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THE CANADIAN SSN PROGRAM AND THE NONPROLIFERATION QUESTION

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Introduction

When the Department of National Defence, in the first half of 1987, was putting the finishing touches to the section of the Defence White Paper dealing with the proposal that Canada acquire a fleet of some 10 to 12 nuclear-propelled attack submarines (SSNs), there could be no doubt among planners that the bold recommendations were bound to unleash a stream of opposition from a variety of groups.[1] Many, perhaps most, of the opposing arguments could be anticipated. After all, the Minister, Perrin Beatty, had participated personally in a series of well-attended defence round-tables in the half-year or so before the tabling of the White Paper, and the press had been full of defence-related stories for some months, in part as a result of DND's deliberate floating of trial balloons. So the criticisms of the proposal could be foreseen. It was, for example, taken for granted that the disarmament groups would reject the SSNs -- indeed, the entire White Paper -- because anything that promised to add to, refurbish, or otherwise enhance Canadian armaments they would hold a priori to be illegitimate.

Others, not so given to outright condemnation of weapons-systems merely because they were weapons-systems, could still be expected to reject the SSN proposal on a number of scores. Opposition parties in Parliament could hardly be counted on to embrace the initiative, and would likely direct their criticism not against a defence build-up per se, which their defence critics, at least, seemed to think long-overdue, but to the "opportunity costs" and budgetary implications of the SSN proposal. What

might we not be able to do, they would ask, as a result of spending the money on the very expensive SSNs? And could we afford these boats, given the competing claims on the federal budget, not only from other precincts in DND, but from any number of other departments?[2] The arms-control community, as well, would likely have its criticisms, and doubtless these would be directed at the core concern of this community: could these vessels be deployed in such a manner as to destabilize the strategic balance? To many of those who put the question thusly, it was not too difficult to derive an affirmative answer: the SSNs, it was argued, would become a cog in the U.S. Navy's "forward strategy," which the arms-control community saw as anything but stabilizing.[3]

Perhaps the most unexpected objection to the SSNs, and the principal subject of this paper, was the argument that the acquisition of nuclear-propelled vessels would have serious implications for nuclear non-proliferation. Indeed, to some who examined these implications, there seemed a real possibility that a Canadian SSN acquisition would so threaten the international nonproliferation "regime" that the future of that regime itself would be imperiled. But others, who did not necessarily adopt such a bleak perspective on the global nonproliferation implications of the SSNs, did nevertheless wonder what the effect of the proposal would be on Canada's own nonproliferation policy, for it struck them as inconceivable that that policy, arguably one of the world's toughest, would not be able to escape modification, at least in some respects. Whether the modifications were for the better or the worse was not, to these analysts, the major question; at issue was the matter of recognizing and seeking to gauge the effect the SSN program would have on the policy.

Because so little attention had been accorded, within the Department of National Defence, to the nonproliferation implications of the SSN program proposal, it came as no surprise that the department's initial response to criticisms leveled at this aspect of the White Paper was not particularly well-conceived. Early attempts to rebut the charge that the SSN proposal would endanger the international nonproliferation regime centred upon simply denying that the allegation could have any substance, as everyone knew that the Nonproliferation Treaty of 1968 (NPT), to which Canada is a signatory, only forbade non-nuclear weapons states (NNWS) from acquiring nuclear weapons. As the SSNs were not going to have anything but conventional torpedoes (and, possibly, Exocet missiles) as weaponry, it followed that the nonproliferation argument was baseless in this context.

This tack really did miss the point, however; for although there are probably many in Canada (including not a few undergraduates!) who seem to think the nuclear submarines are nuclear-<u>armed</u> vessels, those in the arms-control community who dwelt upon the nonproliferation argument obviously knew better.[4] What they feared, as I shall discuss below, was that Canada, held to be a consummate exemplar of nonproliferationist virtue, would be setting a worrisome precedent for other, less trustworthy adherents to the NPT, as well as for some NNWS that had never signed the Treaty. Better, these analysts argued, that Canada not become the first signatory to acquire SSNs; because while no one in the arms-control community may have fretted about Canada diverting nuclear materials from its SSN program to weapons-building purposes, could the same equanimity be displayed given the prospect of, say, Brazil or some other NNWS obtaining nuclear fuel or facilities for its SSNs?

