and kinetic kill interceptors. Hence it is in this area that is not covered by the 1967 Outer Space Treaty where US military scientists are concentrating their research for future capabilities in Missile Defense.

In the opening proposition of “Six Incentives for Space Weaponization”, written by Bruce M. DeBlois and Richard L. Garwin for the Council on Foreign Relations Study Group on US Space Posture for the 21<sup>st</sup> Century, the authors wrote: “*Where goes man goes the clash of opposing wills and the instruments to effect that clash: weapons.* This progression was true of territorial frontiers throughout history, true of the high seas in the Middle Ages, and true of the air realm in the 20<sup>th</sup> Century. The same is destined to be true in outer space.”<sup>110</sup>

Canada has opposed the deployment of weapons in space for as long as the issue has been around and is currently making an international appeal for a global treaty to ban weapons in space. According to Foreign Affairs Minister, Bill Graham, discussing the benefits of guaranteeing peaceful use of outer space would be in the interests of all nations, especially when “the growing global public goods provided by communication, navigation and remote sensing satellites are now central to our economies.”<sup>111</sup> The space environment already contains a host of technology to aid communications, commerce, science, and human security.

Military forces heavily rely on space technology, not only to guide missiles and

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<sup>109</sup>*Space Appreciation*, 2000, p 9.

<sup>110</sup>Philip E. Coyle and John B. Rhinelander, “Drawing the Line: the Path to Controlling Weapons in Space”, *Disarmament Diplomacy*, Issue No. 66, September 2002, p 1.

<sup>111</sup>“Canada to call for ban on arms in space”, *Toronto Star*, Mar 15, 2004, [www.thestar.com](http://www.thestar.com).

assist any number of military operations, but also to assist disarmament verification. Hence, it is clear that space has been militarized, but not yet weaponized. Currently the US has about 110 operational military assets in space, Russia about 40, and the rest of the world (including Australia, China, Europe, India, Israel, Japan, South Korea, Taiwan and Turkey) about 20. All assets are for use in reconnaissance, surveillance and communications.<sup>112</sup> Therefore, as previously indicated, the US has the highest degree of investment and the most to lose.

Will BMD lead to a new arms race, which could result in the weaponization of space? Space assets comprise three main categories: communications, sensors, and shooters or strike weapons. Shooters or strike weapons, if ever deployed in space, will have the capability to launch projectiles or directed energy beams at targets for strike purposes. In discussions on the weaponization of space, an important region for potential war would be in Low-Earth Orbit (LEO) sphere, which ranges from 180–1200 miles up. This area contains the majority of Earth-orbiting satellites and is home to the Hubble Space Telescope, the International Space Station, weather satellites, and many military and mobile-phone satellites. LEO would become home to 24 of 30 US Space-Based Infrared System-Low Earth Orbit (SBIRS-Low) satellites. In the longer term LEO could become home to as many as 1500 US *Brilliant Pebbles* anti-missile satellites, if and when they are developed. If war is inevitable in space, it is likely to start in this sphere because of the number of satellites found in this orbit.<sup>113</sup>

Actual weapons, to the best of anyone's knowledge, have yet to be stationed permanently in either the low-earth orbit (LEO), medium-earth orbit (MEO) (approximately

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<sup>112</sup>*Ibid.*, p 4.

<sup>113</sup>Coyle and Rhinelander, *Drawing the Line: the Path to Controlling Weapons in Space*, p 3.

3000 miles in altitude) or the geostationary Earth Orbit (GEO) located approximately 6000 miles in altitude.<sup>114</sup> There would invariably be difficulties in reaching the MEO and GEO regions because of time, space and cost considerations. Given the enormous value of outer space for the economic benefit of the international community, other nations might want to accelerate and develop Earth-based and space-based technologies designed to break a potential monopoly on space dominance.<sup>115</sup> This in turn could launch an arms race in outer space.

