

SOVIET AIR-LAUNCHED CRUISE MISSILES
AND THE GEOPOLITICS OF NORTH AMERICAN
AIR DEFENCE: THE CANADIAN NORTH IN
CHANGING PERSPECTIVE

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Introduction: The "Age of the Arctic"?

The Canadian Arctic appears, at least to North American observers, to be assuming greater strategic importance than it has known for some time. Indeed, one would have to go back to the early post-World War II decades to see a similar "geopolitical" relevance being imputed to Canada's northern reaches. In the earlier period, defence planners in North America were primarily concerned with the possibility that Soviet aircraft, flying a great circle route that took them over the Canadian Arctic, might be able to reach targets in the United States and Canada with nuclear bombs.¹ In the past year or so, it has chiefly been other military technologies, and not the manned bomber, that have stimulated much of the public debate in Canada over the strategic relevance of the national domain to American physical security: ballistic missile defence (BMD) and the development of Soviet ballistic-missile nuclear submarines (SSBNs) together share the responsibility for much of the current concern. A major growth industry for Canadian peace researchers and the arms-control community has been research projects on the possible or likely implications for Canada of the Reagan administration's Strategic Defence Initiative (SDI); but hard on the heels of SDI has come the growing attention of these same communities to the possibility that both the USSR and the U.S. will be disporting themselves with nuclear-armed or -powered submarines, or both, in waters that Canada claims as

its own. Thus the ever-serious security agenda has had added to it an acute sense of disquiet over the threat to Canada's sovereignty in the Arctic.

Somewhat lost in the glare cast by the SDI and SSBN spotlights, magnified as each has been by the emotionally charged question of sovereignty, has been the older strategic concern for the air-breathing threat. But developments in this sphere, particularly in the instance of the air-launched cruise missile (ALCM), have been driving a significant amount of restructuring of the North American air-defence system, and though these developments have garnered less publicity of late than the SDI/SSBN tandem, they nevertheless can and do loom as significant features in the altered geopolitical environment of the northern part of the North American continent. In the following pages, I will try to demonstrate the degree to which the ALCM question has evolved in recent years, with particular emphasis upon Soviet development and deployment of these weapons--not because the Soviets are in some sense the initiators or perfecters of ALCM technology (they are not), but because of the obvious role that their employment of this technology has played in the contemporary reconsideration of the effectiveness and very purpose of air defence in North America. I will in part couch my analysis in the context of "geopolitics," a much-abused concept of strategic studies that I will argue can still serve some helpful scholarly purposes. Because this concept has been open to such a wide variety of interpretations, it is worth establishing at the outset what is to be understood by the "geopolitics" of North American air defence.

The Rise, Demise, and Partial Re-rise of Geopolitics

Geopolitics was once, until the end of the Second World War, an honourable and even useful concept for those who specialized in international relations and

strategic studies.² As with most popular concepts, there was more than a little confusion about what precise meaning was supposed to be conveyed therewith; in a manner similar to other concepts, geopolitics had over time undergone a significant degree of expansion, and this would in part account for its eclipse during the post-World War II era. But, however much its usefulness may have been held to have diminished because of lack of analytical sharpness, it was really the particular bad odor associated with geopolitics, as a result of its having become a near-religion in Hitler's Germany, that chiefly led to its fall from conceptual grace after 1945.³

What imprecision and the Nazis began, technological innovation kept in motion; and geopolitical hypotheses continued to lose relevance during the 1950s and 1960s. To the extent that geopolitics ever had a contribution to make to the study of international politics, it did so as a result of the attention it drew to geographical factors that conditioned the way in which power and influence were distributed internationally. As the Sprouts argued, in what remains one of the most thoughtful analyses of geopolitics ever published, geography has tended to contribute to differential distribution patterns of power and influence in three major ways: 1) through the role of climate in the social, economic, and political development of nations; 2) through the part played by configuration in facilitating the adoption of particular kinds of military technologies; and 3) through the contribution that access to raw materials has made to a state's power capability.⁴

Writing more than a quarter century ago, the Sprouts were among a group of scholars who foresaw the obsolescence of geopolitical hypothesizing that attempted--as Mahan, Mackinder, and Spykman had once done so notably--to link configuration with differential patterns of power and influence, and this

because of "revolutionary" developments in the technology of warfare. In ways highly evocative of the Herz thesis regarding the demise of the territorial state,⁵ the Sprouts elaborated on the rapidly diminishing importance of territory in strategic affairs, a disappearance signifying that "the geographical layout of lands and seas and the configuration of the lands have lost much of the military-political value once attached to these factors."⁶ Because of this, it followed, geopolitics would continue to lose utility as a conceptual apparatus for the study of strategic issues. It would become, or so it seemed, passé.

But something curious has happened to geopolitics on the way to the redundancy file: it has refused to fade away. Indeed, it has made a conceptual rebound of sorts in recent years. In truth, it never did disappear completely as a method of analysis; despite its period of retreat in English-speaking parts of the strategic-studies community, it still retained vibrancy in certain Latin American settings.⁷ And in the past decade it has become de rigueur to many French-speaking strategic analysts.⁸ Moreover, even when few in the Anglo-American community were investigating the possibility of breathing new life into the concept, the word retained a certain liveliness, as if it actually meant something.

At least part of the recent resurgence of the concept must be attributable to the earlier return of the word to everyday usage. One scholar, Leslie Hepple, credits the frequency with which geopolitics was employed by Henry Kissinger, both while he was making American foreign policy and after he left government, for the re-emergence of the word's (if not the concept's) popularity among analysts of international politics and strategic studies.⁹ For many who choose today to employ the word, precision of meaning is still not terribly clear; in fact, as it is most often used, it seems to have little to do with geography per

se and more to do with relations between the superpowers--or, as in the case of some recent critics of U.S. Central American policy, with relations between one of the superpowers, the United States, and its Latin American neighbours.¹⁰ The latest, and perhaps most celebrated, attempt to employ the word in a purposeful manner came with Ronald Reagan's remarkable sua culpa speech of 4 March 1987, in which the President told the American public, by way of explaining how things could have gone so awry with the administration's Iran policy, that "I let my personal concern for the hostages spill over into the geo-political strategy ..."¹¹

Apart from the loose usage of geopolitics as a referent to superpower politics, there is another sense in which the term is used that explicitly endows it with policy relevance: as a substitute for, or embellishment of, realpolitik--if by the latter we mean the readiness to apply force in the pursuit of foreign-policy objectives that are rooted in an understanding of the "balance of power." In this context, geopolitics becomes a concept that lends itself first and foremost to the application of strategies intended to contain the expansionary thrust of the Soviet Union.¹² The leading contemporary theorist whose analysis can be situated within a geopolitical context linking geography explicitly with the balance of power is, of course, Colin Gray, who calls upon strategic-studies experts to root their premises firmly in geopolitical terrain, because the outward reach of the Soviet Union has meant, to Gray, that "the concepts contained in the classic literature of geopolitics were never so relevant to international political reality as they are today."¹³ Preeminent among the classics Gray bids us to read (or re-read) is the book that developed the concept of "rimland," Spykman's seminal America's Strategy in World Politics.¹⁴

More relevant, however, to the rekindling of theoretical interest in geopolitics have been changes in the international system, which have invested geography with a renewed political significance--and have tended to vitiate the Sprouts' prediction of a diminution of geographical contributions to international power differentials. The changes have been twofold. First were the portentous developments in the sphere of international political economy, especially insofar as raw materials were concerned, which did so much to focus policy makers and policy analysts alike on the contribution that access to minerals could have on the power and influence of states. The two oil "crises" of the 1970s, and the cognate worries that consuming countries have demonstrated regarding their supply of nonfuel minerals (including, most recently, those coming from the Republic of South Africa) have led to a reassessment of the political significance of such geographical considerations as raw materials.¹⁵

The second change--and the one of most immediate relevance to this study of the geopolitics of North American air defence--concerns the shifting impact of military technology upon geopolitical conceptualizations. It really did seem, when the Sprouts were pronouncing the impending demise of geopolitical hypothesizing in international relations, that the latest advances in the military arts, particular those implicated in the rapid delivery of nuclear warheads by intercontinental ballistic missiles, were rendering footless theories or models that sought to demonstrate the importance of geography to international political outcomes. What could have been more liberating, from the point of view of undoing the bonds of geographical conditioning, than a weapons-delivery system that seemingly mocked geographical distance--and especially the territorial insulation it once conveyed, at least to certain states?¹⁶ But the major problem with their argument that technology had radically changed the

nature of the geopolitical enterprise was that the writers of a generation ago seriously underestimated the potential of technology to pose as its own best counterweight: in this, as in so many areas, it seems that the only sure statement to be made about technology is that it cuts both ways, and what it bestows in one instance it can remove in another, and vice versa. It is ironical indeed that, in respect of North American air defence, strategic analysis has begun to reflect some of the propositions and concerns of the decade immediately preceding the advent of the ICBM, and that Canada's northern landmass is again undergoing scrutiny on the part of those who imagine it to be fraught with geopolitical significance. Let us explore the reasons for this return to the geopolitical formulations of the late 1940s and 1950s, first paying attention to the SDI and the SSBN challenge, and then spending considerably more time on our major theme: the contribution that Soviet ALCM development and deployment has been making to the geopolitical assessment.