After some initial period of confusion about the nonproliferation issue, DND finally began to coordinate this aspect of the SSN proposal with the major bureaucratic players in the realm of nuclear policy, the Department of External Affairs (DEA) and the Atomic Energy Control Board of Canada (AECB). Now the view in government is that there are indeed nonproliferation implications stemming from the SSN proposal, but that these implications need not be adverse for the nonproliferation regime. It is possible, say some who are monitoring the issue, that a positive precedent may be set by the Canadian SSN program. Thus the debate has become engaged, and a focus of much of what follows in this paper will be the question of whether Canadian SSNs, which now all seem to concede have a bearing on the nonproliferation regime, are likely to have a negative or a positive impact on that regime, and to what degree.

There is a second major nonproliferation issue associated with the SSN proposal, and this issue took not only DND by surprise, but the arms-control community as well. In the past few months there has been emerging a rather curious ally of sorts for the Canadian arms-control community -- an ally that professes to be equally worried about the Canadian SSNs setting unfortunate precedents. This ally is the U.S. Navy (USN) and some of its Congressional patrons, and their concern is that, for a variety of reasons, a Canadian SSN capability will complicate matters for them. The reason that USN opposition becomes perforce a "nonproliferation issue" is that the American Congress has the authority, under the terms of a 1958 bilateral nuclear cooperation agreement between the U.S. and Britain, effectively to prohibit a British transfer of Trafalgar-class nuclear technology to Canada. The Congress acquired this authority as a result of earlier American anxiety about the possible spread of nuclear weapons

resulting from the dissemination of American nuclear technology to other countries. Thus U.S. nonproliferation policy may have an influence, however indirect in inspiration, on the future shape of the Canadian SSN program. As a recent article in a major Canadian newsweekly put it, "where Canada buys its submarines may ultimately be decided outside the country."[5] This possibility has arisen because the two major contenders for the SSN contract are Britain's Trafalgar and France's Améthyste update of its Rubis class submarine; and the French boat is not encumbered by any third-party control over technology transfer.

Despite being overlooked in the early stages of the SSN proposal, the nonproliferation question has attained a level of importance that has required policy makers to give it close attention. It is the purpose of this paper to contribute to the ongoing debate over the manner in which nonproliferation concerns -- whether of Canada, the global community, or the U.S. -- can both be affected by and have an effect upon the Canadian SSN program. I begin this investigation in the following section with a summary of some relevant matters related to the functioning of the international nonproliferation regime.

The Contemporary Nonproliferation Regime

Because the health of the nonproliferation regime is said by some to be so fragile that a Canadian SSN program would render its prospects even more problematical than they now are, it is necessary that some attention be accorded the current condition of that regime. In this section, I shall concentrate upon what might be termed the spine of that regime, the International Atomic Energy Agency and its all-important system of

safeguards. It could probably be said of the nonproliferation regime that it is like Mark Twain, in that reports of its death seem to be premature; I prefer, however, to compare the regime to another 19th-century personage, Charles Darwin, because while Darwin may have been a valetudinarian, he still managed to produce an impressive body of work. Similarly, the nonproliferation regime, or more specifically, the IAEA, surely does have numerous problems confronting it, yet withal it seems to be one of the most effective international organizations that we have witnessed in the post-World War II years, with the possible exception of NATO and the Warsaw Pact.

Analysts will no doubt puzzle over the exact reasons why the IAEA should have been so relatively successful, given that the fate of most international organizations over the past four decades has been to be condemned to varying degrees of fecklessness. Realists will say that the IAEA works because -- and only because -- both superpowers see its continuation as in their interests; liberal-pluralists (sometimes confusingly called "neo-realists") on the other hand will see in the IAEA proof that the pessimism embodied by contemporary realist thinking on the prospects of international cooperation is misplaced. About this dispute, this essay will have little to say. Nor will it address the important but ultimately perplexing inquiry on the meaning and nature of international "regimes."[6] Whether or not international politics is in a state of transformation will not concern us here. What will concern us is the evolution and the working of the IAEA-centred nonproliferation regime, with that latter term being employed in the old-fashioned sense of a "prevailing system."

