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H-Diplo/ISSF Editors: **Thomas Maddux and Diane Labrosse**

H-Diplo/ISSF Web and Production Editor: **George Fujii**

Commissioned for H-Diplo/ISSF by **Thomas Maddux**

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- **Andrea Charron. "Canada, the Arctic and NORAD: Status quo or new ball game?"** *International Journal* 70:2 (June 2015): 215-231.  
<http://dx.doi.org/10.1177/0020702015572998>
- **James Fergusson. "The NORAD conundrum: Canada, Missile Defence, and Military Space."** *International Journal* 70:2 (June 2015): 196-214.  
<http://dx.doi.org/10.1177/0020702015575916>
- **Joseph T. Jockel and Joel J. Sokolsky. "NORAD Does Not Need Saving."** *International Journal* 70:2 (June 2015): 188-195.  
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**Reviewed by Douglas Alan Ross**, Simon Fraser University

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**G**iven recent trends in American strategy, militarily relevant science and technology, and the global balance of power, the North American Aerospace Defense Command (NORAD) is in the process of gaining a new lease on life, regardless of whether Canadian and American politicians wish it to be so. The three analyses under review offer many specific insights and provide a very useful review of NORAD's institutional history and strategic debates, but they fail to situate the discussion in the broader structural context of world politics, worsening great power military rivalries, and the rapidly developing compounded crisis of anthropogenic climate disruption (ACD).

Andrea Charron suggests that Arctic security threats are not likely to worsen. Energy development is still “exploratory” (7) and slowing because of the fall in the price of oil. Mining and fishing activity is growing, but such work is unlikely to lead to a rising risk of terrorist entry. Charron does note that a new North Warning System of radars “will likely need to be financed in large part by Canada” with a longer-range zone of radar coverage as well as a more reliable communication network less subject to blackouts (15). Accordingly, the forecast is for a “status quo” for NORAD operations for the foreseeable future. James Fergusson shares this forecast in large measure but is much more concerned with making the Canadian contributions to NORAD more operationally and strategically consequential. He supports an enthusiastic participation by Ottawa in American Missile Defence (MD) capabilities for North America but concedes that it is fiscally unlikely. He therefore proposes doing much more in the military space field to enhance NORAD’s situational awareness as an indirect way of assisting both detection of threats on sea or on land, but also space-based threats to American and allied satellites (both military and commercial). MD will go ahead, he believes, and he generally subscribes to the view that “without missile defence, NORAD has no meaningful mission” (7 and comment on 13). But cost considerations, he thinks, are likely to keep the Canadian role unhappily modest. Finally, in keeping with the argument advanced by Fergusson, Joseph Jockel and Joel Sokolsky assert that NORAD is in no way at risk of termination by Washington. American officials are “anxious to continue to fit the Canadians in” (4). They argue bluntly in their policy brief that it would be imprudent not to participate fully in the continental MD program being constructed by the Pentagon planners (8). North Korea may already pose a nuclear threat to cities in western North America, and so too may Iran in years to come. In their view the Canadian Senate Committee on National Security and Defence was quite correct to recommend full Canadian participation in continental MD. It is important for Canada to “protect itself” (8)

The three analyses are mutually supportive, but on balance they are not persuasive. The U.S. is the ‘last superpower’ and it has a global presence and global interests. But it is now facing *relative* military decline as China surges forward economically and militarily. In response to the rise of China, American strategic deterrent policy is undergoing a considerable evolutionary shift into far more uncertain waters of unconstrained counterforce and counter-nuclear targeting ambitions after decades of mutual nuclear deterrence based on rough nuclear parity between the U.S. and the Soviet Union during the Cold War, and then the Russian Federation more mutedly thereafter. American hawks seem about to take wing once more— if they can break free from the budget cuts imposed by sequestration legislation (the Budget Control Act of 2011 that mandated defence budget cuts of more than \$500 billion over ten years), and if they then can unleash both thick missile defences and long-range conventional counter-nuclear capabilities against both rogue states and great powers alike. The goal in Washington remains one of achieving and sustaining maximum deterrence, not internationally agreed-to minimum deterrent capabilities.

In the U.S. but also in China and Russia, research and development has spawned new technologies and weapons that arouse fears of strategic obsolescence. We are now living in an era of a three-way security dilemma. For the moment both Russia and China are responding to new American technology challenges such as ‘all aspect stealth’ aircraft, emerging Conventional Prompt Strike (CPS) capabilities,<sup>1</sup> increasingly effective theatre-range Missile Defence (MD) systems, and space and cyberwarfare attack and sabotage capabilities. Russian and Chinese progress in applying Very High Frequency (VHF) radars to Integrated Air

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<sup>1</sup> For an overview of this family of technologies, see James M. Acton, *Silver Bullet? Asking the Right Questions About Conventional Prompt Global Strike* (Washington, DC: Carnegie Endowment for International Peace, 2013).

Defences that are able to detect, track and probably destroy stealthy aircraft, burgeoning anti-access conventional strike capabilities (medium-range, very accurate ballistic and cruise missiles), and the development of stealth aircraft (China's J-20 long-range strike fighter, and Russia's PAK-FA fighter and PAK-DA long-range bomber), all indicate an emerging aerospace parity among the three countries.<sup>2</sup> Possible deployment of hypersonic boost-glide weapons by China and Russia, even before similar systems are available to American forces, have in turn fostered American fears of a loss of military supremacy. Loss of qualitative superiority in turn threatens Washington's credibility as an alliance guarantor. Losing its ability to offer a credible military security 'umbrella' could put the entire American liberal imperial project at risk and open the floodgates to renewed 'vertical' and 'horizontal' nuclear proliferation.

Senior Pentagon officials have acknowledged these threats, and are equally determined to restore a wide margin of American military supremacy (conventional, nuclear, cyber, and space) within a decade. The accelerated development of radically new aerospace and maritime capabilities by the U.S. seems highly likely to set in motion a new arms race among the world's three nuclear-armed great powers. Tragically, such a fiscally ruinous rivalry will threaten to consume the critical financial and scientific resources needed to arrest and halt global heating in the Arctic and elsewhere before it passes a threshold of technical irreversibility.

The Canadian Senate Committee's report that provoked the three articles under review made minimal mention of warnings from two key American witnesses of an intensifying arms race—if American missile defences are expanded without negotiated constraints. Additionally, they warned of possible preemptive defence suppression attacks by American adversaries against MD assets that may be deployed in Canada.<sup>3</sup> The Committee dismissed these serious and unavoidable risks, noted by the Pentagon's former Director of Defense Research and Engineering (Philip Coyle) and Lt.-Gen. Robert Gard (ret'd, U.S. Army), preferring the hortatory advice from two past Liberal cabinet ministers and a few conservative academics who seemed to argue for a Canadian missile defence role without regard for strategic stability and international security, all in the name of friendly relations and a pointless, valueless defence policy 'consistency.' MD in North America is qualitatively different in potential function and consequences for the central nuclear balance between Russia and the U.S. from MD systems deployed in Europe against Iran or other Middle Eastern missile threats. And it is equally provocative and destabilizing for the Sino-American relationship as well.