Changing Technology, Changing Geopolitics: Ballistic Missile Defence

Save for occasional outbursts of concern which tend to recur each time the U.S. prepares to test another cruise missile over Canadian territory--under the terms of an agreement between the two countries signed in 1983--most of the current debate over the geopolitical implications for Canada of changing American military technology has swirled around two categories of weapons: the anti-ballistic missile, and, somewhat more indirectly, the ballistic-missile nuclear submarine.¹⁷ Each of these categories is argued to be replete with profound consequences for Canadian security and sovereignty interests.

The case of the ABM is particularly instructive in this regard, for it does not take too much effort for analysts to come up with arguments stressing the

threat that ballistic missile defence (BMD) can pose for fundamental Canadian security interests. For those inclined to make the argument, it can readily be claimed that an effective BMD system must necessarily be something that destabilizes the general strategic balance between the superpowers, and thus makes the world (and Canada) a more dangerous place because effective defence will either a) accord its possessor a first-strike capability and tempt it to use it for offensive purposes;¹⁸ or b) give the side without the system reason to launch a preemptive strike before it can be fully deployed, out of self-defence. Since no one would deny that the fundamental purpose of Canadian security and defence policy is and must be the prevention of nuclear war, then once the premise is granted that BMD destabilizes, it follows that it must not be in Canadian interests that such a system be developed and deployed.

The reason one can adduce a "geopolitical" aspect to the contemporary strategic debate over BMD is because it appears, at least at first glance, as if Canadian territory might be highly significant (perhaps essential) to the effective deployment of the American Strategic Defence Initiative (SDI). Not all analysts are convinced that trends in BMD must necessarily imply an enhanced geopolitical importance for Canada in global strategic affairs;¹⁹ nevertheless, there has been a good deal of speculation concerning the likely requirements a BMD system, whether space- or land-based, might have for access to Canadian territory.²⁰ For the most part, it has been fear that the Reagan Administration's SDI might be deployed that has animated most of the concern about BMD evinced by the arms-control and disarmament community in Canada; hardly any serious research has been undertaken on the potential geopolitical

implications for Canada of Soviet development and possible deployment of BMD systems.²¹

The future of the Reagan SDI appears less than bright, for several reasons.²² The ambitious shield the President envisioned in his now-famous speech of March 1983 recedes further and further into the future, where it is likely to reside permanently, a victim of physical, political, and fiscal exigencies. Not so impossible of imagination, however, would be a partial BMD, and it is in this context that the interesting questions arise regarding a potential Canadian role. To date, critics of BMD have tended to cast baleful glances at the prospect of the Canada-U.S. air-defence alliance, NORAD (the North American Aerospace Defence agreement), serving as an institutional Trojan Horse, quietly, cunningly, but effectively sneaking Canada into the kind of governmental participation in SDI that the Canadian government seemingly rejected in 1985.²³ On a more specific level, there arises the possibility that BMD planners in the United States might come up with a system that will only work--or will work best--if it can be situated on Canadian territory. In this context, what would constitute the most likely Canadian involvement in U.S. BMD plans would be an American request that Canada permit the positioning in its northern region of some kind of ICBM mid-course intercept system, perhaps featuring a non-nuclear kinetic kill vehicle (or "smart rock").

It is in the mid-course, much more so than either the boost-phase or terminal-phase, intercept stage that any use of Canadian territory for BMD could most likely be envisioned. Two mid-course intercept concepts with potential implications for Canada have been discussed in recent years, both of which would be ground-launched, thus technically not aspects of "Star Wars." One is ERIS, or Exo-atmospheric Re-entry-vehicles Interception System, which

would employ a small kill vehicle, guided by infra-red sensing and laser homing, to intercept Soviet warheads in the late mid-course of their flight. The other, which more than ERIS would depend critically upon basing in Canada, has been given the codename BRADUSKILL. It would consist in a system intended to rendezvous with, but not crash into, incoming Soviet warheads, which it would destroy by firing sub-munitions at them as it accompanied them in their flight over northern North America. With this kind of system, it would be essential to encounter the arriving warheads as far north as possible.²⁴

Any request to deploy portions of a BMD system in Canada would stir up a hornet's nest among Canadian public opinion and opposition parties, as well as within the bureaucracy itself. Nor would any Canadian government likely consider such a request to be anything other than a potential headache of migraine proportions, not least of all because of the negative implications for Canadian sovereignty. It can sometimes amaze and confound American military officials that Canada should have such sovereignty worries directed against its closest military ally and strongest political friend, but the reality is that while the majority of Canadians might regard the Soviet Union (or a superpower conflict) as the principal source of the country's security fears, from the point of view of sovereignty protection, it is lately the U.S. that appears as the leading challenger to Canadian interests. And it is in the context of the sovereignty challenge that the second security issue, the SSBN question, takes on a sense of poignancy.

Changing Technology, Changing Geopolitics: The SSBN Question

Sovereignty and security have been enmeshed in the Far North from the onset of the post-World War II period. Wartime requirements had necessitated

unprecedented levels of Canadian-American military collaboration within North America, which perforce had led to a visible and active U.S. military presence on northern Canadian soil.²⁵ At the war's end, it was a Canadian desire that this presence be greatly reduced, if not eliminated, and Prime Minister Mackenzie King made it a priority consideration to achieve quickly what Fiorello La Guardia, former mayor of New York City and chairman of the U.S. section of the Canadian-American Permanent Joint Board on Defence, had termed the "unscrambling of the eggs." Hardly a virulent anti-American, King nevertheless made it plain to his cabinet colleagues in May 1946 that they should resist American entreaties to get deeply involved in the common defence of North America; for, as he put it, "I believed the long range policy of the Americans was to absorb Canada. They would seek to get this hemisphere as completely one as possible."²⁶

Though BMD developments, as noted above, could have the potential to re-open the sort of sovereignty concerns that were prevalent in the immediate postwar years, the most troublesome sovereignty issues of late have been those related to the Arctic waters, and it is in this context that the SSBN question attains such contemporary significance. Put simply, the Arctic-sovereignty controversy pits a Canadian objective to have the waterways running between the country's Arctic islands recognized as mare nostrum (in the sense of their being seen to be "internal waters"), against a goal of the United States, for reasons primarily military in nature, to preserve maximum freedom of maneuver in those waters. The focal point of the bilateral dispute has been, ever since the voyage of the American tanker Manhattan in 1969, the Northwest Passage.²⁷ Adding fuel to the fire has been a recent call for drilling bids issued by the U.S. Department of the Interior to companies wishing to search for oil

and gas in a portion of the continental shelf under the Beaufort Sea that Canada and the U.S. each claim.²⁸

In the past year, it has grown apparent that the strategic importance of the Arctic, to both the U.S. and the Soviet Union, has become enhanced for reasons related to SSBN developments. The Soviets in particular have figured prominently in the militarization of the Arctic, for they have been introducing new SSBNs with advanced missiles that will allow them to hit nearly every major North American target from bastions in the Arctic Basin. The Northern Fleet, based at Severomorsk on the Kola Peninsula, comprises more than half of all Soviet SSBNs, and in the words of Oran Young constitutes a "virtually invulnerable strategic force capable of launching increasingly accurate missiles against Western targets without making any effort to evade NATO defenses along the GIUK Gap or even to leave their Arctic haven."²⁹ In recognition of this new dimension to the Soviet SLBM threat, the U.S. Navy has begun a more active strategy of probing northward into Arctic bastions, instead of concentrating on monitoring the SSBN threat by simply waiting for Soviet submarines to transit the GIUK (Greenland-Iceland-United Kingdom) "choke point."³⁰

It is axiomatic that whatever increases the geopolitical significance of the Arctic for the superpowers also enhances its domestic political importance for Canada. And thus it comes as no surprise that the defence-policy debate in Canada has lately been taking on a distinct underseas complexion, as the submarines-in-the-Arctic problem focuses public attention upon the dual problems of sovereignty and security.³¹ Every person in the country who has ever worried about either defence issues or the Arctic is being amply supplied with cause for anxiety by recent revelations of underwater cat-and-mouse

games being played by Soviet and U.S. nuclear attack submarines--such as the three U.S. Sturgeon class vessels photographed in May 1986 surfacing at the North Pole.³² Those who primarily see the U.S. as the source of most of the country's northern difficulties note that there is a high probability that at least one of the three American submarines--the Ray, Hawkbill, and Archerfish--reached the North Pole only after transiting waters Canada claims as its own.³³ The Mulroney government has come under sharp questioning, even from some of its own backbenchers, as to the limits of its knowledge of either American or Soviet submarine movements in Canada's north.³⁴ It may know what it says, but it appears not to be saying what it knows on this matter, at least in public.