What is the contemporary nonproliferation regime? Briefly, it may be considered to be a set of operative assumptions, norms, and institutions that have arisen and been sustained because of a widespread concern over the possible spread of nuclear weapons beyond the handful of acknowledged nuclear-weapons states (the U.S., USSR, U.K., France, and China). In addition to this basal consensual understanding of the adverse implications for international security of nuclear proliferation, there is another expectation that has undergirded the current regime, namely that a compelling case exists for the dissemination of the peaceful application of nuclear energy.[7] Given this dual concern -- to stanch the spread of nuclear weaponry but encourage the adoption of nuclear energy -- there has been developed a series of institutional arrangements that collectively can be taken as the organizational apparatus of the regime. There have been: a) arrangements by suppliers, both on a bilateral basis and a multilateral one, to attach constraints on their exports of nuclear materials, facilities, and technology; b) two significant treaties, the NPT and the Treaty of Tlatelolco; and c) an international agency, the IAEA, which has been charged with the important task of administering and verifying safeguards on nuclear exports.[8]

In its evolution, the nonproliferation regime may be said to have gone through at least three major stages. The earliest, and by far most stringent, phase of global nonproliferation aspirations occurred in the first decade of the post-World War II period, when the United States attempted, through a policy of secrecy and denial, to prevent the spread of nuclear weaponry, even if that entailed prohibitions on the peaceful use of nuclear energy. This policy proved a failure, as both America's allies and adversaries would show themselves capable of developing their own nuclear

weapons despite the U.S. embargo on materials and technology. The second phase began in late 1953, with President Dwight Eisenhower's "Atoms for Peace Proposal," through which Washington signaled a new willingness to stimulate peaceful international nuclear cooperation. This phase came to a rather abrupt halt in 1974, when India's detonation of a "peaceful" nuclear explosion, coupled with the proposed transfer of sophisticated fuel-cycle technology by both France and the Federal Republic of Germany to a group of countries then in the early stages of their own nuclear-energy programs, led to a rekindled American desire to impose tighter controls on nuclear exports -- a desire shared by Canada as well.[9]

It would take the appearance of the IAEA, and the emergence of the two nonproliferation treaties of the late 1960s, to complete the institutional infrastructure of the contemporary regime. Of critical importance were the founding of the IAEA, which has been rightly termed the "organizational core of the nonproliferation regime,"[10] and the signing of the NPT. The IAEA, which is based in Vienna, was set up in July 1957. Its main function has been to administer safeguards on nuclear transfers, thereby ensuring that materials and facilities intended for civilian use do not easily get diverted for prohibited military purposes. Although the IAEA performs other functions, far and away its most important one is the administration of safeguards; as one source puts it, "IAEA safeguards have by now become an indispensable component of most other parts of the nonproliferation regime."[11]

IAEA safeguards enter into effect upon the conclusion of a safeguards contract between the Agency and states (or, in some instances, groups of states).[12] Two main types of safeguards agreements exist: one is

applicable to those states who have not signed the NPT, and permits Agency monitoring of only selected nuclear facilities; the other is applicable to NNWS signatory to the NPT and, in most cases, the Treaty of Tlatelolco, and applies to all their nuclear activities (i.e., these are "full-scope" safeguards). The relevant safeguard documents are, for the former, INFCIRC/66, and for the latter, INFCIRC/153. (INFCIRC stands for Information Circular.) The vast majority of IAEA safeguarding activities today are under the auspices of INFCIRC/153. Nevertheless, several NNWS that have not signed the NPT have some of their nuclear activities safeguarded on the basis of INFCIRC/66: India, Pakistan, Israel, South Africa, Argentina, Brazil, Chile, Cuba, and Spain.[13]