Notwithstanding this potential for an arms race in space, it is disturbing to imagine the potential adverse effects that these weapons would have on commercial satellites, when used in a conflict or if they were to be destroyed in the atmosphere, particularly if any of them contain nuclear warheads. For example, many people think that when things explode in space the fragments quickly dissipate, leaving space clear again. In reality, Joel R. Primack, from the University of California, explains, “the fragments from explosion continue circling the Earth, their orbits crossing those of other objects.”<sup>116</sup> He adds that material such as “paint chips, lost bolts, pieces of exploded rockets — all have become tiny satellites, traveling about 27,000 km per hour, 10 times faster than a high-powered rifle bullet.”<sup>117</sup> Anything hit by these fragments would be immediately destroyed, thus creating additional debris. Finally, a nuclear blast could also essentially nullify the capabilities of all on-orbit systems.

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<sup>114</sup>Philips Baines, “Prospects for ‘Non-Offensive’ Defenses in Space”, *Center for Nonproliferation Studies Occasional Paper* No. 12, p 32.

<sup>115</sup>Canada. Department of Foreign Affairs and International Trade, *The Non-Weaponization of Outer Space*, p 2 [<http://www.dfait-maeci.gc.ca/arms/outer3-en.asp>].

<sup>116</sup>Joel R. Primack, *Debris and Future Space Activities*, p 18.

<sup>117</sup>*Ibid.*, p 18.

With enough orbiting debris, pieces will begin to hit other pieces, thus creating a ‘chain reaction of destruction’, which will eventually leave a ‘lethal halo’ around the Earth. To operate a satellite in this environment would become practically impossible. Space warfare would further exacerbate the situation, particularly the explosion of nuclear weapons, and resultant electromagnetic pulses and nuclear radiation “would indiscriminately destroy unprotected satellites.”<sup>118</sup>

As there is a dearth of information on this key issue, Canada’s position regarding the weaponization of space appears valid. By entering discussions and participating in BMD, Canada will be able to better address its concerns about the weaponization of space. Mr. Wright, the government’s chief negotiator in ballistic missile defence talks with Washington, said that Americans fully understand Canada’s strong opposition to weapons in space. He noted that many Americans in the US Congress, and even the Pentagon, oppose space weapons, if for no other reason than the huge estimated costs.<sup>119</sup> However, there is considerable concern over the weaponization of space as the US Missile Defense Agency’s 2004/5 Budget projects the deployment of a weapons test bed in space by 2008 “to determine the feasibility of exploiting the inherent advantages of intercepting threat missiles from space.... [they] will begin developing a space-based kinetic energy interceptor in FY 04 with initial, on-orbit testing to commence with three to five satellites in 2008/9”<sup>120</sup>

While Foreign Minister Bill Graham has recently insisted that Canada’s opposition to weaponization will stand, Project Ploughshares insists “it will be of no practical

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<sup>118</sup>*Ibid.*, p 21.

<sup>119</sup>Jeff Sallot, “Canada Seeking New Treaty on Space Weapons”, *Globe and Mail*, Feb 24, 2004, <http://www.theglobean...>

<sup>120</sup>*Ibid.*, p 5.

value if Canada ends up politically and operationally in support of a BMD system that includes active development, and ultimately deployment of weapons in space.”<sup>121</sup> The Foreign Minister, Bill Graham, has insisted participation would not contradict Canada’s opposition to weapons in space, because missile defence currently is a land- and sea-based programme. A senior Canadian official traveling with the Prime Minister on an 11-day European trip said that Canada would back out of the BMD if the US decided to use the missile defence plan as the first step toward the weaponization of space. He added that Canada hopes to use the negotiations to convince the US not to put weapons in space.<sup>122</sup> As recently as May 29, 2003, John McCallum, the Minister of National Defence, stressed in Parliament that the most effective way for Canada to oppose the weaponization of space was to join the missile defence programme. According to him “...if we are not inside the tent, our ability to influence the US decisions in these areas [weaponization of space] is likely to be precisely zero.”<sup>123</sup> Moreover, Canada could always withdraw from participation in BMD.