There has been a flurry of proposals and counter-proposals in the past few months suggesting measures that the Canadian government could or should be taking to redress the problems stemming from submarine activity in the country's waters. One of the most dramatic recommendations is that made by the Canadian Institute for International Peace and Security, which advocates that Canada declare a peacetime "keep-out-zone" through the expedient of laying mines in the navigable deep-water channels of the Arctic archipelago. This suggestion, made in February 1987, was quickly rejected by Ottawa; but there can be no question that Minister of National Defence Perrin Beatty himself favours a more active Canadian naval presence in the Arctic, both to safeguard Canadian sovereignty and to enhance Canadian security against a Soviet submarine presence that the Minister regards as being a serious potential menace to Canadian interests.³⁵

Hardly less dramatic than mining, given Canadian reluctance to directly utilize nuclear technology for military purposes, is Beatty's proposal, conveyed

in the June 1987 defence White Paper, that Canada acquire its own flotilla of nuclear-powered submarines, one of whose roles would be to safeguard sovereignty and security interests in the Arctic.³⁶ In addition, the Minister has also raised the possibility of Canada and the United States entering into a continental naval-defence arrangement modeled somewhat upon the NORAD agreement, but only on the condition that Washington first concede what it has so far been reluctant to recognize, that Canada has sovereignty over the waters of the Arctic archipelago.³⁷ In making the argument for a naval equivalent of NORAD, Beatty cited a growing Soviet threat in respect of Submarine-Launched Cruise Missiles (SLCMs). Though some have charged that he is overreacting to the SLCM threat,³⁸ there is an interesting irony involved in his connecting the mooted naval version of NORAD with the cruise missile, for as we shall presently see, to the extent that Canadian defence policy has indeed been stimulated by perceptions of a growing geopolitical significance of the Arctic, it is in large measure a result of developments in the technology of the cruise missile--only it is the ALCM that has been providing the impetus for the modernization of defences, not the SLCM.

The Air-Launched Cruise Missile and North American Defence Planning: The Appearance of the Cruise³⁹

Although not the originator of the cruise--it has its antecedents in the German V-1, or "Buzz Bomb," which began to appear over British skies in 1944--the United States can be said to have been the country that has made the most technically sophisticated refinements to this weapon system, particularly its air-launched variant, whose deployment on a part of the aging B-52 fleet dates back to the early months of the Carter administration.⁴⁰ When the

decision to deploy the ALCM was made in June 1977, it came at a time when improvements in the Soviet air-defence system were threatening the penetration capability of the U.S. bomber force, and indeed making it appear to be increasingly vulnerable.⁴¹ The decision to deploy this weapon system on the B-52 (the last of which had been delivered to the U.S. Air Force back in 1962) was predicated on the assumption that it would be a key element in maintaining an adequate deterrent posture through what has become known as the "Triad" of strategic nuclear forces: the ICBM, the SLBM, and the long-range bomber.⁴²

It may have been a pioneer, but the U.S. was not the only country to become involved in cruise-missile development and deployment. The Soviets have been interested in this weapon system since at least the 1940s, and were active in exploring its possible adaptation to anti-ship purposes throughout the 1950s and 1960s. But it was only in the 1970s that the USSR too became active in developing land-attack systems utilizing the cruise; for prior to a decade or so ago, Soviet strategic planning relied nearly exclusively at first on the manned bomber, and then later on the ICBM, to threaten targets in North America.⁴³ Little specific information is publicly available about the recently deployed Soviet ALCM, but strategic analysts assume it to be similar to the systems deployed by the United States.⁴⁴ While Soviet technology may lag behind that of the West in some respects, the technological gap is being closed at an ever-increasing rate, due both to the USSR's own development efforts and its overt and covert technology acquisitions from other countries. Regardless of the source, and for a variety of reasons, the USSR appears to be able to incorporate advanced technology into operationally deployed weapons systems at least as quickly as the United States and other Western countries.

The ALCM, whether Soviet or American, is capable of flying at extremely low altitudes for long distances, sometimes up to 1800 miles. This long range enhances the missile's survivability, as it allows its flight path to be programmed to avoid enemy radars, surface-to-air missile sites, and fighter interceptor bases. Its low-altitude flight capability also increases the ALCM's survivability; for low-flying aircraft tend to present severe problems from an air-defence perspective. Conventional ground-based radars, for instance, are restricted by poor operational characteristics when trying to detect or track very low-flying aircraft (or missiles). This can result from natural terrain features, or from such man-made objects as tall buildings, which block the line-of-sight radar signal; in either case, military planners can take advantage of these features to hide or "mask" the cruise missile from detection. Additionally, ground-based radars are hampered by "ground clutter," which obscures the radar picture in the immediate vicinity of the radar itself, further compounding the detection problem in some situations.⁴⁵

Radars on such aircraft as the U.S. E-3 Airborne Warning and Control System (AWACS) can, it is true, look down from high altitudes and detect low-flying aircraft, but they may have a reduced capability against the cruise missile, given the latter's small size, which might measure 20 feet in length, with a 10-foot wing span. What results is a smaller radar cross section (RCS) than that created by such larger craft as bombers, and this can lead to reduced detection ranges.⁴⁶ To be sure, over-the-horizon radars have the potential to detect low-flying cruise missiles at long distances, perhaps up to 2,000 miles. These radars reflect energy off the ionosphere to achieve their long-range detection capabilities; however, their actual effectiveness against a target the size of a cruise missile is still in question.⁴⁷

The Soviet ALCM, designated the AS-15, has been operational for some three years. In October 1984 the Soviet Defence Ministry announced that it had begun deploying strategic cruise missiles on long-range bombers, ostensibly in response to the American Pershing II and ground-launched cruise missile (GLCM) deployments that were undertaken as part of NATO's "dual-track" policy, itself adopted in 1979 as a response to Soviet SS-20 deployments.⁴⁸ Despite Soviet statements that linked their cruise deployments to NATO strategy, it appears that the USSR's ALCM (and SLCM) program was already well underway some years previous to the articulation of the dual-track approach.⁴⁹

The AS-15 is deployed on the TU-95 Bear H aircraft, a new production model of the mainstay of Soviet intercontinental-range aircraft. The Soviets now have more than 45 operational BEAR H craft that, armed with the AS-15, are capable of striking targets throughout North America from bases in the Soviet Union. Although it is not easy to determine the number of ALCMs the BEAR H can carry, it is known that four can be mounted externally. By way of contrast, the B-52 can currently carry 12 ALCMs externally and can be configured to add eight more internally, for a total of 20 missiles.⁵⁰ This contrast raises but does not answer the question of the actual ALCM load capacity of the BEAR H bomber, which is of comparable size to the B-52; a good approximation is that the BEAR H can carry eight AS-15s, though some sources list it as able to carry as many as 20, which if true would presuppose a carousel loading system similar to that of the B-52.

The AS-15 could also be carried on the medium-range TU-26 BACKFIRE according to some defence analysts, and will likely be deployed on the BLACKJACK bomber now under development.⁵¹ The BLACKJACK, which should enter operational service by the end of this decade, is thought to be capable of

carrying up to 20 ALCMs in its internal bomb bay.⁵² Whatever the ultimate carrying potential of the Soviet intercontinental-bomber fleet turns out to be, it is clear that the development and deployment of the ALCM has occasioned a considerable rethinking in Washington planning circles about the once-moribund air-breathing threat, and that this in turn, as we shall see in the next section, has led to a substantial modernization of North American air-defence systems, currently underway. Prior to examining this modernization effort, let us contemplate the manner in which the Soviet ALCM has come to be regarded as a major threat to North American security by the Pentagon.

Threat Assessment and the ALCM: A First-Strike Weapon?

To a certain degree, the reconsideration of the air-breathing threat has been animated by technological or political developments (or both) that might render the ICBM danger less apparent than it now seems. Indeed, as Lawrence Freedman points out in a recent article, the prospect of a "return to the bomber age" is tied closely to the fortunes of the Strategic Defence Initiative.⁵³ Although there is much merit to this view, it is somewhat incomplete in its implicit assumption that the air-breathing threat requires SDI (or something akin to it) if it is to be taken seriously. To be sure, there has been and will continue to be much talk about the futility of building, to cite the cliché, a "house with a roof [viz SDI] but no walls"--with the latter structural feature supposed to represent defensive systems capable of parrying the ALCM and SLCM. However, it is incorrect to imagine that a world without SDI--or even its incomplete BMD form as discussed above--must be a world without concern for the air-breathing threat. Strategic planners will have more

than enough reason, when engaging in the business of threat-assessing, to worry about the ALCM; they already have had.