### A New American Strategy

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<sup>2</sup> Russian officials claim a smaller Radar Cross Section for the PAK-FA than that of the F-22. The TU-160 supersonic long-range bomber is going back into production shortly, even while the PAK-FA bomber is under accelerated development. Some 50 long-range modernized aircraft are to be built with extensive Air-Launched Cruise Missile loading likely. "'Better than U.S.-made 5GH': PAK-FA fighter to engage sea, air and ground targets," 28 May 2015, as at *RT News*: < <http://rt.com/news/262657-pakfa-better-us-5g/> . See also Zachary Keck, "Is Russia's Lethal PAK-FA Fighter Stealthier than America's F-22?" *The National Interest* website, as at: < <http://nationalinterest.org/blog/the-buzz/russias-lethal-pak-fa-fighter-stealthier-americas-f-22-12972> >.

<sup>3</sup> Government of Canada, Senate of Canada, Standing Senate Committee on National Security and Defence, Hon. Daniel Lang, Chair and Hon. Romeo A. Dallaire, Deputy Chair, "Canada and Ballistic Missile Defence: Responding to the Evolving Threat," June 2014. Available at: < <http://www.parl.gc.ca/Content/SEN/Committee/412/secd/rep/rep10jun14-e.pdf> >, 14-15.

In Washington's new approach, the preferred instruments for future counterforce attritional attacks on adversary strategic nuclear assets and command and control networks<sup>4</sup> will, in large measure, if not exclusively, be *non-nuclear*. This would be a tactically brilliant step up (if they can be built quickly at a tolerable cost) that would extend the concept of counterforce coercion contained in the original Maritime Strategy policy as it was announced in January 1986.<sup>5</sup> If the current Deputy Secretary of Defense, Robert O. Work, is successful in selling his strategic concept, the object of the next round of American strategy and military technical innovation will be to ensure operational nuclear and conventional superiority over all potential military 'peer competitors'—Russia and China. This is to be achieved by buying entirely new systems that will defeat Russian and Chinese new anti-access/area denial (A2/AD) capabilities. These future means for achieving sustained superiority are outlined in the Pentagon's vision of a 'third offset strategy' for ensuring American military supremacy.<sup>6</sup> Qualitative superiority, the report declares, is necessary "against any potential adversary."<sup>7</sup>

American academic discussion of such ambitious grand strategy typically has used the euphemistic terms 'primacy' or 'preponderance' rather than blunter terms such as global military hegemony or disarming first-strike superiority. This 'vision' was first articulated by the administration of President George H. W. Bush in its Defense Planning Guidance for 1992-97. It was later formally embodied in policy in President George W. Bush's National Security Strategy of 2002. The latter document declared: "Our forces will be strong enough to dissuade potential adversaries from pursuing a military buildup in hopes of surpassing, or equaling, the power of the United States."<sup>8</sup> Arguably, that unequivocal goal of indisputable strategic superiority has survived through two Obama Administrations as the guiding light of U.S. strategic planning—despite the President's declared interest in promoting steps toward nuclear disarmament.<sup>9</sup>

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<sup>4</sup> The Pentagon specifies a more inclusive definition of 'command and control'. It includes Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance or 'C4ISR.'

<sup>5</sup> For the best summary and critique of the Maritime Strategy, as well as a measured dissection of the flaws of the first 'counterforce coercion' strategy, see John Mearsheimer, "A Strategic Misstep: The Maritime Strategy and Deterrence in Europe," *International Security*, 11: 2 (Autumn, 1986): 3-57; but see especially his comments on 'counterforce coercion' at 14-17, 23-24, 40-42 and 46-54.

<sup>6</sup> Robert Martinage, "Toward a New Offset Strategy: Exploiting U.S. Long-Term Advantages to Restore U.S. Global Power Projection Capability," (Washington, DC: Center for Strategic and Budgetary Assessments, 2014). The document is said to have been drafted under the direction of Robert Work, Deputy Secretary of Defense.

<sup>7</sup> *Ibid.*, ii.

<sup>8</sup> See U.S. Government, Office of the President of the United States, "The National Security Strategy of the United States of America," The White House (Washington, DC: 22 September 2002), 30.

<sup>9</sup> The 2015 draft of the National Security Strategy affirms that the U.S. possesses "a military whose might, technology and geostrategic reach is unrivaled in human history" (i). It notes that the U.S. is "the world's leading global power with interests in every part of an increasingly interconnected world" (5). Finally, it declares that "the purpose and promise of American power...aims to advance our interests and values with initiative and from a position of strength" (29). Office of the President of the United States, "National Security Strategy," (Washington, DC: The White House,

The quest for unqualified American military primacy may not attract universal allied support. Some governments will fear the outbreak of a nasty three-cornered arms race and the diversion of the precious resources needed for shifting to a clean-energy, non-polluting world economy. Others may believe simply that a reasonable level of security can be found without trying to deploy a disarming first-strike capability against Beijing and Moscow. They may also fear, reasonably enough, that U.S. policy is simply driving the Chinese and Russians together geopolitically. Nuclear deterrence does work, and building an arms control regime can set reasonable mutually acceptable limits on the most dangerous, destabilizing weaponry, without leaving any party seriously vulnerable to disarming attack. It is simply prudent policy. MD deployments may one day have a role in helping the nuclear weapon states to go to 'global zero', but they will have to be constrained by some agreement on numerical limits. The categorical refusal of Republicans to discuss some multilateral version of the defunct ABM Treaty is a strategic blunder in terms of overall international security policy, which the Obama Democrats unfortunately dare not repudiate.

Ottawa's prospective enthusiasm for a new round of NORAD air defence modernization is faint to nil, but not because of concerns for strategic stability. The Harper government has had a disastrous experience in trying to move forward with major capital re-equipment projects since 2006. Every major procurement (fighter aircraft, frigates, supply ships, Arctic patrol ships, helicopters) is many years behind schedule. Tens of billions of unspent dollars of programmed purchases are piling up. Any direct participation in the American-led effort to build a multilateral Western MD network—the issue that professors Fergusson, Jockel and Sokolsky address—will add substantially to this figure. A new MD role also may be the thin edge of a strategic procurement wedge that could lead to further immense outlays over the coming decade. The cost of a full-scale renewal of continental air defences is likely to very large. And fully renewed air defences are a *sine qua non* for any scheme of area-wide MD for North America.

What impressed the Senate Committee in Ottawa were arguments for joining a limited missile defence system that could deal with a small number of intermittently arriving first-generation ICBM warheads from a 'rogue state.'<sup>10</sup> But they may find that they have signed on to helping to fund an open-ended, evolving and ever-expanding system of MD deployments coupled with radically expanding American strategic conventional strike capabilities. What was for the Senators a *prima facie* case of belatedly 'doing the right thing' as good neighbours and as insurance-minded citizens, may take a surprising turn. Furthermore, as both Philip Coyle and Robert Gard warned, the Ground-based Mid-course Defense interceptors are inherently flawed and unable to perform their mission.<sup>11</sup> President George W. Bush's decision to deploy the GMD interceptors prematurely without adequate testing and development has resulted in the situation that 44 interceptors that have no ability to discriminate between warheads and missile debris (nor even the most rudimentary decoys)

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February 2015). Unlike the 2002 draft, the document does include one dovish statement that American policy with respect to nuclear deterrence is to promote "strategic stability" (11).

<sup>10</sup> Senate of Canada, Standing Senate Committee on National Security and Defence, Hon. Daniel Lang, Chair and Hon. Romeo A. Dallaire, Deputy Chair, "Canada and Ballistic Missile Defence: Responding to the evolving threat," June 2014. Available at: < <http://www.parl.gc.ca/Content/SEN/Committee/412/secd/rep/rep10jun14-e.pdf> >.