Based on these official Government statements, it can be argued that Canada will be able to exert its position and influence only as a participant in the BMD system and therefore must be at the table not only on issues pertaining to the weaponization of space, but in all matters pertaining to the defence of North America. The ultimate goal of these discussions as recommended by Coyle and Rhinelanders is to obtain a multinational agreement banning the testing and deployment of any weapon strike system against orbiting satellites, whether ground-based, sea-based, air-based or space-based, including

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<sup>121</sup>*Ibid.*, p 6.

<sup>122</sup>Aileen McCabe and Robert Fife, *Canada in talks to join missile defence system*, [www.canada.com/nati](http://www.canada.com/nati), May 30, 2003.

<sup>123</sup>Dwight N. Mason, “Canada Alert”, *Canada and Missile Defense*, Vol XI, Iss 22, June 6, 2003.

weapons that blind or disable but which do not entirely destroy a satellite. They add that such a ban could also cover the testing and deployment in space of attack vehicles.<sup>124</sup>

While the United States has expressed an interest in the weaponization of space, it needs to fully examine the extent to which it wants to see space weaponized since it also has a great deal at stake, both commercially and militarily. It is clear that the US has and will continue to have more interest in space assets than most countries; therefore it also stands to lose the most by the weaponization of space. Accordingly, the US would retain the net benefit if no one had weapons in space. As Karl Mueller, in his article *Totem and Taboo: Depolarizing the Space Weaponization Debate*, quotes:<sup>125</sup>

It is easy to speak in general and often glib terms about global reach, the importance of holding the high ground, and revolutions in military affairs, but it is important to develop and debate a more nuanced understanding of the ways in which space weapons truly are and are not likely to alter the strategic landscape if they are built.

Before space-based weapons become a reality, there is a tremendous amount of research and development required. Furthermore, considering that space-based technology is still quite immature, it is difficult to predict whether research and development will be successful.<sup>126</sup> William Spacy contends that space-based laser weapons "...will not be feasible without a number of fundamental breakthroughs in laser physics and engineering."<sup>127</sup> Such efforts over a prolonged period makes the weaponization of space a very costly proposal, which gives nations like Canada an opportunity to continue an open dia-

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<sup>124</sup>Coyle and Rhinelander, *Drawing the Line: the Path to controlling Weapons in Space*, p 8.

<sup>125</sup>Karl P. Mueller, "Totem and Taboo: Depolarizing the Space Weaponization Debate", *The Royal Air Force Power Review*, Vol. 7, Number 1, Spring 2004.

<sup>126</sup>Jack Harris, "U.S. National Missile Defence", *Interdisciplinary Science Reviews*, Vol 23, Autumn 2001, pp 157–161.

<sup>127</sup>William Spacy, *Does the United States Need Space Based Weapons?* Maxwell AFB, AL, Air University Press, Sep 1999.

logue with the US on space-based weapons and to help prevent the weaponization of space. In the words of Kofi Annan, the UN Secretary-General, “We must not allow this century, so plagued with war and suffering, to pass on its legacy to the next, when the technology at our disposal will be even more awesome. We cannot view the expanse of space as another battleground for our earthly conflicts.”<sup>128</sup>

## **Command and Control.**

The Canadian Government would have liked to see missile defence under NORAD, the joint Canada–US command based in Colorado that was set up to defend North American Aerospace.<sup>129</sup> Furthermore, Canada is seeking guarantees that its territory will receive the same protection as the US if it joins BMD.<sup>130</sup>

Since its formation in 1958, NORAD has been the mainstay of Canada’s aerospace defence and control capability. When formed, its primary mission was to deal with the strategic bomber threat of the Cold War. Since that time, it has evolved to track and warn of an attack against North America by aircraft, missiles, space vehicles and asymmetric threats. NORAD has served both countries well, and its role following the events of 9/11 has taken on an even greater surveillance function particularly within the parameters of North America. Increased cooperation with NAVCAN and FAA has occurred with interior radar feeds linked into the NORAD systems. Furthermore, there has been increased Close Air Patrols (CAPs) both in Canada and the US, and an increased exercise planning for the interior threat. The US Defense Department has revised the Unified Command Plan

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<sup>128</sup>Annan, Kofi, “*The world community must leave no one behind as it moves to explore, develop outer space says UN Secretary-General*”, SPACE/SG/1, 19 July 1999, Vienna, Austria.