To those who are not part of the strategic-studies community, there seems to be a decidedly Pickwickian quality to threat assessments--particularly those made by academicians with a bent for exponential logical extrapolations that can never be disciplined (or at least we hope) by empirical observation. That something might in the abstract happen is taken as prima facie grounds for considering that it could in reality occur; and given the existence of anarchy in the international system, and the sorry record of behaviour of the units that make up that system, there is a prudential basis to the worst-case approach that does, and probably must, figure so largely in threat assessment. This is by way of preface to the following set of considerations facing those who must plan against the ALCM; for if we grant the premise that nuclear war remains a possibility (surely the one assumption shared equally by peace researchers and strategic analysts), then we must also concede a certain degree of logical validity to speculations about Soviet employment doctrine for ALCMs, and this even though we can have no good information about Soviet intentions. The "security dilemma," in other words, applies to the ALCM at least as much as it does to other weapons systems.⁵⁴

In theory, the ALCM's unique characteristics allow it to be employed in a range of situations covering the entire spectrum of nuclear warfare. The five major postulated roles for Soviet strategic cruise missiles are the following:

- 1) Selective nuclear strikes, or limited nuclear options, fall within the framework of the deterrence model known as "flexible targeting." This envisions the use of a single nuclear weapon (or at most a few of them) to produce a demonstration effect of limited and selective retaliation, the purpose of which

is to ensure that the adversary understands the resolve or willingness to engage in nuclear strikes to attain political or military objectives.⁵⁵

2) A decapitation attack would consist in an initial attack designed to destroy critical command, control, and communications (C³) targets in North America. The objective of this type of attack would be to deny or severely disrupt the U.S. ability to launch retaliatory strikes against the Soviet Union by "decapitating" the political and military leadership from the nuclear forces.⁵⁶ This attack could be employed to achieve "victory," on the assumption that the United States might not be able to retaliate effectively; alternatively, it could constitute the first of several massive strikes by such other Soviet strategic offensive weapons systems as ICBMs, SLBMs, and bombers. In the alternative case, this kind of attack can be termed a precursor, or leading-edge, attack.

3) The precursor attack would be the prelude to massive nuclear strikes by other strategic forces. Similar in one way to the decapitation attack, the precursor strike is intended to disrupt attempts to launch coordinated retaliatory blows against the Soviet Union.⁵⁷ One conceivable timing sequence envisages the simultaneous detonation of cruise-missile warheads on critical North American C³ installations at approximately the same time that Soviet ICBMs and SLBMs would be detected by NORAD early warning sensors. It is assumed that Soviet missiles would be detected by one or more of the space- or ground-based ballistic-missile early warning sensors shortly after they were launched.⁵⁸

4) In the complementary attack role the cruise missile would be used in conjunction with a massive first strike by Soviet central strategic assets, but would arrive at the target some hours later.

5) The follow-on attack would be employed to "mop up" remaining high-value targets that have been newly discovered, or previously known targets that may have been missed by earlier strikes due perhaps to attrition of attacking forces by enemy defences or to weapon-system malfunction.

For good measure, Western planners can anticipate that ALCMs would also partially make up whatever reserve nuclear forces the Soviets retain after massive blows had been delivered by their strategic triad. These would be used for unplanned contingencies as warranted by the political/military situation.⁵⁹ By this stage, it could only be assumed that unplanned contingencies would abound, what with much of the planet a smoldering, radiated ruin.

It is easy to be dismissive of strategic threat assessments, particularly as they progressively rise into the stratosphere of strategic tremulousness--not to say paranoia. There does come a limit to the rational analyst's ability to suspend disbelief in respect of the worst-case approach to thinking about the future. And it is true that strategic planners can become nearly totally divorced from strategic reality, as seems to have happened with war planners in Washington during most of the interwar period, when elaborate plans were crafted in the Army and Navy departments to deal with what was seen as the most imperiling menace to American physical security, the spectre of a British-Japanese war against the U.S. Only in late 1937 did reality overtake the planners, who quickly scrapped most of the old assumptions and began cobbling together the conceptual framework through which they and their successors would come to grips with the potential challenge posed to American security by Nazi Germany and its allies.⁶⁰

Of the five possible employment options listed above, there is one that stands out as a generator of anxiety on the part of strategic planners in

Washington: the possibility that the ALCM might figure prominently in a decapitation attack. To be sure, there exist damage-limitation rationales for pondering countermeasures to the ALCM in the other four postulated roles; but it is really only the decapitation scenario that raises the prospect of the ALCM constituting a potentially destabilizing factor in the general strategic balance between the U.S. and its Soviet adversary. It does so precisely because it creates at least the expectation that the ALCM could be, given its characteristics, a potential first-strike weapon. It may seem odd to regard the relatively slow ALCM (and its even slower launch platform) as a potential first-strike weapon,⁶¹ but what is lacking in terms of speed can be made up for in both difficulty of detection and degree of accuracy possessed by these missiles, qualities likely to be vastly improved upon in the next generation of ALCM.

Arms-control theorists have for some time been urging that utmost care be taken to reduce the ability of an attacker to achieve surprise--and surprise is the very attribute that can endow the ALCM with the power to either tempt its user to "go first," or perhaps more likely, unleash the urge to "pre-empt" or prevent on the part of the side that fears such weapons.⁶² It is significant, given the tendency to dismiss the Soviet ALCM as a second-strike system, that the Soviets themselves have made no secret of the fact that they regard the cruise missile (albeit the American cruise, and primarily the GLCM, not the ALCM) as a first-strike weapon that can execute a decapitation attack. Although he writes on military affairs for Tass, Vladimir Bogachev would find a receptive audience in the Pentagon for this statement: "High precision and the ability to fly at low altitudes and to circumvent air defense systems on their way to target make these [cruise] missiles typical first nuclear strike

weapons."⁶³ Nor would those who seek to counter the AS-15 necessarily find much objectionable logic in the following remarks of Georgiy Arbatov, director of the USSR Academy of Sciences Institute of the USA and Canada: "Our experts and people who simply keep an eye on events have come to believe that in all these plans for the first strike, the American [Pershing II and cruise] missiles in Europe are to perform a 'beheading' function ... because they have a very short flying time and are targeted at the other side's command, control and communication centres."⁶⁴

Of course, Arbatov stressed short flying time as a necessary condition of first-strike capability, but it can be observed that shortness of flying time is a function not only of the passage of seconds, minutes, and hours, but also of the likelihood of detection. In any event, the point of the above paragraphs is not to make the argument that the ALCM is a first-strike weapon; it is only to illustrate the basis for such an argument being made by those in the strategic-planning establishments of either superpower. Whether a first-strike system or not, one thing seems clear: a remedy to the problems that the Soviet ALCM poses for North American air defence is enhanced detection capability, and it is to this that we now turn, in our assessment of the changing geopolitical significance of the Canadian north.

Responding to the Cruise: NORAD Modernization Efforts

Although much ambiguity surrounds, and will continue to surround, the degree to which the Soviet (or, for that matter, American) ALCM can be considered to be--primarily by virtue of its potential for a decapitation role--a first-strike weapon, fears about its possible application in such a role have been responsible for much of the recent modernization planning and deployments

undertaken by NORAD. To understand the extent to which the Soviet ALCM (and its launching platform) have stimulated a rethinking of the air-defence mission that was NORAD's original *raison d'etre*, it is necessary to quickly review some of the major benchmarks in the agreement's 30-year history.

At inception, NORAD's primary mission was twofold: to provide warning for the strategic retaliation forces of the U.S., which in the late 1950s meant the long-range bombers deployed by the Strategic Air Command; and to defend as best as could be defended important industrial and military targets in both Canada and the United States. In response to the manned-bomber threat, Canada and the U.S. would jointly deploy, through NORAD, extensive radar networks and a robust interceptor force. But hardly had the ink on the North American Air Defence Agreement been allowed to dry when changes in military technology--away from the bomber and toward the ICBM and (later) the SLBM--guaranteed that the geopolitical status of Canada's northern reaches would decline precipitously in importance to U.S. defence planners, as would NORAD itself.