<sup>11</sup> See Robert Gard and Philip Coyle, "America's Massive Missile-Defense Mistake," *The National Interest* website, as at: < <http://nationalinterest.org/feature/americas-massive-missile-defense-mistake-10768> >.

have already been deployed or bought.<sup>12</sup> To cope with true ICBMs, the American Missile Defense Agency needs interceptors that are larger, faster, and tipped with a far ‘smarter,’ discriminating kinetic kill vehicle (KKV). Money spent on the current technology seems to be an utter waste, unless one puts some stock in a ‘scarecrow’ defence.

If the Pentagon’s chief planning architect, Robert O. Work, gets his way, MD will not have a high priority simply because the cost-exchange ratio (CER) still dramatically favours the offence. Even with the more successful Aegis ship-based interceptors, the CER is probably over 6 to 1 in favour of the offence.<sup>13</sup> Far better then, to deal with the long-range threat to North America with a new generation of long-range precision strike conventional capabilities, and totally new ‘outside the box’ ISR and targeting capabilities that do not depend on vulnerable space-based assets. For Deputy Secretary of Defense Work, a new American ‘strategic offensive initiative’ (SOI being a black-sheep son of Reagan’s SDI) would directly threaten first Chinese and then later the far more numerous Russian strategic nuclear deterrent systems. What is missing in Ottawa’s recent discussion about possible inclusion of MD in the NORAD operational mandate is the need to have some numerical cap negotiated by Washington with Moscow and Beijing on the number of MD interceptor deployments—formally or informally. Without such a cap, and in the context of an American rush to develop new Conventional Prompt Strike (CPS) capabilities, a destructive and dangerously unstable arms race seems to be a virtual certainty.

Ottawa should not be signing on to continental MD with its ‘eyes wide shut.’ Small powers should be aware of the risk of ‘bait and switch’ tactics by more powerful allies bent on off-loading some of the costs of inherently aggressive geostrategic projects. And militarily, Canada, after its last three Prime Ministers and their shared aversion to defence spending, is most definitely a small power and is likely to remain so indefinitely. Symbolic participation in Afghanistan for a decade, and now Iraq and perhaps Syria counts for little in terms of being able to influence the American grand strategy debate. Successive governments have marginalized Canada for the next generation at a minimum through willful optimism about a new democratic peace, coupled with a more traditional determination to ‘free ride’ on the U.S. and other more exposed Western states who cannot afford to play the dilettante in international security matters.

### **New Military Technologies and Nuclear Force Modernization**

Some observers simply attribute the escalatory shift in American military planning to the cupidity and political influence of the military-industrial-scientific complex in its development of technologies for long-range ‘strategic’ strike. In this view modernization is a matter of technological determinism and the aerospace industry’s manipulation of the U.S. Congress.

Deputy Secretary Work has specific plans for restoring a clear qualitative superiority for American forces by 2025. His roadmap is clear and unambiguous. His new systems that will comprise an innovative Global Surveillance and Strike (GSS) capability will build on technologies that have been under development for the

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<sup>12</sup> *Ibid.*

<sup>13</sup> Martinage, “Toward a New Offset Strategy,” 36-37. Three SM-3 interceptors would be needed per attacking warhead and would cost \$20 to 24 million each, while a typical Chinese modern accurate conventionally armed ballistic missile (the DF-21D carrier killer) is estimated to cost between \$5 and 10 million each.

past twenty-five years, and will avoid altogether any ‘symmetrical’ competition with China and Russia that would try to match fighter for fighter, or missile for missile. Forward bases are no longer feasible because they are all vulnerable to conventional precision attacks via ballistic or cruise missiles.

In the conventional strike category of weapons development, he has called for: a large number of high-precision conventional warheads or ‘kinetic kill vehicles’ for delivery via land-based ballistic missiles with very long range, or forward-deployed sea-based systems (robotic Unmanned Undersea Vehicles [UUVs] able to tow ‘pods’ carrying scores of additional missiles or emplace these pods on the seabed some four to six kilometers deep for future activation), or via new Long-Range Stand-Off (LRSO) glide bombs; new conventionally armed, long-range cruise missiles with extremely accurate terminal guidance or versatile submunitions for destruction of targets over wide areas; and robotic, air-breathing ‘all-aspect stealth’ bombers (LRS-B aircraft) carrying advanced stand-off weapons or specialized ground-penetrating ordnance in large numbers for fixed and Hardened and Deeply Buried Targets (HDBTs such as command posts or missile launch control centers).<sup>14</sup> These new conventional strike capabilities will be able to attack and destroy the Anti-Access/Area Denial (A2AD) assets being developed in Russia, China and even in Iran. Secondly they will be able to attack and ‘degrade’ command and control of both conventional and nuclear forces in any adversary state. The key to all the cutting edge innovation is automation that he believes will enable far stealthier aerial strike platforms that have vastly greater combat endurance, as well as a greatly extended technological superiority in undersea naval warfare systems. These radically enhanced conventional strike capabilities will be complemented by new counter-space systems to try to deter attacks on American satellites and an atmospherically based alternative GPS and communications network based on High Altitude Long Endurance robotic aircraft.<sup>15</sup>

Work is not an enthusiast for traditional methods of MD. Because current Anti-Ballistic Missile (ABM) interceptors have such a poor CER, Work wants to develop cost-effective defences based on electro-magnetic railgun or laser technologies that can reduce or eliminate the deterrent threat of small nuclear arsenals while denying the ability to conduct limited nuclear operations to larger nuclear-armed states.<sup>16</sup> He also favours implicitly the development of an array of more usable, highly accurate, lower yield nuclear warheads to be deployed on a new generation of CMs and new Long-Range Stand-Off (LRSO) glide bombs.<sup>17</sup> Hypersonic boost-glide vehicles (flying in the upper atmosphere at eight to ten times the speed of sound) are in the early testing phase and just over the development horizon, but Work believes they will be a critical addition to

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<sup>14</sup> Martinage, “Toward a New Offset Strategy,” 56-62.

<sup>15</sup> Martinage, “Toward a New Offset Strategy,” 19-20, 60-66.

<sup>16</sup> Martinage, “Toward a New Offset Strategy,” 36-37.

<sup>17</sup> Work praised the Pentagon’s “much needed investments in our nuclear enterprise” in a column outlining the keys to sustaining American technological superiority. See “Budget Blunders Can’t Drive Strategy,” *Aviation Week and Space Technology*, 16-29 March 2015. Nuclear weapons would remain essential for deterrence of nuclear attack, but they would also have improved “crisis management and escalation control” because of the greatly improved surveillance capabilities of the new GSS network. See “Toward a New Offset Strategy,” 55.

conventional prompt deep-inland strike capability when they are forward deployed on American submarines.<sup>18</sup>

Such weapon advancements are likely to be markedly destabilizing precisely because they would erode the credibility of both Russian and Chinese strategic nuclear weapons—even if they are built and deployed with a declared objective of containing and deterring new nuclear states such as North Korea or Iran.