<sup>129</sup>Daniel Leblanc, “Full Protection sought under missile shield”, *Globe and Mail*, Sep. 11, 2003.

<sup>130</sup>*Ibid.*, p 1.

to create USNORTHCOM, which has been designated as the command responsible for the defence of the Homeland. The US has already announced that USNORTHCOM will have command and control of the BMD mission, hence other Commands such as NORAD and USSTRATCOM would be in a supporting role.

The data fusion, threat assessment and warning functions currently in place at NORAD, which are critical to missile defence, could easily be taken over unilaterally by the US. If Canada continues to drag its feet, the US may have little choice but to advance these functions unilaterally in the interest of efficiency. If this occurs, it is quite conceivable that due to the advent of new technologies and the decrease in the intent of Russia to attack North America, Canada's role in the overall Defence of North America will decrease even further, thus marginalizing Canada's participation in the Defence of North America.

Project Ploughshares insists that US security cooperation with Canada is a "function of its interests" and the US will continue air defence cooperation as long as it is in its interests.<sup>131</sup> This is perhaps an oversimplified assessment of US/Canada defence relations as Canadian personnel serving in NORAD are being increasingly excluded from specific intelligence relating to the Defence of NA because of its current position of "non-commitment" regarding BMD.<sup>132</sup>

Should NORAD not assume the integrated tactical warning/attack analysis (ITW/AA) functions responsible for BMD, "the integrated command structure is expected to undergo radical change to segregate warning from engagement responsibilities."<sup>133</sup> Ac-

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<sup>131</sup>"Canada to call for ban on arms in space", *Toronto Star*, Mar 15, 2004, p 7.

<sup>132</sup>NSSC FSE/NORAD, Colorado Springs, *Canadian Briefing*, 3 May 04.

<sup>133</sup>David Rudd, Jim Hanson and Jessica Blitt, *Canada and National Missile Defence*, CISS Annual Spring Seminar 2000, p 80.



According to LGen (Ret'd) W. Morton, if Canada did not participate in BMD and NORAD did not assume responsibility for ballistic defence, then Canada would be marginalized in the Command and Control structure of NORAD as the "terms of reference on mission responsibility" would change considerably.<sup>134</sup> He states "it is inconceivable that anytime soon the missions of aerospace warning and aerospace control will become irrelevant to North American security."<sup>135</sup> Canadians are already being pushed out of their jobs due to the classification of some of the upgraded radars. Moreover, information once shared has become NOFORN.<sup>136</sup>

Accordingly to Morton, it makes "...good sense to tie surveillance data and engagement data, and present that fused information to one commander."<sup>137</sup> Perhaps Dr. Jockel best expresses the future of NORAD by simply stating, "without Canadian participation in NMD [BMD], the North American Aerospace Defence Command has no future."<sup>138</sup> According to Dr. Jockel, with the intent to link the BMD battle management system to the existing NORAD tracking assessment system, non-Canadian participation in BMD would basically eliminate Canadians in the new Integrated Tactical Warning and Attack Assessment (ITWAA) process.<sup>139</sup>

Dr. Fergusson suggests that the Canadian positions in the Cheyenne Mountain Operations Center, the Missile Warning Center (which would be transferred to include missile defence) and Space Control Operations Centers would disappear.<sup>140</sup> The biggest

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<sup>134</sup>*Ibid.*, p 80.

<sup>135</sup>LGen Robert W. Morton, *Canada and National Missile Defence*, Proceedings of the Annual Spring Seminar, Canadian Institute of Strategic Studies, Ottawa, Canada, 20 April 2000, p 78.

<sup>136</sup>*Discussions with NORAD Staff during NSSC FSE 3 May 2004*. NOFORN pertains to material for US eyes only.