The essence of safeguards is to deter the diversion of nuclear materials to military purposes through the prospect of early detection. This deterrent element is supplied by the inspection role and capabilities of the Agency; but it is important to remember that the Agency itself cannot police violations, it can only report them. In other words, the Agency counts upon the cooperation of those states with which it has safeguard agreements to live up to the terms of the arrangements. In the apt words of one U.S. governmental report, the Agency is "a monitoring group responsible for sounding an alarm."[14] Whether the alarm bell functions at all has come into question among some parties of late, with the most dramatic show of non-confidence in the Agency's efficacy as a nonproliferation guarantor being the Israeli attack on the IAEA-safeguarded Iraqi Osirak reactor on 7 June 1981.[15] But developments in another NNWS, Pakistan, have also triggered some concern of late about the IAEA's capacity to limit the spread of nuclear weapons. Some time ago the Agency admitted that it could not guarantee that Pakistan's Kanupp reactor was

being used for peaceful purposes only, an admission that came in the wake of concern about Pakistan's growing sophistication in the enrichment of uranium.[16] According to U.S. intelligence sources, Pakistan has been enriching uranium to weapons grade of more than 90 percent at its Kahuta plant, near Islamabad -- and this, despite a pledge made to the U.S. not to enrich beyond 5 percent. Moreover, Pakistan is now said to be constructing a second enrichment facility, at Golra.[17]

To the worry about "normal" states getting access to nuclear weaponry has been added another concern, that of nuclear weapons or weapons-grade materials falling into the hands of terrorists.[18] Of particular relevance here is the prospect of plutonium produced by commercial reactors in Europe and separated in that continent's reprocessing facilities being stolen by terrorists to make weapons. A recent battle has been fought within the U.S. administration over the relative security threat posed by the increased commercial use of plutonium -- a battle that has pitted the Department of Defense against State and some other departments. The Pentagon is especially worried that IAEA standards for safeguarding plutonium (as well as highly enriched uranium) are sufficiently lax as to make the danger of terrorist theft too considerable. Contrasted with this position is that of the State Department, which holds that current standards are adequate.[19]

If it can be said that the effectiveness of the IAEA is seen by some to be in question, it can also be said that the Nonproliferation Treaty, the other chief component of the regime, is itself subject to stresses and strains. The NPT was opened for signature on 1 July 1968, and entered into force on 5 March 1970. By August 1985, the eve of the Third Review

Conference of the Treaty, some 130 states had ratified and acceded to it.[20] The Treaty's objectives are contained in its first five articles, which seek to check the spread of nuclear weapons to NNWS (Articles I and II), to ensure through safeguards that the NNWS do not engage in nuclear-weapons fabrication (Article III), and to promote cooperation for the purpose of achieving the peaceful use of nuclear energy under international monitoring (Articles IV and V). The Treaty also serves, through Article VI, as a goad to the nuclear-weapons states (NWS) to move toward arms reduction and, indeed, eventual nuclear disarmament.[21]

In a sense, the NPT represents an exchange of commitments between NWS and the NNWS, with the latter agreeing to renounce the acquisition of nuclear weapons in return for the former granting them access to their civilian nuclear materials, facilities, and technology. As it has not been lost on the NNWS that there is a certain asymmetry to the respective commitments made by the two categories of states, the NWS undertook to try to reduce and ultimately eliminate their own nuclear arsenals -- or at least to say that they would. That is, the NWS pledge to stanch the "vertical" proliferation of nuclear weapons, as part of a general thrust to temper "horizontal" proliferation of these weapons. Until the recent INF accord between the U.S. and USSR, this latter commitment has seemed hollow indeed, something that has not gone unnoticed by several NNWS.[22]

Apart from the contentious issue of the practical and ethical workability of a nonproliferation regime that, through the NPT, continues to depend upon a two-caste division of states, there has arisen another matter of discord over the Treaty, one relating to the undertaking of signatories with nuclear capability to transfer their technology and materials to states wishing to develop civilian nuclear-energy resources.