Of course, Beijing and Moscow will respond. Russia accelerated the modernization of its nuclear arsenal and naval forces when it saw NATO territorial expansion creeping east, and more importantly, as the U.S began to press European allies to build their own MD system against Iran. From the Russian perspective, a European MD capability against Iran or another Middle Eastern state is also an embryonic anti-Russian MD capability. China has been the only P5 member of the Security Council of the United Nations to expand its nuclear arsenal steadily since 2000 deploying entirely new ICBMs and SLBMs that are accompanied by massive numbers of theatre-range, highly accurate, conventionally armed ballistic missiles. The latter reflect a sustained Chinese effort to deny the U.S. Navy and Air Force the ability to operate in the East and South China Seas—and perhaps as far out as the ‘second island chain’ that runs from the Marianas, to Guam, to the Philippines.

Bombers and air-launched cruise missiles (ALCMs) that are far more difficult to detect than anything previously fielded may be added to the Russian and Chinese air forces, not just to American the aircraft inventory, by the mid-2020s.<sup>19</sup> American long-range strike systems are likely to be robotic so as to minimize personnel costs but also to permit “48-hr.-plus missions” (including tanker support) as well as the ability to “remain on station beyond the limits of human endurance.”<sup>20</sup> To deal with the high probability that American military space assets will be increasingly vulnerable, senior Pentagon planners hope to develop an atmospherically layered system of GPS transmitters and military communications deployable on very high-altitude, long-endurance robotic aircraft. Along with the new offensive conventional ballistic missile strike capabilities being contemplated, these atmospherically based sensors and transmitters will be the key elements in a new Global Surveillance and Strike (GSS) network—pillars of a new SOI—that will be able to win regional wars or avoid them through preemptive conventional strikes.

Chinese and Russian defence planners have been closely watching American development and refinement of its MD technologies, land- and sea-based, since George W. Bush’s unilateral abrogation of the ABM Treaty took effect in June 2002. From 2007 on, Russian President Vladimir Putin ordered and funded the massive modernization of all Russian long-range nuclear systems. He also promulgated a new nuclear doctrine of ‘de-escalatory’ tactical nuclear attack meant to deter any NATO-American eastward ‘aggression’ (i.e., the proposed admission of Ukraine and Georgia to the alliance being seen as a step in that direction). Russian officials have rebuffed for more than a decade American and NATO calls for arms control discussions related

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<sup>18</sup> Martinage, “Toward a New Offset Strategy,” 53, 62.

<sup>19</sup> See Bill Sweetman and Richard D. Fisher, “Long-Range Plans: China may follow Russia in bomber developments,” *Aviation Week and Space Technology*, 15 September 2014, 47-50.

<sup>20</sup> Bill Sweetman, “Revolutionary Roadmap: The U.S.’s air-centred strategy has top level backing,” *Aviation Week and Space Technology*, 3/10 November 2014.

to Non-Strategic Nuclear Weapons (NSNWs), seeing in their tactical nuclear weapons (TNWs) an essential trump card for dealing with NATO-American conventional force superiority. First use of nuclear weapons was reinstated in Russian doctrine in 1993 under Boris Yeltsin. Putin has expanded TNW options by deploying new Iskander missiles that Washington has denounced as an INF Treaty violation. Russian nuclear force modernization is moving quickly toward completion and it includes the extremely retrograde destabilizing step of restoring multiple warheads (counterforce capable MIRVs—Multiple Independently Targeted Re-entry Vehicles) on almost all of its new land-based missiles. All 160 Russian Submarine-Launched Ballistic Missiles have MIRVed warheads.<sup>21</sup> With the New START agreement biased in favour of long-range bombers (each accounts for just one ‘accountable’ warhead, not the number actually carried), it is not surprising that the bomber strike capability is now much larger than that of Russian nuclear submarines<sup>22</sup>—a fact rarely if ever noted in public discussions of NORAD’s alleged ‘marginalization.’

### The Rise of China

A third factor looms just as large in causative effect toward this great military transformation: the arrival of a militarily assertive China and American fears about China’s “vast latent power.”<sup>23</sup> As John Mearsheimer foresaw almost two decades ago, the rise of China has ended the putative era of strategic ‘unipolarity’ and created “a dramatically unbalanced multipolar system” in the Northeast Asian region. Russia may be resurgent, but Germany, France and the U.K., with any rational foreign and defence policies on their part, should be able to keep Moscow in check. Hence, it was both feasible and strategically appropriate to commence the U.S. ‘pivot’ to Asia-Pacific in 2011. Given Russia’s weak economy and shrinking population, China is America’s only authentic, long-term, peer competitor. The U.S. has reacted by doing its best to contain China, to limit its territorial expansion, and thus prevent it from becoming a regional hegemon.<sup>24</sup> For Deputy Secretary of Defense Work, it is critical that American technological superiority be renewed, extended and sustained in the face of a dramatic leap in Chinese capabilities. Work claims that “from 2011 to 2016,

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<sup>21</sup> Sweetman, “Russian Renaissance: Putin gives nuclear weapons top billing,” *Aviation Week and Space Technology*, 11/18 November 2013, 48-50.

<sup>22</sup> Hans Kristensen and Robert Norris estimate that by 2022 some 90% of its ICBMs will be MIRVed. As of 2014 total potential warhead loading of Russian long-range bombers was 810 (35%) compared to 528 (23%) on submarines and 967 (42%) on land-based missiles in silos or on mobile relocatable Transporter Erector Launchers (TELS). See Kristensen and Norris, “Russian nuclear forces, 2014,” *Bulletin of the Atomic Scientists*, v.70 n. 2 (2014), 76-77.

<sup>23</sup> See John J. Mearsheimer’s blunt warnings about China’s latent power and its threat to overtake American economic preponderance in *The Tragedy of Great Power Politics* (New York, London: Norton, 2014), chapter 10. His original warning was summarized most succinctly in the same year the first edition of the book was published. See “The Future of the American Pacifier,” *Foreign Affairs*, v. 80 n. 5 (Sept/Oct 2001), 46-61, esp. 56. His advice then was to avoid economic engagement and giving China any help to develop economically, and to pull back U.S. troops from Northeast Asia “so that they can stay out of future wars—or at least join them later rather than earlier” (47).

<sup>24</sup> See Mearsheimer’s “The Coming Balancing Coalition,” in *Tragedy* updated edition (2014), 383-88.

we estimate that China's defense budget increased by 500%" and that "it is astonishing to see the number of programs that they are developing at a single point."<sup>25</sup>

We are now in a world with three nuclear-armed 'great powers,' all of which feel insecure. Leaders in all three states fear that they have become strategically vulnerable and feel compelled to build new weapon systems, conventional and nuclear, to reassure themselves that their basic retaliatory capability is intact, and that their ability to undertake winning conventional military initiatives remains secure. American officials feel that their military preeminence and force projection abilities that were so impressive from 1991 to 2007 are in the process of being nullified. The proliferation of nuclear weapons to rogue regimes remains a vital immediate concern. The proliferation of precision guided technologies and long-range ballistic missile strike to potential major adversaries, and the spread of advanced computing and cyberwarfare capability to them as well is troubling for the long term. So too is the highly probable loss of space as a 'sanctuary' for secure military communications and targeting. China, Russia and even North Korea are pursuing Anti-Satellite (ASAT) capabilities—in China's case apparently including a test for counter-GPS targeting at 20,200 km altitude. Russian leaders fear American-NATO aggression or subversion (in the form of the exportation of the Ukrainian Orange Revolution's techniques to Moscow). And the Chinese are angry and indignant that the U.S. is 'meddling' in China's own regional campaign to assert its historical territorial claims in the South China Sea,<sup>26</sup> while Washington, in Beijing's perspective, maintains its illegal security relations with Taiwan.<sup>27</sup>

These three interacting processes—a more assertive American military strategy, the spread of new destabilizing military technologies, and the economic and military rise of China—mean troubled waters ahead. The new weapon technologies, unless they are held back by new arms control agreements, promise to make calculations about the strategic requirements for NORAD over the next two decades difficult. The costs of air defence upgrades, thus, are likely to be extremely expensive for both NORAD and NATO.