During the 1960s and into the 1970s, North American interceptor forces were allowed to dwindle to mere shadows of what they were in the 1950s, and for good reason; for of what utility would fighter aircraft be against the ballistic missile?⁶⁵ Granted, some interceptor capability remained, if only to guard against giving the Soviet bomber force a free ride into the heart of North America; but instead of the 3,000 interceptors of 1960 (200 of which were Canadian), NORAD by the late 1970s would be able to muster some 300 (only 36 of which were Canadian). With the de-commissioning and scrapping of scores of Canada-based radars, and the dismantling of the Canadian BOMARC

surface-to-air missile, NORAD's mission became nearly exclusively one of providing warning of ballistic missile attack.⁶⁶

The development and deployment of the Soviet ALCM has brought about a sobering reconsideration of the adequacy of both the detection and interception capabilities of NORAD, which is in the midst of an ambitious and expensive modernization project designed to counter the air-breathing threat--at a cost of more than US\$7 billion over five years, 12 percent of which would be borne by Canada.⁶⁷ Though the Soviet SLCM is lately cited as being at least a part of the problem facing Canadian and American defences, it is the ALCM, and especially its BEAR H launch platform (as well as other versions of the BEAR) that have been gaining periodic media attention as they probe Canada's Air Defence Identification Zone (ADIZ) on communications-monitoring missions that eventually culminate when Canadian or U.S. fighter aircraft arrive to usher them out of the zone (which is, incidentally, not to be confused with Canadian airspace per se).⁶⁸

In response to growing concern over the air-breathing threat, Canada and the U.S. adopted an Air Defence Master Plan (ADMP) in 1982 that would serve as the basis for a Memorandum of Understanding (MOU) signed by the two countries at the Quebec Summit on 18 March 1985.⁶⁹ The 1985 MOU established the fundamentals of the North American Air Defence Modernization (NAADM) project, among which are the following: a) the North Warning System (NWS), a string of long- and short-range radars designed to replace the aging Distant Early Warning (DEW) Line radars, numbering some 52 in all, and covering most of the northern perimeter of the continent from chiefly Canadian sites;⁷⁰ b) deployment of three major segments of Over-the-Horizon Backscatter (OTH-B) high-frequency radars, to provide long-range detection and tracking capabilities

on the eastern, western, and southern approaches to North America (but not the northern, for the OTH-B is rendered ineffectual by the Aurora Borealis);⁷¹ c) commitment to NORAD of U.S. E-3 Airborne Warning and Control System (AWACS) aircraft, to provide survivable command and control capabilities in the event NORAD's Regional Operational Control Centres (ROCCs) were disabled during an attack;⁷² d) a series of Forward Operating Locations (FOLs) that will enable the range of CF-18 interceptors to be extended to the far north, thus enhancing the ability of these and other NORAD interceptors to search out and destroy low-flying bombers and ALCMs.⁷³

Conclusion: The ALCM and the Ongoing Policy Debate

The NORAD modernization efforts, most of which should be operational by 1993, have not escaped some adverse commentary, but by and large they have been seen, even by the arms-control community, as being both long-overdue and conducive to the stability of deterrence.⁷⁴ Moreover, the modernization programs, if expensive, at least will see the costs shared between the U.S. and Canada in such a way that overall Canadian expenses associated with the program should be less than US\$1 billion--not a bad figure compared with the multibillion-dollar price tag being put on such options as the acquisition of a small nuclear-submarine fleet.⁷⁵ And when one considers that the NWS and the FOLs, to say nothing of the other components of NORAD modernization, should enhance not only Canadian security but the country's sovereignty as well, it might be argued that the Soviet ALCM deployments could turn out to be proof once again that there is some truth contained in the old saw, "it's an ill wind that blows no one some good."

Still, one would be imprudent to imagine that NORAD's modernization has not occasioned some discontent in Canada. On the one hand, some from within the Canadian defence community have argued that while the principle of the North Warning System is a good thing, its location is not; according to this view, the NWS is sited too far south (following the general course of the old DEW line at 70° north latitude) to provide effective radar coverage of all of Canada's northern territory. Thus, parts of the High Arctic, including the islands of the archipelago and the sensitive Northwest Passage, will have to depend upon intermittent AWACS flights originating in either Alaska or Thule, Greenland--a situation that some see as being problematical in security terms, and "clearly prejudicial to Canada's claims to sovereignty."⁷⁶

This criticism apart, there are two other arguments raised in recent months that bear witness to the potential effect upon domestic politics of the changing geopolitical significance of Canada's northern landmass. The first relates to an issue that is indirectly linked with the Soviet deployment of the ALCM: the testing in Canadian airspace of the American ALCM. As noted above, every test of an American ALCM (there have been seven to date) can be sure to create a frisson of anti-cruise excitement among Canadian disarmament groups. Lately, however, the anti-cruise forces have been joined by arms-control advocates who formerly were not opposed to the testing of the U.S. missiles in Canada.⁷⁷ Because the reasoning of the two groups is somewhat different, I will treat them in turn, beginning with those who are against the cruise because it is a weapon, and they are in favour of doing away with weapons, regardless of the effect that this might have on the overall strategic balance, or on the "deterrence stability" that is dear to most arms controllers.

Gertrude Stein's famous line from Sacred Emily comes to mind when discussing the opposition of the disarmament groups to the testing, for their position can be characterized by the phrase, "a cruise is a cruise is a cruise." According to this perspective, attempts to distinguish whether a weapon enhances or detracts from deterrence are both spurious and insulting; the only thing to know is that something can kill, therefore it should be opposed. Arguments made on behalf of certain kinds of weapons by arms controllers seem, to this group, to be at best casuistic. Because disarmament is held by them to be the great moral imperative of our time, anything that stands in the way of the elimination of nuclear weapons demands to be opposed. Hence opposition to the tests is a priori an honourable position.⁷⁸

A more nuanced, and occasionally more tortured, logic has been developed by arms controllers who have in the past accepted the ALCM testing because of their view that this weapon system, being ill-suited for a first-strike role, could preserve the stability of Mutual Assured Destruction (MAD), by enabling the U.S. to pose a credible threat of retaliation upon the Soviet Union. At the same time, it would also soothe jangled American nerves supposedly first set on edge a decade or so ago by the celebrated "window of vulnerability," which ostensibly presented the Soviets with a golden opportunity to destroy U.S. fixed-site ICBMs in their silos, and hence gain a quick victory over the U.S. in a nuclear war.⁷⁹ Arms controllers have lost some of their previous ardor for the ALCM in part because of the possibility that a "stealthy" version of the missile might indeed make it the kind of weapon both Soviet and American defence planners have argued it already is. But probably a more compelling explanation for the volte face of many arms controllers (and a few members of the Liberal Party) on the ALCM testing is that it represents an opportunity to signal to the

Reagan administration their opposition to the late 1986 U.S. violation of the SALT II ceiling on combined MIRVed ICBMs and ALCM-equipped bombers. And what could be a more symbolic way of expressing this opposition than through a call for the termination of cruise testing, for it was the deployment of the 131st B-52 with ALCMs that pushed the U.S. strategic forces over the SALT limit?⁸⁰

The second major line of criticism that has been directed against the NORAD modernization efforts is that they will involve Canada willy-nilly in defending not only against the air-breathing threat, but against ballistic missiles as well. As I noted earlier, there has been a popular view that developments in BMD have in part driven the modernization efforts so far made to counter the air-breathing threat. This has not, as I have tried to show, been the case to date; but there is indeed the possibility that the next generation of detection and defence systems intended for the air-breathing threat could be involved in BMD.⁸¹ There are two aspects to this potential linkage that bear discussing.

The first aspect relates to the undeniable logic of the metaphorical argument that would have the structural characteristics of BMD (i.e. the "roof") be completed by a robust defence against the air-breathing threat (the "walls" of the North American strategic-defence condominium). Neither SDI nor BMD in its ground-based versions have much of a constituency in Canada, and it is with good reason that Ottawa stresses that the current NORAD modernization efforts should not be construed as a statement about either the desirability or the feasibility of ballistic-missile defence. By and large, they are unrelated to the SDI program.

But whether future aspects of NORAD modernization--aimed at countering the air-breathing threat--will be so easily distinguishable from SDI is another

question, and one that will begin to occupy the attention of the Canadian arms-control and disarmament communities over the next few years, as Canada debates whether and to what extent participation in the U.S. Air Force's Air Defense Initiative (ADI) is deemed to be in the national interest. The ADI was begun in mid 1985 as a project intended to investigate the kinds of technology that might in the 1990s be required for air-defence purposes in the areas of surveillance, battle-management C³, and engagement. Much more so than the current modernization efforts, those undertaken in connection with ADI will be dependent upon space-basing, and it is this that has led many ADI critics, in the U.S. Congress and elsewhere, to draw some troublesome links between it and SDI.⁸² The ADI is an outgrowth of the Strategic Defence Architecture 2000 (SDA 2000) study, in whose first phase Canada and the U.S. participated jointly between 1982 and 1985.⁸³ Although Canada has yet to formally commence participation in the ADI, there is at least one collaborative project between the two countries that does lend itself to being connected with the ADI, the TEAL RUBY infrared surveillance system.