On the one hand there has been resistance by some NNWS to the notion that primary emphasis should be placed on safeguards, at the expense of the competing claim made, especially by the LDCs, for preferential access to nuclear know-how and materials. On the other hand, there has been a split among the ranks of the nuclear-supplier states -- a split that pits some states (e.g. the U.S., Canada, Australia, and Sweden) desirous of making full-scope safeguards a condition of nuclear exports against other states (e.g. the U.K., Federal Republic of Germany, Italy, and Japan) that resist the mandatory imposition of such safeguards on their nuclear transactions.[23]

That the IAEA and NPT have represented relatively successful initiatives in the area of international law and organization cannot be denied. Nevertheless, it would be unwise to assume that their relative success, and consequently that of the global nonproliferation regime, will be as evident in future as it has been to date. For reasons related above, as well as for other reasons that I have not discussed, both the IAEA and the NPT have become subject to erosive forces in the past few years.[24] It is in the context of this erosion of the global nonproliferation regime that one must examine the Canadian SSN proposal, with specific attention being given to the argument that Canada, in acquiring nuclear-propelled attack submarines, would be establishing a <u>precedent</u> that must prove injurious to the regime. It is to this matter of precedent that I now turn, and in doing so I shall examine both the legal considerations involved in the Canadian SSN proposal and the degree to which Canadian nuclear-export policy has marked Canada as an exemplary state in the politics of nonproliferation.

A Matter of Precedent, I: The Article 14 Issue

To those who are most inclined to view the Canadian SSN proposal as inimical to the long-term future of the nonproliferation regime, one matter stands out above all the others as worthy of anxiety: the potential precedent that a Canadian nuclear-propelled submarine program might set for other would-be acquirers of SSNs. There are really two aspects of this concern. In the first place, no state has yet to avail itself of a provision in the safeguard agreements between the IAEA and the NPT NNWS signatories that allows the latter to withdraw from safeguards nuclear materials intended to be used for nonweapons, nonexplosive military purposes (e.g. submarine or other naval-propulsion reactors). Should Canada, as it appears likely, pursue this avenue, it would in so doing probably be setting a precedent; that much seems clear. What the effect of this precedent upon the regime must be, of course, is open to debate. Suffice it to say at this juncture that for those who view with foreboding the Canadian SSN program, the precedential effect upon the regime must be negative, and markedly so. What is held to be at stake is nothing less than the future credibility of the IAEA; for should any state have recourse to the provision in Article III of the NPT that sanctions the withdrawal of materials from safeguards for "non-proscribed" military purposes, then this "could result in the negation of the treaty's raison d'être, namely, to avoid the proliferation of nuclear weapons. The reason for this is simple.... The Agency would no longer be in a position to provide assurances that no diversion toward weapon manufacture ... was taking place, thereby weakening the credibility of IAEA safeguards."[25]

To be sure, no knowledgeable student of international nuclear politics thinks Canada would be taking material out of safeguards for the purposes

of weapons-fabrication. But those who do maintain the position that the Canadian SSN proposal must have negative precedential significance do so precisely because they view Canada as an exemplary nonproliferator. Thus, any derogation by Canada, it is argued, from the highest standards of nonproliferation would have the same chilling effect on the regime that an evangelist's lapse from probity must have on his or her followers. No NNWS, according to this view, should take advantage of Article 14, but least of all should Canada. One might call this the "Elmer Gantry" proviso, which is another way of saying that while it would be bad enough for the regime were Chad to announce a desire to obtain SSNs, it would be devastating for Canada to do so.

It is with these two related aspects of the precedent issue, then, that this and the next section will be concerned. In the pages that follow, I shall briefly analyze those considerations in respect of IAEA safeguards agreements that are currently attracting such attention, and then turn to an examination of both Canadian declaratory policy on nonproliferation and official practice regarding nuclear weaponry and nuclear-product exports. Although there is merit in the views of those who worry about the global nonproliferation implications of the Canadian SSN proposal, I shall argue in this section that it is by no means certain that the precedent that Canada might set in acquiring SSNs must be a negative one. Moreover, I will also try to show, in the subsequent section, that the exhalted status Canada has for some reason attained among nonproliferators is probably not warranted, at least not completely. The cynic might be excused for recalling, while contemplating Canada's nuclear-export and nuclear-arms experience, this famous epigraph of La

Rochefoucauld: "Our virtues are most frequently but vices in disguise."