The debate in Canada about joining American MD plans for North America should not focus on ending an allegedly illogical inconsistency (supporting MD for allies in Europe or Japan, but not in North America). That is a false proposition. Instead, Canadians must recall that they have played an historic role in the protection of the American retaliatory deterrent and the survivability of the American nuclear command and control systems since the late 1950s. That role has been largely dormant for much of the last twenty years, and thus forgotten. But it is not gone, and Canada's role requirements in NORAD may be about to return with a vengeance.

Given the reduced numbers of American strategic nuclear delivery systems pursuant to the New START agreement, it is all the more important that air defences be sufficiently thickly deployed to be able to ensure

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<sup>25</sup> Robert O. Work, "Budget Blunders Can't Drive Strategy," *Aviation Week and Space Technology*, 16-29 March 2015, 74.

<sup>26</sup> See *China's Military Strategy* (Beijing: State Council Information Office of the People's Republic of China, May 2015). As released by Xinhua, 26 May 2015, as at: [http://english.chinamil.com.cn/news-channels/2015-05/26/content\\_6507716.htm](http://english.chinamil.com.cn/news-channels/2015-05/26/content_6507716.htm)

<sup>27</sup> Chinese nationalists' chief press vehicle claimed that if the U.S. is determined to halt the construction of island bases in the South China Sea "then a U.S.-China war is inevitable." Julian Ryall, "Chinese military expansion risks war," *National Post*, 27 May 2015; based on reporting from 'The Global Times.'

American protection against ‘air-breathing only’ limited attacks. Early Warning (EW) systems must be renewed and kept fully functional. The 47 North Warning System radars across the Canadian Arctic are receiving modernized electronic upgrades from Lockheed-Martin (11 long-range, 36 short-range radars),<sup>28</sup> but entirely new radars may be required in the next decade to be able to provide assured timely warning of any intrusions by stealth-enhanced Russian bombers armed with up to 16 even stealthier cruise missiles each.

As a former U.S. Secretary of Defense, James Schlesinger, pointed out in the 1970s, and as U.S. NORAD commanders have repeated since, there is no strategic point in building a Missile Defence ‘roof’ if you have no air defence ‘walls.’ An inadequate early warning system with exploitable gaps, or a shortfall in fighter interceptor platforms able to disrupt or destroy bomber formations before they reach ALCM release points, amounts to a standing invitation for partial strategic preemption in a future crisis. Being able to greatly reduce or completely defeat any precursor air-breathing-only attack on American nuclear deterrent forces and command networks may become a task of much renewed importance—with an equally great financial burden sometime before 2025.

The concept of an ‘air-breathing-only’ precursor preemptive attack is not new. Dr. George Lindsey warned of that risk for decades when he was Canada’s leading defence scientist in the Department of National Defence. That was the scenario that forced the U.S. and Canada to keep a system of minimal EW and peacetime air sovereignty capability in place along with a more focused ability to detect, disrupt and greatly degrade any limited attacks in the North American interior. Such a capability had to endure, so long as there was any sort of long-range nuclear bomber threat—no matter how minimal. Zero air defences would mean a ‘free ride’ for even a skeleton attack force.

There is also at least one historical precedent of the American government considering precisely this type of scenario during the dangerous summer and early fall of 1961 when the threat of major war arising over West Berlin had become extreme. Investigative journalist Fred Kaplan discovered documentary evidence of such a plan to preventively attack and destroy 8 Soviet ICBM sites, 46 bomber bases and 26 staging bases (88 Designated Ground Zeros in all) in a no-warning bomber-only attack with as few as 55 B-52s.<sup>29</sup> This is precisely the sort of attack scenario that one would not want to drive Russian leaders into considering as part of a crisis effort to suppress new American MD capabilities in North America that were perceived to be a threat to Russian retaliatory capability. A negotiated cap (not necessarily treaty defined) on MD deployments is therefore desirable, before there is any serious consideration of joining MD and placing it under NORAD.

### Canada and the Arctic Region

Andrea Charron’s essay on the changing character of the Arctic provides a good review of the post-9/11 transformation of NORAD’s mission as seen by officials in Washington and Ottawa. Preventing entry to North American territory by terrorists or criminals has been the main priority for American officials. While sharing that goal to a considerable extent, Canadian officials and, since 2006, Prime Minister Stephen

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<sup>28</sup> John Keller, “Lockheed Martin to continue project of upgrade AN/FPS-117 long-range surveillance radars,” Military and Aerospace Electronics website, 16 December 2012, as at: <<http://www.militaryaerospace.com/articles/2012/12/lockheed-fps117-radar.html>>.

<sup>29</sup> Fred Kaplan, “JFK’s First-Strike Plan,” *The Atlantic Monthly*, October 2001, 81-86.

Harper, have made the enhancement of a Canadian military and policing presence in the Arctic an important goal of national security planning. Unfortunately they have accomplished very little toward achieving that goal. Thus far, the rhetoric has not led to new spending and capabilities.

Almost all the government's plans for procurement of needed ships and aircraft have stalled badly leaving the Canadian Forces and the Canadian Coast Guard ill-equipped to deal with the challenges they may face in coming years. Canadian frigates will be waiting years for new helicopters to arrive. Any new frigates will not have any capacity to operate in ice-covered waters. Without them ship operations are crippled and the ships themselves are more vulnerable to attack. Fixed wing Search and Rescue aircraft are far behind any rational replacement schedule. The first steel is only now being cut for Arctic Offshore Patrol Ships (September 2015) although the program was announced in 2008. Only 5 of 8 ships are certain to be delivered, and their capabilities have been scaled back. The lightly armed AOPS ships will be able to push through only 1 metre of first-year ice and will require Coast Guard ice breaker assistance for access through multi-year ice. Acquisition has been far slower than originally planned. A full military base that was to have been built at Nanisivik to support their operations at the northwest tip of Baffin Island has been reduced to a mere refuelling capability.

Charron's central argument is not at issue: "so long as...monitoring and detection continues and the threats facing the Arctic remain few, then the mandate of NORAD does not need to change" (2). But will the military threats remain 'few' if American continental missile defence capability is expanded considerably in the decade to come?