<sup>137</sup>*Ibid.*, p 78.

<sup>138</sup>*Ibid.*, p 84.

<sup>139</sup>*Ibid.*, p 85.

<sup>140</sup>James Fergusson, "Time for a Decision on North American Missile Defence". *Policy Options*, Apr 2002, p 33.

problem really rests with the Command Center — especially when the Canadian is the Command Director (CD) — the missile defence decision process is problematic if Canada is not a participant. Canadians also occupy the Deputy Director for Missile Warning and the Air Battle Management positions, as well as the Emergency Action Controller positions. Clearly, Canada could lose the Missile slot as it evolves to missile defence or is further harmonized with defence capability. The sole position that Canadians cannot occupy under current operations is the Missions Director (MD) for Space which is restricted to US personnel only.

In his annual report to Parliament, the Chief of the Defence Staff, Gen R.R. Henault, said Canada has a common interest with the US in developing a missile defence system and suggested that Canada would be perceived as a weak link in continental defence unless it expands its defence relationship with the Pentagon.<sup>141</sup> Gen Henault also cautioned that Canada “must never be a source of insecurity to the U.S....” especially following September 11<sup>th</sup>.<sup>142</sup> Were this to happen, Canada would likely be excluded from information about what is going on over its territory. This loss of surveillance information would have a negative impact on Canada’s ability to maintain its sovereignty.

## **Conclusion.**

The West is living in a period of profound change faced with a new security environment characterized by a new breed of terrorism, the proliferation of weapons of mass destruction, and the increased public awareness of threats to prosperity and security. The

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<sup>141</sup> Alberta Sheldon, ed., “Support missile defence...”, *National Post*, Wed., June 11, 2003.

<sup>142</sup> *Ibid.*, Jun 11, 2003.

events of September 11, 2001, have made a deep impact on perceptions of security in the United States. The US responded with its “war against terrorism” and has undertaken its most far-reaching restructure of government operations since the early days of the Cold War. It has drafted and released a new National Security Strategy and has amalgamated numerous agencies to create the Department of Homeland Security. As well, it has overhauled its military Unified Command Plan and created a Northern Command.

These developments are affecting all aspects of Canada’s bilateral relationship with the US, from border security and law enforcement to intelligence and critical infrastructure protection, to defence and military cooperation. Both Canada and the US will continue to face defence-related issues in the coming months including missile defence.

Canada shares US and NATO concerns regarding the proliferation of missiles and weapons of mass destruction. Indeed, this proliferation of mass weapons combined with the ever-increasing spread of international terrorism is creating a more dangerous and complex security environment both at home and abroad. Although the ballistic missile threat to Canada is low, Canadian and American intelligence predicts that the range and accuracy of ballistic missile technology will improve, that weapons of mass destruction will continue to proliferate and the threat to Canada and Canadian interests could increase.<sup>143</sup> An attack against the US will reverberate through Canada in immense ways, particularly on the economic front. Considering the nature of the threat, coupled with the enormous time required to develop and trial a ballistic missile defence system, waiting until an adversary has acquired and is prepared to use a ballistic missile would be

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<sup>143</sup>*Ibid.*, p 4.

irresponsible and would fly in the face of the Government's primary responsibility of providing for the protection and well-being of its citizens.

By participating in Missile Defence, Canada will be able to contribute to the future defence of North America while at the same time performing its traditional diplomatic role of working with potential ballistic missile proliferators, promoting multinational arms control initiatives and contributing to defence. The Canadian decision on whether or not to participate in BMD could also have long-term impacts on Can/US relations, and economic and collective defence relationships. It is clear that Canada can no longer abrogate its responsibility for defence and the protection of North America. As the Standing Senate Committee on National Security and Defence so aptly put it: "If we are not willing to be part of the solution, American decision-makers are likely to start thinking of us as part of the problem, in that we are not prepared to share in the burden of defending North America. In simple practical terms, if we do not signal a willingness to defend the continent, this key facet of defence will be taken out of our hands."<sup>144</sup>