The TEAL RUBY sensor, developed by the U.S. Air Force and the Defense Advanced Research Projects Agency (DARPA), was intended to be launched into orbit by the space shuttle. It has been designed to detect and track aircraft (including cruise missiles) from space, and though its function does not necessarily suggest a complementary role in BMD, the possibility of such a role has not been lost on U.S. planners. As a recent Congressional study on ballistic-missile defence noted, "a BMD system does not have to be able to attack aircraft. However, should one be developed, the advantages of also providing it with anti-aircraft capability may be compelling."⁸⁴

It is the possible link between ADI and SDI that poses potential problems for Canada--indeed, has already posed some problems--given the federal government's publicized opposition to direct government involvement with SDI research and development.⁸⁵ Ottawa's dilemma, felt most acutely in the Department of National Defence, is precisely how to avoid giving the impression of cooperating on anything that might be plausibly connected with SDI while at the same time not jeopardizing access to the ADI and other research projects that could enhance Canadian sovereignty and security interests. There is a prime ingredient to the DND disquiet, and it consists in the fear that Canada might slip into a quasi-permanent state of technological impoverishment (and irrelevance) regarding space-based surveillance systems. Should this occur it is argued that there would be a double threat to Canadian sovereignty interests. This threat inheres in both the denial of access to technologies that might enhance Canada's ability to conduct satellite surveillance of its national airspace, and the diminution of Canada's ability to participate in and contribute to NORAD's surveillance and warning functions.⁸⁶ According to those who hold this view, the primary problem facing Canadian defence planners is not that the United States will bring increasing pressure to bear upon Canada because of the country's enhanced geopolitical relevance for American military purposes; but rather that the U.S. might be able, by dint of technological improvements in space-based surveillance and detection systems, to make itself less dependent upon Canadian territory, and a fortiori Canadian defence cooperation, for the purposes of safeguarding its own security.

Whether future technological developments portend a relative de-linking of American defence planning from geographical constraints cannot, obviously, be determined. We do know that in the past decades technology did contribute to a

reduction of the geopolitical significance of Canadian territory for American security interests. Whether it will do so once again must remain a matter of conjecture. What can be stated, however, is that for the present, it does appear that Canada has regained the geopolitical significance it had during the early post-World War II years, and that in addition to stimulating the substantial degree of air-defence modernization occasioned by the evolution of the air-breathing threat, this enhanced geopolitical importance has added, and will continue to add, considerable fuel to the defence-policy debate now going on within Canada. At least for the moment, Canada's north constitutes, as a recent book has phrased it, "vital strategic space" for the superpowers, with all that this implies for both international and domestic politics.⁸⁷

Notes

¹See, for the early relevance of the Arctic, Melvin Conant, The Long Polar Watch: Canada and the Defense of North America (New York: Council on Foreign Relations, Harper, 1962). A good review for the entire post-war period is George R. Lindsey, The Strategic Defence of North America (Toronto: Canadian Institute of Strategic Studies, 1986). For an implicitly geopolitical assessment of Canadian territorial relevance to American physical security, see Donald E. Nuechterlein, America Overcommitted: United States National Interests in the 1980s (Lexington: University Press of Kentucky, 1985), chap. 3: "North America: The Neglected Heartland." On North American air defence prior to the creation of NORAD, see Joseph T. Jockel, No Boundaries Upstairs: Canada, the United States and the Origins of North American Air Defence, 1945-1958 (Vancouver: University of British Columbia Press, 1987).

²Geoffrey Parker, Western Geopolitical Thought in the Twentieth Century (London: Croom Helm, 1985).

³Critical assessments of Nazi geopolitics include Andrew Gyorgy, Geopolitics: The New German Science, University of California Publications in International Relations, vol. 3 (Berkeley: University of California Press, 1944); Johannes Mattern, Geopolitik: Doctrine of National Self-Sufficiency and Empire (Baltimore: Johns Hopkins Press, 1942); Robert Strausz-Hupé, Geopolitics: The Struggle for Space and Power (New York: G. P. Putnam's Sons, 1942); and Hans W. Weigert, Generals and Geographers: The Twilight of Geopolitics (New York: Oxford University Press, 1942). For the role the Munich school of geopolitics, headed by Karl Haushofer, had on the formulation of German foreign-policy goals, see Derwent Whittlesey, "Haushofer: The Geopoliticians," in Makers of Modern Strategy: Military Thought from Machiavelli to Hitler, ed. Edward Mead Earle (Princeton: Princeton University Press, 1971), pp. 388-411.

⁴Harold and Margaret Sprout, "Geography and International Politics in an Era of Revolutionary Change," Journal of Conflict Resolution 4 (March 1960):145-61.

⁵John H. Herz, "Rise and Demise of the Territorial State," World Politics 9 (July 1957): 473-93.

⁶Sprouts, "Geography and International Politics," p. 160.

⁷See John Child, "Geopolitical Thinking in Latin America," Latin American Research Review 14, 2 (1979):89-111; J.T. Briano, Geopolítica y Geoestrategía Americana (Buenos Aires: Editorial Pleamar, 1966); Armando Alonso Piñero, "El equilibrio geopolítico sudamericano," Estrategía 30 (September/October 1974): 62-71; and Howard T. Pittman, "Geopolitics in the ABC Countries" (Ph.d. dissertation, American University, 1981). For specific national "geopolitical" schools, see Stephen M. Gorman, "Geopolitics and Peruvian Foreign Policy," Inter-American Economic Affairs 36 (Autumn 1982):65-88; Judith Ewell, "The Development of Venezuelan Geopolitical Analysis since World War II," Journal of Interamerican Studies and World Affairs 24 (August 1982):295-320; (Gen.) Golbery do Couto e Silva. Geopolítica del Brasil, trans. Paulo Schilling (Mexico, D.F.: El Cid, 1978); Oliveros S. Ferreira,

"La Geopolítica y el Ejército Brasileño," Aportes, no. 12 (April 1969): 111-32; Philip L. Kelly, "Geopolitical Themes in the Writings of Gen. Carlos de Meira Mattos of Brazil," Journal of Latin American Studies 16 (November 1984): 439-61; and (Gen.) Juan E. Gugliamelli, Geopolítica del Cono Sur (Buenos Aires: El Cid, 1979).

⁸See, for a good discussion of French geopolitical thought, John D. Young, "L'explication interthéorique en relations internationales: Quelques jalons pour une synthèse du réalisme structurel américain et de le géopolitique française contemporaine," Etudes internationales 18 (forthcoming in June 1987).

⁹Leslie W. Hepple, "The Revival of Geopolitics," Political Geography Quarterly 5 (October 1986): S21-36.

¹⁰Good examples of the tendency to employ geopolitics as a code word for relations between (or with) the superpowers include Robert S. Litwak, Détente and the Nixon Doctrine: American Foreign Policy and the Pursuit of Stability, 1969-1976 (Cambridge: Cambridge University Press, 1984); James H. Wylie, European Security in the Nuclear Age (Oxford: Basil Blackwell, 1986); and Xabier Gorostiaga, "Towards Alternative Policies for the Region," in Towards an Alternative for Central America and the Caribbean, ed. George Irvin and Xabier Gorostiaga (London: George Allen & Unwin, 1985), pp. 13-37.

¹¹Quoted in "The Hatching of the Second Reagan Presidency," The Economist, 7-13 March 1987, p. 31.

¹²John Lewis Gaddis, Strategies of Containment: A Critical Appraisal of Postwar American National Security Policy (New York: Oxford University Press, 1982).

¹³Colin S. Gray, The Geopolitics of the Nuclear Era: Heartland, Rimlands, and the Technological Revolution (New York: Crane, Russak, 1977). Also see, by the same author, Maritime Strategy, Geopolitics, and the Defense of the West (New York: National Strategy Information Center, 1986); "Keeping the Soviets Landlocked: Geostrategy for a Maritime America," National Interest, no. 4 (Summer 1986): 24-36; and "Maritime Strategy and the Pacific: The Implications for NATO," Naval War College Review 40 (Winter 1987):8-19.

¹⁴Nicholas John Spykman, America's Strategy in World Politics: The United States and the Balance of Power (New York: Harcourt, Brace, 1942).

¹⁵David G. Haglund, "The New Geopolitics of Minerals: An Inquiry into the Changing Political Significance of Strategic Minerals," Political Geography Quarterly 5 (July 1986):221-40.

¹⁶For the relationship between insulation and foreign-policy role conceptions, see William Fox, "Geopolitics and International Relations," in On Geopolitics: Classical and Nuclear, ed. Ciro E. Zoppo and Charles Zorgbibe (Dordrecht: Martinus Nijhoff, 1985), pp. 15-44.

¹⁷See Edward J. Babin, "Time for Canada to End Its Role in Cruise Tests," Globe and Mail (Toronto), 9 February 1987, p. A7.

¹⁸For BMD's potential as an "offensive" system in its own right, if space-based, see William J. Broad, "Antimissile Weapon Spurs Debate on Potential for Offensive Strikes," New York Times, 22 February 1987, p. 1; and David L. Chandler, "Star Wars, When Developed, Will Be a First-Strike Weapon," Ottawa Citizen, 13 November 1986, p. A9.