Certainly there is likely to be less economic activity in the Arctic than has been forecast by optimistic analysts in recent years. With the international price of oil halved, energy exploration and development in the Canadian Arctic is likely to proceed much more slowly or it will be postponed indefinitely. The winter ice may continue to thin and the summer ice disappear altogether, but the Arctic winter night will always be a deterrent to use of the Northwest Passage, as will the crush of residual broken sea ice that accumulates among Canada's Arctic islands because of the Arctic gyre—long after the Russian northern route is largely free of it. Franklyn Griffiths' compelling scepticism about rising Arctic traffic through Canadian waters is at least worthy of note.<sup>30</sup> Ottawa's lack of readily available escort icebreakers and chronically inadequate search and rescue capabilities for the far north will also restrict use of Canada's northern route. The vastly better equipped Russian Northern Sea Route has a far better prospect of early usage which is why the Chinese have been assessing the Shanghai-Rotterdam transit route much more closely.<sup>31</sup>

More importantly, Charron does not discuss the steady loss of Arctic ice in itself as an indirect threat to Canadian and American security, despite considerable evidence that the narrowing temperature differential between the Arctic and southern latitudes is having a highly destructive impact on weather and rainfall patterns across the northern hemisphere because of the disruption of the jet stream.<sup>32</sup> The progressive loss of

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<sup>30</sup> Franklyn Griffiths, "The Shipping News: Canada's Arctic Sovereignty Not on Thinning Ice," *International Journal*, 58, n. 2 (Spring 2003), 257-82.

<sup>31</sup> "China and the Arctic: Polar bearings," *Economist*, 12 July 2014.

<sup>32</sup> Thomas Homer-Dixon, "Ice, please—climate on the rocks," *Globe and Mail*, 17 September 2012.

reflective ice cover has created a feedback effect that is stimulating the warming of Arctic waters and inducing an increasing release of methane stored in ice formations on the continental shelf, in northern river estuaries, and ultimately in the Arctic tundra itself.<sup>33</sup> The Arctic region as a whole is warming at five to eight times the annual rise in global average temperature.

To make matters worse, methane blowholes were discovered in the Arctic coastal regions of central Siberia on the Yamal peninsula in the summer of 2014. Further search has uncovered additional holes thought to be clear signs of the thawing tundra venting large quantities of methane.<sup>34</sup> For over two decades scientists have warned about the risks of runaway warming caused by a catastrophic release of Arctic methane.<sup>35</sup> NASA has at least one aircraft dedicated to collecting air samples of methane flying over Alaska regularly. Canadian researchers have also collected data on methane releases across the Arctic. What all such researchers fear is a rapid, uncontrollable release of methane that could prove to be irreversible in generating runaway planetary heating far faster than any Intergovernmental Panel on Climate Change (IPCC) forecast has ever envisaged.<sup>36</sup>

Major disruption of freshwater availability and therefore global food production is highly probable once large quantities of methane escape from the Arctic waters and tundra. The drought emergencies in the western states (California, Washington, Nevada, New Mexico) and B.C. and Alberta could be merely a taste of worse to come. Rice production across East and South Asia would be very much at risk, as would much food production in the U.S. and Australia. If such trends continue, a tide of environmental migrants or refugees is virtually certain, as are wars over vanishing sources of water for agriculture and for direct human consumption.<sup>37</sup>

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<sup>33</sup> For background on the loss of Arctic ice, see “Arctic sea ice 101,” *National Snow and Ice Data Center*, as at: < <http://nsidc.org/icelights/crash-course/arctic-sea-ice/> >; also, “Loss of Arctic sea ice speeds domino effect of warming temperatures at high latitudes,” *Science Daily*, 23 January 2013, as at: < <http://www.sciencedaily.com/releases/2013/01/130123144044.htm> >.

<sup>34</sup> Anastasia Pantsios, “Huge New Methane Blowholes in Siberia Have Scientists Worried Climate Change Is to Blame,” *EcoWatch*, as at: < <http://ecowatch.com/2015/02/25/new-methane-blowholes-climate-change/> >.

<sup>35</sup> See George Monbiot, *Heat: How to Stop the Planet From Burning* (Toronto: Random House Canada/Anchor Books, 2007), 3, 11-19.

<sup>36</sup> The IPCC forecasts have been subject to progressive dilution and denaturing by various national governments according to many participants in the process. A rising ocean level is the least of the consequences of a major release of methane. Methane is 23 times as powerful a greenhouse gas as CO<sub>2</sub> on a one-hundred-year time scale, and 105 times more potent on a twenty-year scale.

<sup>37</sup> See Gwynne Dyer, *Climate Wars* (Toronto: Random House Canada, 2008), chapters 1-3 and Scenario 4. The Pentagon has been thinking about climate disruption scenarios for over a decade, despite ‘climate change deniers’ in Congress rejecting any such thinking. See also, details on the study ordered by Andrew Marshall on extreme climate variation for the Pentagon in 2004. Mark Townsend and Paul Harris, “Now the Pentagon tells Bush: climate change will destroy us,” *The Guardian*, 22 February 2004; as at < <http://www.theguardian.com/environment/2004/feb/22/usnews.theobserver> >; accessed 21 May 2015.

The probable environmental consequences of runaway heating caused by the loss of Arctic ice are so fearsome that they deserve to be the top priority in Canada's national and international security strategies. Prime Minister Harper's contrarian plans for northern energy resource development should be postponed indefinitely. The Harper government's approach to the Arctic is little more than reckless gambling with the human future. Given the gravity of warnings by prominent scientists and belatedly by the IPCC itself, an indefinite moratorium on all energy development across the entire Arctic is appropriate, as the legal scholar (and Arctic boundary issues specialist) Michael Byers has suggested.<sup>38</sup> Needed too are major studies on how best to cool the Arctic as soon as possible by whatever 'geo-engineering' techniques are likely to prove most helpful and least disruptive.

In the Obama Administration's list of eight international security priorities, 'confronting climate change' is number six. That is too low on the list, but it reflects thinking that is light years ahead of the head-in-the-sand blindness that has characterized Prime Minister Harper's tenure. His willful indifference to climate change risks led to extremely frosty relations with both President Obama and Prime Minister David Cameron. With 2014 being the hottest year ever recorded, with the IPCC at long last calling for radical action soon 'to avoid the most severe long-term consequences,' with the U.N. Lima preparatory conference for the Paris climate conference (to be held in December 2015) failing to secure a consensus on mandatory carbon emission cuts, and finally, with Arctic sea ice hitting a record low spring maximum in 2015,<sup>39</sup> Charron's article should have highlighted Canada's multiple policy failures in environmental regulation and reform in the Arctic.<sup>40</sup> The recent American decision to put the fight against climate change as the centrepiece of policy during Washington's two-year tenure as the Chair of the Arctic Council is long overdue and stands in marked contrast to the misguided Canadian effort to establish a new pro-resource development Arctic Economic

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<sup>38</sup> See Byers, *Who Owns the Arctic? Understanding Sovereignty Disputes in the North* (Vancouver, Toronto, Berkeley: Douglas and McIntyre, 2009), 11. He noted: "establishing clear boundaries may enable responsible governments to ensure that the carbon stays locked in the seabed, where it cannot contribute to even more dangerous climate change." A climatology/meteorology researcher at the University of Ottawa, Dr. Paul Beckwith, has suggested that "our climate system is in early stages of abrupt climate change that, unchecked, will lead to a temperature rise of 5 to 6 degrees Celsius within a decade or two." Estimates made in 2010 of methane hydrates in the Arctic basin range from 1,000 to 10,000 gigatons of carbon; since 1850, all human activity has released an estimated 1,475 gigatons in total carbon dioxide. See Dahr Jamal, "The Methane Monster Roars," [truthout.org](http://truthout.org), 13 January 2015.