The use of space for military operations will continue to take on an added significance in enhancing the security of the United States and its allies. This is likely to include the weaponization of space, which Canada strongly opposes. In recognition of this reality, BMD should be strongly pursued and space weaponization strongly opposed. Militarily, BMD would provide a degree of insurance against the inadvertent or deliberate launch of ICBMs as well as smaller strikes from nations which have or may acquire and use nuclear weapons. Furthermore, Canada would be in a better position to influence

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<sup>144</sup>*Ibid.*, p 15.

the US and the international community in its opposition to the weaponization of space by following scientific studies on the potential disastrous effects on Canada and the world.

In conclusion, Canada must be prepared to participate in a system designed to prevent a ballistic missile strike on North America and the unimaginable economic Armageddon and human tragedy that would result from such an attack. While Canada stands to gain more by joining BMD, it also stands more to lose by not joining. The time has arrived and it is indeed in Canada's best interest to participate in BMD. As Jack Granatstein has rightfully pointed out, "the U.S. is determined to improve its homeland defence and is certain to approach this subject, as it must, from a continental perspective. Canada can choose to either stand back and allow the Americans to plan for the protection of Canadian territory, or to participate in the decision."

## **Bibliography**

Armstrong, Scott, and Peter Grier. *Strategic Defense Initiative: Splendid Defense or Pipe Dream?* (New York: The Christian Science Publishing Society, 1985).

Baines, Phillip J. "Prospects for 'Non-Offensive' Defenses in Space". *Center for Nonproliferation Studies Occasional Paper 12*. United Kingdom: Monterey Institute of International Studies. July 2003.

Campbell, William A.B., and Richard K. Melchin. *The Strategic Defence Initiative, Assured Security for Canada* (Canada: Canadian Conservative Publishers Ltd., 1985).

Canada. *Space Appreciation 2000*. A Directorate of Space Development Sponsored Study on Global Space Trends & Canadian Security Implications. Winnipeg, MA, 2000.

Canada. Department of National Defence. *Space Policy*. Ottawa: 1992.

Canada. Department of National Defence. *Challenge and Commitment, A Defence Policy for Canada*. (Ottawa: Canadian Government Publishing Centre, 1987).

Canada. Department of National Defence. *NORAD Backgrounder*, <http://www.foces.gc.ca/site/focus/canada-su>.

Canada. Department of Foreign Affairs and International Trade. *Backgrounder: Canada and Ballistic Missile Defence*. <http://www.dfait-maeci.gc.ca/departement/focus/bmd-en>.

Canada. Department of Foreign Affairs and International Trade. *The Non-Weaponization of Outer Space* [<http://www.dfait-maeci.gc.ca/arms/outer3-en.asp>].

Canada. Department of National Defence. *Letters Exchanged on Missile Defence*. [[http://www.forces.gc.ca/site/Focus/Canada-us/letter\\_e.asp](http://www.forces.gc.ca/site/Focus/Canada-us/letter_e.asp)].

Canada. *Defence 85*. (Ottawa: Minister of Supply & Services, 1986).

Canada. *The Standing Senate Committee on National Security and Defence*, Eighth Report, September 2002.

Canada. *Securing an Open Society: Canada's National Security Policy*, April 2004

Carter, Ashton B., and David N. Schwartz. *Ballistic Missile Defense*. Washington: The Brookings Institution, 1984.

Center for Arms Control and Non-Proliferation. *Briefing Book on Ballistic Missile Defense*, May 2004.

Causewell, Erin V. *National Missile Defense, Issues and Developments*. New York: Novinka Books, 2002.