Those who worry about the potential dire consequences of the SSN proposal would perhaps not see matters in this light, although they certainly would consider as a major vice any Canadian departure from the straight and narrow path of eschewing nuclear materials or technology for military purposes. But they would not necessarily challenge the "legality" of Canada's so straying.[26] It is clear that there exist, depending upon one's interpretation of Canada's NPT adherence, some avenues for it (and other states) to pursue in legally applying nuclear products and facilities to non-proscribed military purposes. At the moment, there are two possible approaches Ottawa can make to the legal (if not the ethical) question of how to acquire SSNs yet remain consistent with the country's NNWS status.[27] On the one hand, Ottawa could simply argue that neither the NPT nor the IAEA are affected by the SSN proposal, for the good reason that both these institutions exist to prevent nuclear materials and technology from being diverted from peaceful to military purposes. Since the SSN program would clearly be military in intent, origin, and application, it would, according to this view, fall outside the ambit of both the NPT and the IAEA.

An alternative approach to the international legal issue, and the one that Ottawa feels more comfortable in following, is to take advantage of the provision in the country's safeguard agreement with the IAEA that allows, under certain conditions, nuclear material to be withdrawn from safeguards for permissible (i.e. non-proscribed) military applications. When Canada and other NNWS ratified the NPT, they agreed that they would conclude with the IAEA a safeguard arrangement that would, according to Article III(1) of the Treaty, be directed toward "the exclusive purpose of verification of the fulfillment of ... obligations assumed under this

Treaty with a view to preventing diversion of nuclear energy from peaceful uses to nuclear weapons or other nuclear explosive devices." As I noted earlier, the basis for all the agreements reached between the IAEA and NNWS signatories would be INFCIRC/153.[28] This would not actually be the safeguard agreement per se that Canada would make with the IAEA; it would only be the model for that agreement. In Canada's case, INFCIRC/164, which came into force in February 1972, would spell out Ottawa's rights and responsibilities in respect of the IAEA under the NPT.[29]

Because some NNWS signatories, at the time the Treaty was being completed, had plans eventually of tapping nuclear power for their submarines and surface vessels (both the Italians and Dutch have been cited in this regard), a provision to this effect was included in the model safeguard agreement, INCIRC/153. This, of course, is the celebrated Article 14, which has yet to be invoked by any NNWS signatory to the NPT. Canada bids fair to be the first to invoke this article, which would require it to satisfy the IAEA that non-proscribed military use of the nuclear material in question will not violate any Agency safeguard undertakings Ottawa may have already made regarding the same material, and that "during the period of non-application of safeguards the nuclear material will not be used for the production of nuclear weapons or other nuclear explosive devices."[30] How Ottawa will succeed in satisfying the Agency on these two matters will take some negotiations between it and the IAEA; that it will satisfy the Agency is not seriously in doubt.[31]

Those who fear Canada's taking the momentous step of invoking Article 14 base their case upon the conviction that in setting a precedent, Ottawa sets a bad precedent. It is possible that their assessment will, in

retrospect, prove to have been correct; but this we have no way of knowing at the moment. What can be stated is that, logically, one could as well argue that the precedent will be a positive one. Alternatively, one could argue that the precedent will not really matter, one way or the other; in effect, the real significance of the Canadian precedent would be that it had no significance. Let us examine these latter two possibilities.