<sup>39</sup> Justin Gillis, "2014 was the hottest year in recorded history," *Globe and Mail*, 17 January 2015; Ivan Semeniuk, "Dire warning on climate change," *Globe and Mail*, 3 November 2014; Bob Weber, "The extent of Arctic sea ice hits record low," *Globe and Mail*, 20 March 2015. Recently gathered evidence based on data from both submarine transits and satellite data "suggests that ice thickness has declined in the Central Arctic to about 1.25 metres from 3.6 metres in the 1970s," according to Dr. Julienne Stroeve of the National Snow and Ice Center, Boulder, Colorado. For images of the retreat of the annual sea ice maximum see Margo McDiarmid, "Melting Arctic ice changing weather patterns, scientists say," Canadian Broadcasting Corporation website, as at: < <http://www.cbc.ca/news/politics/melting-arctic-ice-changing-weather-patterns-scientists-say-1.3061988> >.

<sup>40</sup> Josh Wingrove, "Tories behind on climate targets: report," *Globe and Mail*, 8 October 2014. The report by the Commissioner of the Environment and Sustainable Development revealed that the Harper government had no specific plan to reduce greenhouse gas emissions, and no plan to monitor oil sands emissions beyond 2015. On the U.N. conference failure to call for mandatory emission cuts, see Alex Morales, Alex Nussbaum, and Ewa Krukowska, "Climate near-miss bodes ill for Paris," *National Post*, 15 December 2014.

Council that was evidently meant to replace the existing Arctic Council and its pro-sustainable environment, pro-international cooperation approach.<sup>41</sup>

Charron's article is not alone in ignoring the environmental threat to Canada and the international community. This may indirectly reflect the attitudes of officials in the Department of National Defence. In any case, many defence and security analysts have long objected to the inclusion of environmental issues at international security meetings as an 'out of area' policy domain. A new approach is needed.

### Missile Defence and the Future of NORAD

James Fergusson has been a nationally respected voice on behalf of early Canadian participation in American Missile Defence (MD) development over two decades. His article reflects a continuation of his largely unqualified support for MD as an obviously desirable capability that should be acquired first to defend Canadian cities and territory directly, and secondly to position Ottawa as a valuable security partner able at least to discuss top security issues with American officials. Professors Joseph Jockel and Joel Sokolsky share many if not most of Professor Fergusson's frustrations that successive governments in Ottawa have remained so reluctant to become involved in the great MD experiment launched by President Ronald Reagan in March 1983. Their views on MD and involvement in military space activities will be considered briefly in tandem.

All three authors subscribe to the view that it is better to be safe than sorry with respect to unpredictable threats from North Korean autocrats or Iranian theocrats armed with atomic weapons and, perhaps, ballistic missiles of sufficient range and reliability to reach North America. An attack aimed at Seattle might hit Vancouver, or one intended for Chicago or New York might hit part of the Greater Toronto Area. The soon to be 44 Anti-Ballistic Missile (ABM) interceptors deployed in silos at Fort Greely, Alaska, and at Vandenberg Air Force Base, California, should be tasked with covering vulnerable Canadian cities if possible. Better still, they imply, would be a decision by Ottawa to actually buy ABM interceptors for deployment on Canadian territory to protect Vancouver-Victoria, or Calgary-Edmonton, or Eastern Canada.

All three authors stress the fact that a Canadian absence from American MD operations is no threat to the continuation of NORAD. That is quite correct. Deterrence enhancement is clearly in the interest of both Canadians and Americans and has been since the 1950s. U.S. nuclear deterrent forces must be survivable against the most probable methods of attack. Effective air defence of the American deterrent is a foundational element of any deterrent strategy. Furthermore, even the most hawkish American zealots favouring nuclear primacy and a massive MD effort, know full well that there must be a "capable anti-bomber defence perimeter or the missile defence investment would be a waste of effort."<sup>42</sup> Cooperative partnership with Canadians in the joint air defence of the continent is the optimal way to go, no matter how difficult and vacillating Ottawa politicians may be.

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<sup>41</sup> Lloyd Axworthy and Mary Simon, "Undermining the Arctic Council," *Globe and Mail*, 4 March 2015.

<sup>42</sup> See Douglas A. Ross, "American Missile Defence, Grand Strategy and Global Security," in *The Dilemmas of American Strategic Primacy: Implications for the Future of Canadian-American Cooperation*, edited by David S. McDonough and Douglas A. Ross (Toronto: Royal Canadian Military Institute, 2005), 60. Fergusson contributed to the same volume with: "A Strange Decision in a Strange Land: The Irrelevance of Ottawa's Missile Defence 'No,'" 9-34.

Jockel and Sokolsky recommend that the coming debate on NORAD should include a discussion of the resumption of air defence protection of cities so that the 9/11 scenario is not repeated north of the border (6-7). With Canadian forces operating in Iraq and perhaps over Syria too, that is prudent advice. But the probable expansion of NORAD interceptors in the coming decade (assuming arms control talks remain stymied) should help redress this error—including in that expansion the early replacement of the CF-18s with a more modern fighter aircraft. In that regard, it should be borne in mind that the Canadian Forces's next fighter needs great speed, range, and armaments payload as well as two engines given the forbidding environment over which Canadian pilots will be operating with very few emergency recovery options.

Speed will be essential for being able to patrol the maritime approaches on all three coasts. The “semi-stealthy” F-35 is not well suited to the air defence role.<sup>43</sup> It is far more appropriate for a surprise assault on North Korea's missile sites and Transporter Erector Launchers (TELs), and command and control. Canadian authorities should note that the U.S. Air Force has equipped F-15s with very powerful AESA radars to work in tandem with F-22. The very first operational squadron of F-22s was set up in Alaska. The F-15 is a fine bomb and missile ‘truck’. It is not stealthy, but it is the only production aircraft in western countries that can keep up with the F-22. The next Canadian fighter jet should be given an extremely powerful on-board AESA radar. Then it would be able to team up with American F-22s in crisis mode joint operations to be able to disrupt and degrade precursor air-breathing attacks on critical American C3 and active strategic defensive assets.

Fergusson's article is not persuasive in suggesting that the deployment of ICBMs meant that “NORAD's air defence mission was being marginalized if not becoming obsolete” (5). So long as there are ‘air-breathing’ bombers and missiles in the hands of governments potentially hostile to the U.S., air defence will never be irrelevant. Precursor bomber/cruise missile attacks must be prevented, as well as cruise missile or short-range ballistic missile attacks from naval or even commercial ships just offshore. Neither the ICBM nor the long-range SLBM has made air defence obsolete.

Fergusson's suggestion that NORAD has been “expropriated” by Canada to enhance peacetime sovereignty claims in the far north is not convincing (7-8). R.C.A.F. personnel have never suggested that governments have been so inclined, although they are quick to complain about the declining or ‘no growth’ budgets they have been forced to live with. That is more likely a result of ‘politics as usual’ that starves the military and reduces or eliminates altogether foreign aid when election time comes near. Prime Minister Harper's government is steadfast in its effort to avoid federal budget deficits, even at the cost of a badly hollowed-out military.

It is certainly true that U.S. has always borne the vast majority of the costs of NORAD (6). It pays for all air defence capabilities on U.S. territory and a very large fraction of costs incurred in NORAD's operations on Canadian territory. Canadian free riding may be inherently unfair to American taxpayers, but it is probably politically unavoidable. Because the U.S. designs all strategic nuclear operations unilaterally and always will, greater Canadian ‘responsibility’ in defence spending seems unlikely. There has never been any public

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<sup>43</sup> ‘Semi-stealthy’ is Deputy Secretary Work's description of the F-35. New Integrated Air Defences being developed and deployed in both Russia and China apparently can identify and track it. Thus, Work wants to cut back considerably on F-35 and other manned fighter procurement in favour of robotic long-range strike aircraft with true ‘all-aspect stealth’ and much greater mission endurance.

evidence of consultation with Canadian governments about nuclear weapons strategy or planning since the 1950s (recall Prime Minister John Diefenbaker's exclusion from any private discussion prior to and during the Cuban missile crisis—or any other nuclear alert of U.S. forces since 1962).