- Connell, Jon. *The New Maginot Line* (Great Britain: The Chaucer Press, 1986)
- Cordesman, Anthony H. *Strategic Threats and National Missile Defenses, Defending the U.S. Homeland*, Washington, DC: Praeger Pubs, 2002.
- Coyle, Philip E., and John B. Rhinelander. *Drawing the Line: the Path to Controlling Weapons in Space*, Disarmament Diplomacy. Issue No. 66, September 2002.
- Daalder, Ivo H. *Strategic Defenses in the 1990s, Criteria for Deployment*, New York: St Martin's Press.
- Denoon, David. *Ballistic Missile Defense in the Post-Cold War Era*, Colorado: Westview Press, 1995.
- Drell, Sidney D., Philip J. Farley, and David Holloway. *The Reagan Strategic Defense Initiative: A Technical, Political, and Arms Control Assessment*, Cambridge, Massachusetts: Ballinger Publishing Co., 1984.
- Feder, Don. *Beijing's Missile Menace*, The Washington Times. 31 January 2002, Ed 2. Section A16.
- Fergusson, James. *Time For A Decision On North American Missile Defence*, Policy Options April 2002.
- Fergusson, James. *Déjà vu: Canada, NORAD, and Ballistic Defence*, Centre for Defence and Security Studies, University of Manitoba, Occasional Paper #39.
- Gromley, Dennis M. *UAVs and Cruise Missiles as Possible Terrorist Weapons*. Center for Non Proliferation Studies, Occasional Paper 12. United Kingdom: Monterey Institute of International Studies. July 2003.
- Gronlund and Lewis. *How A Limited National Missile Defence Would Impact the ABM Treaty*, Arms Control Today; September 2000.
- Gray, Colin S. "Strategic Defences: A Case for Strategic Defence", *Survival* (Mar/Apr 1985).
- Hackett, James T. *The Strategic Missile Threat, 1996*, CDIIS [<http://www.cdiss.org/column.1.html>].
- Handberg, Roger. *Ballistic Missile Defense and the Future of American Security*. United States: Praeger Publishers, 2002.
- Harris, Jack. "U.S. National Missile Defense," *Interdisciplinary Science Review*, Vol. 23, Autumn 2001.
- Hitchens, Theresa. *US Space Policy: Time to Stop and Think*, Disarmament Diplomacy, Issue No. 67, Oct–Nov 2002.

Hitchens, Theresa. CDI Missile Defense, *Weapons in Space: Silver Bullet or Russian Roulette? The Policy Implications of U.S. Pursuit of Space-Based Weapons*. April 18, 2002. Presentation to the Ballistic Missile Defense and the Weaponization of Space Project Space Policy Institute and Security Policy Studies Program, Elliott School of International Affairs, George Washington University.

Hitchens, Theresa (with Victoria Samson). Technical Hurdles in U.S. Missile Defense Agency Programs. Center for Nonproliferation Studies Occasional Paper No. 12. United Kingdom: Monterey Institute of International Studies. July 2003

Hostettler, The Honourable John N. *ABM Treaty, Post 9-11 Deterrence and the Need for Missile Defense*, Remarks at Lexington Institute's Capitol Hill Missile Defense Forum, April 24, 2002.

Jasani, Bhupendra, ed. *Space Weapons and International Security*. Oxford: Oxford University Press, 1987.

Jacoby, Vice Admiral Lowell. E., Director Defense Intelligence Agency. *Current and Projected National Security Threats to the United States*. Statement for the Record, Senate Armed Services Committee, 26 Feb 2004.

Kennedy, Brian. *Defending the West: Current Debate over Ballistic Missile Defense*, Ashbrook Center, June 2001.

Lakoff, Sanford, and Herbert F. York. *A Shield in Space? Technology, Politics, and the Strategic Defense Initiative*, California, University of California Press, 1989.

Lindsay, James M., and Michael E. O'Hanlon. *Defending America: The Case for Limited National Missile Defense*. Washington: Brookings Institution Press: 2001.

Mason, Dwight N. "Canada Alert: Canada and Missile Defense", *CSIS Hemisphere Focus*, Vol XI, Issue 22, June 6, 2002.

McMahon, Scott K. *Pursuit of the Shield: The U.S. Quest for Limited Ballistic Missile Defense*. New York, University Press of America, 1997.