The current position of the Department of External Affairs, to which both the Atomic Energy Control Board of Canada and the Department of National Defence also subscribe, is that if the resort to Article 14 is done well, it could have the effect of making the prospects of nonproliferation more, rather than less, tenable. To this end, Ottawa has been seeking, through bilateral agreements with both Britain and France, the two contenders for the SSN contract, to construct safeguard arrangements that would, it is hoped, have the effect of assuring both Canadians and the international community that even while the nuclear fuel for the submarines is out of IAEA safeguards it will still be safeguarded. The bilateral agreements contain a renewal of the respective parties' nonproliferation commitments, which in the case of France are not to be found in the NPT, to which it is not a signatory, but rather in such institutions as the London (or Nuclear) Suppliers Group, which established a code of conduct applicable to its members' nuclear trade.[32] The agreements will be legally binding in international law; they will be made public; and they will be consistent with Canada's current nonproliferation policy. The suppliers will monitor the nuclear material while it is in Canada, and Canadian officials will monitor it while it is outside the country.[33]

This attempt to secure a beneficial outcome for the nonproliferation regime as a result of the Canadian precedent assumes that what Canada does will be noticed by, and have an effect upon, other NNWS that, whether signatories or not to the NPT, might be tempted to acquire their own SSNs. This may indeed reflect reality; on the other hand, it is arguable that other countries with SSN dreams have already embarked upon fulfilling their visions quite independently of anything being done in Canada. In this event, then one could remark that the Canadian precedent will be neither good nor bad, but simply irrelevant. Is there any reason to imagine that Canada's invoking of Article 14 will have little effect upon other states, and therefore upon the global nonproliferation regime? Yes, and it inheres in the recent experience of at least two states that have announced ambitious plans of their own for SSNs. To the extent that these two states, India and Brazil, have made their plans quite independently of anything Ottawa has been considering doing -- a logical supposition given the rather lengthy gestation period for both countries' SSN proposals -- then it becomes extraordinarily difficult to argue that Canada's SSN program has set any precedent at all for the clearly identifiable would-be entrants to the SSN club.

Indeed, the Brazilian SSN program dates back to March 1979, long before the Canadian project was ever a gleam in former Minister of National Defence Erik Neilsen's eye. Key to the Brazilian SSN project was the country's announcement, made in September 1987 by President José Sarney, that it had succeeded in developing the capacity to enrich uranium, thereby freeing itself from dependence upon foreign sources of enrichment for its sole nuclear power reactor, Angra I.[34] As well, and most importantly, solving the enrichment puzzle will allow Brazil, should it wish to, to

build nuclear weapons. But even assuming that Brazil intends to keep its conditional commitment -- made in the Tlatelolco Treaty -- not to introduce nuclear weapons into Latin America, the country will have every reason to press ahead with its SSN program.[35] And if it does, there is ample cause to expect that Argentina, so impressed during the recent Falklands/Malvinas War with the value of SSNs, will also speed up plans to acquire SSNs of its own. It is even possible, given last year's nuclear-sharing accord between Brasilia and Buenos Aires, that Brazil will assist its long-time rival in obtaining SSNs.[36] Alternatively, should the recent rapprochement between the two South American powers prove short-lived, then there would appear to be an even greater incentive to Argentina to proceed with SSNs.[37] In fact, Argentina's own enrichment program, centred upon the facility at Pilcaniyeu, predates Brazil's by a year and is thought to be somewhat more advanced.[38] It goes without saying that any Argentine breakthroughs in military nuclear technology will stimulate grave anxiety in the continent's third naval power, Chile.

For those in Canada who ponder the effect that SSNs might have upon nonproliferation, the South American cases seem a nightmare come true. If, as these critics of Canada's SSN program appear to believe, SSNs can serve to enhance the prospects of the bomb spreading (because of the likely, though not inevitable, association of weapons-grade enriched uranium with this class of vessel), then the "Southern Cone" countries epitomize the risks involved in nuclear-propelled submarines. However, given these same critics' insistence that the Canadian SSN program entails such danger for the nonproliferation regime that it should be halted immediately, it is difficult to avoid the conclusion that their argument suffers from a major

logical fallacy -- that of anachronism. SSNs may well, as the critics maintain, make the world less safe for nonproliferation; but it seems as if the Canadian program, far from being the initiator of an unfortunate chain of events, is at worst simply another stage of a process already begun -- a process, furthermore, that will continue even should the Canadian SSN program be scrapped. And if the cancellation of the Canadian SSN program would not have any effect upon arresting the proliferation hazards inherent in nuclear-propelled submarines, it is difficult to see how its existence impels the world toward greater proliferation risks. One cannot have it both ways: either the Canadian SSN program is somehow a logically necessary antecedent of the Brazilian (and Argentine) one, or it is not. If it is not, which appears to be the only sustainable conclusion, then in what exactly does the Canadian "precedent" consist?