It is also not really accurate to say that 9/11 made air defence “relevant” again (8). Capable Early Warning and active Air Defence will be essential so long as there are thousands of nuclear weapons in potentially hostile hands. The uncertainty about possible surprise nuclear attacks (or surprise conventional missile attacks on American strategic C3 or deterrent forces) will never disappear until these weapons are negotiated away under a verifiable and plausibly multilaterally enforceable disarmament regime. Even in a nuclear-disarmed world, air defences and probably missile defences will be part of a necessary insurance against cheating and ‘nuclear breakout.’

Fergusson makes a good point in noting that Canadian Forces personnel no longer are enthusiastic about a direct Canadian role in missile defence because they fear the cost of ‘signing on’ and what that would mean for other capital projects they view as more fundamental to Canadian security (14-15). Quite so. In a ‘heavy’ or ‘thick’ strategic defensive environment that includes a MD role for Ottawa in NORAD, a Canadian defence budget of little more than 1% of GDP would become a distant memory. Given the very substantial costs involved (the most advanced American ABM interceptor for the Aegis systems costs \$20-24 million each),<sup>44</sup> and limited government resources, Canadian political leaders are likely to be loath to pour billions of dollars into what may seem to be an implausible threat to Canadians. Governments in Ottawa would probably wish to contribute indirectly to MD by such missions as deep space surveillance and tracking (the ‘Sapphire’ satellite that may turn into a group of observing platforms). Research into theatre MD and boost-phase intercept development would also be useful activities that would not threaten central strategic stability among the three main nuclear weapon states.

### Conclusion:

As noted above, contrary to the consensus of Fergusson, Jockel, and Sokolsky that now is the time to join the MD ‘train’ (better late than never), the trend lines of international rivalry between the U.S. and China, and the U.S. and Russia, suggest that participation without an arms control framework in place would be ill-advised and unhelpful. Further arms-control agreements are needed urgently among the U.S., China and Russia on missile defence deployment, and new conventional long-range precision strike capabilities so as to ease the worsening security dilemma psychology that afflicts each of them.

For Canada now to join an ‘evolving’ (i.e., a growing) American MD system without having some clear numerical constraints established with respect to the numbers of ABM systems deployed would be misguided and premature. This issue cuts to the core of the goal of promoting ‘strategic stability’ that was referenced in the U.S. National Security Strategy for 2015. If there is no cap on American, Russian and Chinese ABM deployments then direct Canadian participation should be avoided. But that would not be the end of the story. If American authorities deem it to be a vital security interest to deploy radars or other MD sensors on Canadian territory (and perhaps ABM interceptors too), then any Canadian government must reluctantly acquiesce, but it should do so under protest—and then work sensibly to mitigate the damage being done, by

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<sup>44</sup> Martinage, “Toward a New Offset Strategy”, 36. The interceptors are part of a far larger network of radars and EW and targeting systems whose cost is in the billions.

making sure that these systems are protected by sufficient Air Defence assets and thus present minimal opportunity for preemptive crisis suppression via air attack.

If the great effort to tame the Cold War's 'offence versus offence' arms race dies in this decade, the risks of uncontrolled conflict escalating to nuclear catastrophe will loom ever larger. The global offensive nuclear warhead inventory has fallen from 70,000 at its maximum to fewer than 16,000 today.<sup>45</sup> That was a huge achievement by American and Russian governments. The goal now should be a collective agreement to go down to minimum deterrent forces while drawing in the other nuclear weapon states to the negotiated reductions process.

But Canadians must remember that those residual far smaller nuclear forces will have to be protected by far better air defence networks, precisely because the numbers of deployed forces will be so few and therefore so much more vulnerable to sustained conventional attack—as well as carefully orchestrated nuclear strikes. To help deter and reduce the risk of preventive strikes by either Russia or China in future crises, NORAD air defences and the Canadian contribution to them probably will have to be greatly strengthened. Ottawa's decision on the next fighter aircraft is long overdue. The only way to avoid such a future is to put Russian-American arms control relations back on an even keel, and to achieve a breakthrough in Sino-American military relations. But to date the U.S. government has shown little willingness to cede overall strategic superiority. Any such moves in that direction would have to begin with two steps: an American willingness to set a numerical limit on both MD tracking radars and numbers of interceptor missiles; and secondly, an explicit commitment (long-sought by the Chinese) to No First Use of nuclear weapons backed up by appropriate deployments and survivable C3 configured for maximum retaliatory credibility.

Even if Ottawa were to oppose unconstrained MD development and deployment, it makes little or no sense not to do what is reasonable and financially feasible to strengthen Early Warning capabilities and deploy carefully postured active air defence interceptors to protect the most vulnerable and enticing targets for preemption or preventive attack by future Russian or Chinese bombers and cruise missiles.

What about the risk of attack from North Korea or Iran if Canada continues to avoid MD participation? Might a vengeful North Korean leader strike out at one or two Canadian cities as his regime was collapsing all about him, or would he be much more likely to strike at bases in South Korea or Japan hosting many American soldiers? Theoretically, a Canadian city *could* be targeted as a 'demonstration of resolve' and proof of ability to hit North American targets—precisely because Canada had no ABM protection. Any cities that were hit would be extremely visible to American media, but would involve no American casualties. Would American leaders continue an invasion of North Korea in such a context—or agree to an immediate armistice, knowing that the current Ground-Based Interceptors are badly flawed and prone to failure?

As for the Arctic and its role in Canadian foreign and defence policy, it is clear that Ottawa can do far more to address the crisis of anthropogenic climate disruption and the risk of runaway global heating. Canadians live in a privileged geo-strategic location and have far more room for declining military involvement abroad. But with respect to the threat of runaway heating of the planet, there is no plausible, ethical rationale for leaders to refuse to take action to try to save and restore the Arctic ice cap. Arguably Canada's security spending and

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<sup>45</sup> "Status of World Nuclear Forces," as at the website of the Federation of American Scientists, as at: <<http://fas.org/issues/nuclear-weapons/status-world-nuclear-forces/>>; accessed 21 May 2015.

other financial resources should be turned towards development of geo-engineering solutions to this, the most urgent threat to human survival. It is time for a 'new ball game.'

**Douglas Alan Ross** is a professor of Political Science at Simon Fraser University, Burnaby, B.C. He is co-author of *China and Japan: Emerging Global Powers* (Praeger, 1975); author of *In the Interests of Peace: Canada and Vietnam, 1954-73* (University of Toronto Press, 1984); co-editor and co-author of *Superpower Maritime Strategy in the Pacific* (Routledge, 1990); co-editor and co-author of *The Dilemmas of American Strategic Primacy* (Royal Canadian Military Institute, 2005). He has published articles in *International Journal*, *Canadian Foreign Policy*, *Bulletin of the Atomic Scientists*, *Canadian-American Public Policy*, *Canadian Public Policy*, *Pacific Affairs* and many edited collections.

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