Moltz, James Clay, ed. *New Challenges in Missile Proliferation, Missile Defense, and Space Security*. Occasional Paper No. 12. United Kingdom: Monterey Institute of International Studies. July 2003.

Mueller, Karl P. *Totem and Taboo: Depolarizing the Space Weaponization Debate*, The Royal Air Force Air Power Review, Vol. 7, Number 1, Spring 2004.

The North Atlantic Treaty Organization, *Facts and Figures* (Brussels: NATO Information Service, 1984).

Primack, Joel R. *Debris and Future Space Activities*, University of California at Santa Cruz. Presented at the Conference on Future Security in Space, at New Place



(Southampton, England) May 28/29 2002. <[physics.ucsc.edu/cosmo/mountbatten.pdf](http://physics.ucsc.edu/cosmo/mountbatten.pdf)>

Regehr, Ernie. *Canada and Ballistic Missile Defence*, Simons Centre for Peace and Disarmament Studies. Vancouver: University of British Columbia, 2003.

Regehr, Ernie, Executive Director, Project Ploughshares. *Letter to the Prime Minister regarding Ballistic Missile Defence*, January 2, 2004.

Robertson, Scott. “*The Missile Defence Debate: Beyond the Dialogue of the Deaf*”. *Policy Options*, August 2003.

Ross, Douglas A. “Foreign Policy Challenges for Paul Martin, Canada’s International Security in an era of American Hyperpower and Continental Vulnerability”. *International Journal*, Vol. 58, No 4 (Autumn 2003)

Rudd, David, Jim Hanson, and Jessica Butt, eds. *Canada and National Defence*, CISS Annual Spring Seminar 2000, The Canadian Institute of Strategic Studies, Toronto: 2002.

Panel on Public Affairs, *Report of the APS Study Group on Boost-Phase Intercept Systems for National Missile Defense*, July 15, 2003,

Spacy, William. *Does the United States Need Space Based Weapons?* Maxwell AFG, AI: Air University Press.

Spencer, Jack.. *The Ballistic Missile Threat Handbook*. The Heritage Foundation. 2000

Squassoni Sharon A. *Weapons of Mass Destruction: Trade Between North Korea and Pakistan*, CRS Report to Congress, 11 March, 2004.

Union of Concerned Scientists. *Technical Realities: An Analysis of the 2004 Deployment of a U.S. National Missile Defense System*, May 2004. [[http://www.ucsusa.org/global\\_secur...ile](http://www.ucsusa.org/global_secur...ile)]

*Washington File*, U.S. Embassy Ottawa, Information Resource Center, Bolton Says Proliferation of WMD Becoming Riskier — Threat has not been eliminated despite progress, 31 March 2004.

Woolf, Amy F. “U.S. Nuclear Weapons: Changes in Policy and Force Structure,” *CRS Report for Congress*, Feb 23, 2004.

Yanarella, Erenest J. *The Missile Defense Controversy, Technology in Search of a Mission, Kentucky*: The University Press of Kentucky, 2002.

Yanarella Ernest J. *Missile Defense: Controversy, Strategy, Technology, and Politics, 1955–1972*, Kentucky, 1977.

### **Newspaper Articles.**

Alberts, Sheldon. National Post. “*Support missile defence or be seen as weak link by U.S. Henault says*”. 11 June 2003, [www.nationalpost.co](http://www.nationalpost.co)

Graham, Fraser. “Canada to Call for ban on Arms in space”. *Toronto Star*, 15 March 2004. [www.thestar.com](http://www.thestar.com).

Hackett, James T. *The Strategic Missile Threat*, 1996

Harper, Tim, Washington Bureau. “*Canada Warned of Untested Defence System*”, *Toronto Star*, 17 Mar 04.

Hellyer Paul. “*Missile defence: It was wrong then and it’s wrong now*”, May 15, 2003. [Globeandmail.com](http://Globeandmail.com)

Rudd David. “*Canada Hedging Its Bets on Missile Defense*”. *National Post*, Jan 13, 2004 [<http://www.Canada.com/national>].