¹⁹For an examination of the possibility that space-based technology might actually reduce the strategic importance of Canadian territory insofar as BMD is concerned, see Joel J. Sokolsky, "The Future of Canadian-American Defence Relations: Trends in U.S. Strategy and the Canadian Defence Posture," Occasional Paper no. 10 (Kingston, Ont.: Queen's Centre for International Relations, 1986), pp. 33-42. Also see Albert Legault, "Canada and the United States: The Defense Dimension," in Canada and the United States: Enduring Friendship, Persistent Stress, ed. Charles F. Doran and John H. Sigler (Englewood Cliffs, N.J.: Prentice-Hall, 1985), pp. 167-70.

²⁰John Honderich, "SDI in Canada?," Peace & Security 1 (Summer 1986): 4-5; Paul E. Rohrlich, "Canada and Star Wars," International Perspectives, May/June 1985, pp. 17-20; James W. Moore, "Canadian Participation in BMD Deployment: The Implications for National Sovereignty and Security," a paper presented to the Canadian Political Science Association annual meeting, Winnipeg, June 1986; Gregory Wirick, "Canadian Responses to the Strategic Defence Initiative," Background Paper no. 1, Canadian Institute for International Peace and Security, October 1985; David Frum, "In Defence of Strategic Defence," Saturday Night, January 1986, pp. 13 ff.

²¹It is often easy to overlook the fact that the Soviets are also involved in BMD research that could have eventual implications for space. See David Whitehouse, "The Russians Have Got Their Star Wars Programme, Too," Manchester Guardian Weekly, 2 November 1986, p. 8; and Hubertus Hoffmann, "Moscow's Secret Strategic Defence Initiative," Military Technology, no. 11 (1986), pp. 38ff. A good analysis of Soviet thinking on BMD is Bruce Parrott, The Soviet Union and Ballistic Missile Defence (Boulder, Colo.: Westview Press, 1987).

²²David C. Morrison, "Shooting Down Star Wars," National Journal, 25 October 1986, pp. 2544-49.

²³For an analysis of the Canadian critics' opposition to SDI, see Joel J. Sokolsky, "Changing Strategies, Technologies and Organization: The Continuing Debate on NORAD and the Strategic Defense Initiative," Canadian Journal of Political Science 19 (December 1986): 751-74.

²⁴I am indebted to Col. Gary Marchand (U.S. Army) for this section on ERIS and BRADUSKILL. Marchand was a Visiting Defence Fellow of the Queen's Centre for International Relations in 1985/86, where he prepared a monograph entitled "Canada and Strategic Defense: A Future Dilemma."

²⁵Stanley W. Dziuban, Military Relations between the United States and Canada, 1939-1945, United States Army in World War II: Special Studies, gen.

ed. Kent Roberts Greenfield (Washington: Office of the Chief of Military History, Department of the Army, 1959).

²⁶Quoted in James Eayrs, In Defence of Canada: Peacemaking and Deterrence (Toronto: University of Toronto Press, 1972), p. 351.

²⁷The issue is treated comprehensively in Franklyn Griffiths, ed., Politics of the Northwest Passage (Montreal and Kingston: McGill-Queen's Press, 1987). Other studies that focus on the legal aspects of the dispute are Donat Pharand, "The Legal Regime of the Arctic: Some Outstanding Issues," International Journal 39 (Autumn 1984): 742-99; and Donat Pharand, with Leonard H. Legault, Northwest Passage: Arctic Straits (Dordrecht: Martinus Nijhoff, 1984).

²⁸"Threats to the North," Maclean's, 26 January 1987, pp. 10-11.

²⁹Oran R. Young, "The Age of the Arctic," Foreign Policy, no. 61 (Winter 1985/86), p. 161.

³⁰Richard Halloran, "A Silent Battle Surfaces," New York Times Magazine, 7 December 1986, pp. 60ff.

³¹Paul Koring, "Grim Sub-vs.-Sub Games Played by U.S., Soviets under Canada's Arctic Ice," Edmonton Journal, 29 September 1986.

³²Mike Byfield, "The U.S. Take-Over in the Arctic," Alberta Report, 5 January 1987, pp. 10-15.

³³There are three principal routes the submarines could have taken to reach the Pole: one, the route taken by the Hawkbill, goes from the Pacific through the Bering Strait, and northward from the Chukchi Sea; a second traverses Canadian waters at least partially, following the Davis Strait into Baffin Bay, and thence through the Canadian archipelago; the third also proceeds from the Atlantic through either the Denmark Strait or the Norwegian Sea, then northward through the Greenland Sea. The Ray and Archerfish used either the second or third route (or both). Richard Halloran, "Navy Frontier: Submarines Rendezvous at North Pole," New York Times, 16 December 1986, p. B15.

³⁴"Tory Assails Clark over Subs in Arctic," Gazette (Montreal), 10 December 1986, p. B1; Jeff Sallot, "U.S., Canada Won't Comment on How Subs Travelled to Pole," Globe and Mail, 5 December 1986, p. A11.

³⁵Jeff Sallot, "Mine Arctic Waters to Keep Submarines Out, Report Urges," Globe and Mail, 4 February 1987, p. A1; Idem, "Laying Mines in Arctic Is Rejected," Globe and Mail, 5 February 1987, p. A4.

³⁶Government of Canada, Department of National Defence, Challenge and Commitment: A Defence Policy for Canada (Ottawa: Supply and Services Canada, 1987), pp. 52-55.

³⁷Jeff Sallot, "Canada Studies Treaty with U.S. to Combat Threat of Soviet Subs," Globe and Mail, 20 December 1986, p. A1.

³⁸See especially Sheldon E. Gordon, "Is Soviet Threat in Arctic Over-Rated?," Globe and Mail, 9 January 1987, p. A7.

³⁹Material in this and the following section is drawn heavily from an unpublished manuscript prepared by Lt. Col. William P. Armstrong, Jr., (U.S. Air Force), "Soviet Strategic Cruise Missiles: Implications for North American Air Defense." Armstrong was a Visiting Defence Fellow of the Queen's Centre for International Relations in 1984/85, where he wrote this manuscript.

⁴⁰Ronald Huisken, The Origin of the Strategic Cruise Missile (New York: Praeger, 1981), p. 15.

⁴¹Richard K. Betts, ed., Cruise Missiles: Technology, Strategy, Politics (Washington: Brookings Institution, 1981), p. 31.

⁴²Walter J. Boyne, "The B-52 Story," Air University Review 34 (November/December 1982):67.

⁴³Joel Wit, "A New Arms Threat: Soviet Cruise Missiles," Christian Science Monitor, 16 March 1982, p. 22; Idem, "Soviet Cruise Missiles," Survival 25 (November/December 1983): 249-60.

⁴⁴William Kucewicz, "Spotting Soviet Strategic Advance," Wall Street Journal, 5 September 1984, p. 32.

⁴⁵Betts, Cruise Missiles, pp. 40-41.

⁴⁶U.S. Department of Defense, Soviet Military Power 1985 (Washington: U.S. Government Printing Office, April 1985), p. 34.

⁴⁷Chris Bulloch, "Beyond the Far Horizon," Interavia, no. 12 (1982), p. 1302.

⁴⁸A good review of the INF deployment is Andrew J. Pierre, ed., Nuclear Weapons in Europe (New York: Council on Foreign Relations, 1984).

⁴⁹"At the USSR Defense Ministry," Krasnaya Zvezda [Red Star], 14 October 1984, p. 1, in Daily Report: Soviet Union, Foreign Broadcast Information Service, 15 October 1985, p. AAI; "The U.S. Response on Cruise Missiles," New York Times, 28 August 1984, p. 12.

⁵⁰"Soviet Military Power: U.S. Illustration of the Soviet Inventory," Jane's Defence Weekly, 13 April 1985, p. 612; U.S. Department of the Air Force, Office of the Vice Chief of Staff, Air Force Issues Book, Air Force Issues Team, November 1984, pp. 27-28.

⁵¹Clarence A. Robinson, Jr., "Soviets Test New Cruise Missiles," Aviation Week and Space Technology, 2 January 1984, p. 14; But cf. Capt. J. B. Haazen (Canadian Forces), "Soviet Cruise Missiles," Canadian Defence Quarterly 15 (Winter 1985/86):38, for the claim that the BACKFIRE is not a carrier of the AS-15. Making the claim that the BACKFIRE does carry ALCMs is Michael Ganley, "NORAD Makes a Comeback as Soviet Strategic Threat Grows," Armed Forces Journal International, January 1986, p. 57.

⁵²Bill Sweetman, "Blackjack the Biggest Bomber By Far," International Defense Review, no. 5 (1984), p. 551.

⁵³Lawrence Freedman, "Return to the Bomber Age?," Council for Arms Control Bulletin, no. 30 (January 1987), pp. 1-2.

⁵⁴In its barest form, the "security dilemma" holds the condition of international anarchy to be the structural prerequisite of, and at the same time the principal justification for, resort to self-help measures; the dilemma arises from the ineluctable tendency of one side's security preparations to contribute enormously to making the other side feel more insecure. See Barry Buzan, People, States and Fear: The National Security Problem in International Relations (Chapel Hill: University of North Carolina, 1983), especially chap. 7: "The Power-Security Dilemma"; Robert Jervis, "Security Regimes," in International Regimes, ed. Stephen D. Krasner (Ithaca, N.Y.: Cornell University Press, 1983), pp. 173-94; and John Herz, "Idealist Internationalism and the Security Dilemma," World Politics 2 (January 1950): 157-80.

⁵⁵Keith B. Payne, Nuclear Deterrence in U.S.-Soviet Relations (Boulder, Colo.: Westview Press, 1982), pp. 21-22.

⁵⁶Wit, "Soviet Cruise Missiles," pp. 249-60. The best discussion of C³ is found in Paul Bracken, The Command and Control of Nuclear Forces (New Haven: Yale University Press, 1985).

⁵⁷Canada, Special Senate Committee on National Defence, Canada's Territorial Air Defence (Ottawa: Department of Supply and Services, January 1985), p. 24.

⁵⁸U.S. Department of Defense, Office of the Secretary of Defense, Annual Report to the Congress: Fiscal Year 1986 (Washington: U.S. Government Printing Office, February 1985), p. 216.

⁵⁹Derek Leebaert, ed., Soviet Military Thinking (London: George Allen & Unwin, 1981), pp. 132, 148-49.

⁶⁰Louis Morton, "Germany First: The Basic Concept of Allied Strategy in World War II," in Command Decisions, ed. Kent Roberts Greenfield (Washington: Office of the Chief of Military History, Department of the Army, 1960), pp. 12-22. Also see Michael K. Doyle, "The U.S. Navy and War Plan ORANGE, 1933-1940: Making Necessity a Virtue," Naval War College Review (May/June 1980):49-63.

⁶¹For the view that Soviet ALCMs cannot be first-strike weapons, cf. David Cox, "Trends in Continental Defence: A Canadian Perspective," Occasional Papers, no. 2 (Ottawa: Canadian Institute for International Peace and Security, December 1986), p. 14: "[T]he slow speed of the Bear-H makes the stand-off ALCM a second-strike weapon."

⁶²The classic discussion of the "urge" to pre-empt or prevent is found in Thomas C. Schelling and Morton H. Halperin, Strategy and Arms Control (Washington: Pergamon-Brassey's, 1985), pp. 10-14.

⁶³Vladimir Bogachev, "Cruise Missile First-Strike Weapon," Tass, 14 August 1984, in Daily Report: Soviet Union, Foreign Broadcast Information Service, 15 August 1984, p. AA2.

⁶⁴Georgiy Arbatov, "We Must Not Allow Civilization to be Buried," Moscow News, 2 September 1984, in "Arbatov on Improving Ties with U.S., Arms Race," Daily Report: Soviet Union, Foreign Broadcast Information Service, 5 September 1984, p. AA2.

⁶⁵MGen. R. W. Morton (Canadian Forces), "A Priority Task: North American Air Defence Modernization," Canadian Defence Quarterly 16 (Winter 1986/87):11-20. For an interesting assessment of NORAD's relative importance to both the U.S. and Canada by the early 1970s, see Colin S. Gray, "Canada and NORAD: A Study in Strategy," Behind the Headlines 31 (June 1972).

⁶⁶Sokolsky, "Changing Strategies, Technologies and Organization," p. 757.

⁶⁷Herbert H. Denton, "Canada Winging Jets North as Arctic Defenses Gain Relevance," Washington Post, 6 November 1985.

⁶⁸BEAR D, F, and H bombers were intercepted off Canada's East Coast and over the Beaufort Sea on at least four separate occasions between June 1986 and February 1987. See "Canadian CF-18 Fighters Intercept 2 Soviet Military Jets off East Coast," Ottawa Citizen, 6 October 1986, p. A5; Robert Gordon, "Cruise Shadow over Canada," Chronicle-Herald (Halifax), 24 November 1986; "Canadian Fighters Intercept Four Soviet Military Planes," Ottawa Citizen, 28 February 1986, p. A5; Richard Rohmer, "Bear Hunt," Toronto Sun, 3 March 1987, p. 11.

⁶⁹Maj. T. J. Hochban (Canadian Forces), "North American Air Defence Modernization," Canadian Defence Quarterly 15 (Winter 1985/86):13-17.

⁷⁰"Fact Sheet: The North American Aerospace Defense Command," News Release, Office of the Assistant Secretary of Defense (Public Affairs), Washington, 14 March 1985; Government of Canada, Deputy Prime Minister and Minister of National Defence, "Statement on Motions on Air Defence Modernization," 13 March 1985; Martin Shadwick, "Early Warning," Aerospace Canada International, May/June 1985, pp. 14-16.

⁷¹Bernard Blake, "Beyond the Horizon: New Concept in Detection," Jane's Defence Weekly, 17 March 1984, pp. 414-16; David A. Boutacoff, "Backscatter Radar Extends Early Warning Times," Defense Electronics, May 1985, p. 83.

⁷²Donald D. Carson, "New Look in Air Defense," Air Force Magazine 67 (June 1984):82; Susan H. Young, "Gallery of USAF Weapons," Air Force Magazine 68 (May 1985):155.

⁷³Five northern Canadian communities have been chosen as FOLs: Inuvik, Yellowknife, Iqaluit, and Rankin Inlet (all in the Northwest Territories), and Kuujuaq, in Quebec. "Jet Fighters to Operate from Arctic Airfields," Globe and Mail, 12 March 1987, p. A1.

⁷⁴See two thoughtful analyses by prominent members of the Canadian arms-control community: John Barrett and Douglas Ross, "The Air-Launched Cruise Missile and Canadian Arms Control Policy," Canadian Public Policy 11 (December 1985):711-30; and Ronald G. Purver, "Arms Control Options in the Arctic," a paper presented to the York University Conference on Sovereignty, Security, and the Arctic, Toronto, 9 May 1986.

⁷⁵The Department of National Defence estimates that it would cost some C\$5 to \$6 billion to purchase a fleet of ten nuclear-powered submarines. See James Bagnall, "Beatty Poses New Defence Battle Plan," Financial Post, 16 March 1987, p. 10.

⁷⁶See the article by two former general officers in the Canadian Forces, BGen. (Ret'd) C. E. Beattie and BGen. (Ret'd) K. R. Greenaway, "Offering Up Canada's North," Northern Perspectives, September/October 1986, pp. 5-8.

⁷⁷One such group, which spoke out against testing for the first time in February 1987, is the Canadian Centre for Arms Control and Disarmament. See Andrew McIntosh, "Call Halt to Cruise Test, Ottawa Told," Globe and Mail, 24 February 1987, p. A1.

⁷⁸Defence analyst Gwynne Dyer exemplifies this point of view. See his "The Politics of U.S. Defence Tests," Ottawa Citizen, 16 March 1987, p. A8.

⁷⁹Differing perspectives on the vulnerability question can be found in Colin S. Gray, "The Strategic Forces Triad: End of the Road?," Foreign Affairs 56 (July 1978): 771-89; and John D. Steinbruner and Thomas M. Garwin, "Strategic Vulnerability: The Balance between Prudence and Paranoia," International Security 1 (Summer 1976): 138-81.

⁸⁰Congressional Quarterly, 13 December 1986, p. 3087; R. Jeffrey Smith, "131st Cruise B52 Rolled Out: Treaty Implications Disputed," Washington Post, 18 November 1986, p. 3.

⁸¹David Cox, "Star Wars & NORAD: Canada's Role in North American Defence," Peace & Security 1 (Spring 1986): 2-3.

⁸²John D. Morrocco, "Push for Early SDI Deployment Could Spur Air Defense Initiative," Aviation Week and Space Technology, 2 February 1987, p. 13; "Cloudy Skies for the ADI?," Defense Electronics, January 1987, pp. 59ff.

⁸³Sharon Hobson, "Canada's Space-Based Radar Project," Jane's Defence Weekly, 14 February 1987, p. 226.

⁸⁴U.S. Congress, Office of Technology Assessment, Strategic Defenses: Ballistic Missile Defense Technologies (Princeton: Princeton University Press,

1986), pp. 191-92; Bruce A. Smith, "Air Defense Group Urges Early Launch of Teal Ruby," Aviation Week and Space Technology, 1 December 1986, pp. 34-36.

⁸⁵David Mueller, "Inescapable SDI," International Perspectives, September/October 1986, pp. 14-16.

⁸⁶Sokolsky, "Changing Strategies, Technologies and Organization," p. 772.

⁸⁷L'Arctique: Espace Stratégique Vital pour les Grandes Puissances: Colloque 1986 (Québec: Centre Québécois de Relations Internationales, Université Laval, 1986).