Brazil does not expect to launch its first SSN before 1995.[39] Of more immediate concern, in the context of the SSN-proliferation link, is the recent acquisition by India of a nuclear-propelled submarine. The acquisition of this vessel, a "Charlie" class (in NATO designation) boat on lease from the Soviet Union, constitutes a precedent in its own right; for it makes India the first NNWS to acquire SSNs.[40] India is thus only the sixth country to have nuclear-propelled submarines, the others being the United States, the Soviet Union, China, the United Kingdom, and France.[41] The lease of this boat, now called by the Indians INS Chakra, is expected to be followed by the outright purchase from the Soviets, in the early 1990s, of four "Sierra" class SSNs. Given India's rather infamous nonproliferation record, it might be thought that its acquisition of SSN capability would have triggered a good deal of anxiety among analysts who have been pondering the connection between SSNs and proliferation.

Curiously, although some worry has been expressed in a variety of countries about the Indian démarche, in Canada at least the actual acquisition of the submarine has occasioned much less anxiety than have the potential Canadian SSNs -- even though the latter will, assuming they get funded, not begin to arrive until the middle of the next decade. The relative lack of interest shown in this country in respect of the Indian SSN program is doubly curious, for the Soviets have argued that they are imposing a safeguards system that, in some respects, will bear the earmarks of the bilateral safeguard agreements Ottawa has concluded with Britain and France.[42] Thus it could be maintained that the ability (or inability, as the case may be) of the Soviets to safeguard the nuclear materials transferred to India may be of some relevance to both the Canadian case and to the international nonproliferation regime. Ironically, while it is evident that the Canadian SSN proposal cannot be seen as a precedent for the Indian program, it is possible that the latter might establish a precedent of sorts for the former.

A Matter of Precedent, II: Canada as a Model Nonproliferator

Because neither Brazil nor India have signed the NPT, they obviously do not confront the Article 14 problem discussed above. In many ways, the Canadian "precedent" is largely based on the argument that the invoking of this article must adversely affect the nonproliferation regime, a contention whose logic I have sought to question in the above section. Beyond this concern, there is one other major element to the fear that a Canadian SSN program would imperil the nonproliferation regime, and it relates to Canada's reputation (at least in some quarters) as an exemplary

nonproliferator. Certainly, not all who follow nonproliferation issues would share this assessment of Canada as a model state when it comes to inhibiting the spread of nuclear weapons; Ashok Kapur, for instance, heaps scorn on this image of Canada, which he considers to be a "crypto-nuclear state ... benefiting from the full protection of the Western umbrella."[43] And Ron Finch takes a stern and skeptical look at Canadian nuclear-export policy over the past 40 years, concluding that "Canada has never produced an atomic bomb of its own, but it has played a major role in the proliferation of nuclear technology throughout the world."[44]

Although critics such as these can err in the direction of excessive condemnation of Canadian nuclear-export practices, they are at least refreshingly free of the Pecksniffianism that seems to infect much of the community of analysts -- in this country and abroad -- who seem to imagine that there has never been such an unblemished nuclear actor as Canada. All the more reason, lament this latter group, to condemn the SSN program, which to them plunges Canadian credibility among the nonproliferation faithful into depths of degradation usually attained by less noble states. Consider, for example, some recent testimony prepared by the Canadian Centre for Arms Control and Disarmament, before the Standing Committee on National Defence of the House of Commons. Were it not for the Canadian SSN program, the CCACD argues, Canada would be much better placed to denounce the recent Soviet lease of a nuclear-propelled submarine to India. "Today," notes John Lamb, the Centre's Director, "we'd be laughed out of the room if we as much as raised the issue with them."[45]

If Canada's record as a nuclear producer and exporter is not as bad as some of its reproachers may maintain, it certainly is far from being the paragon of nonproliferation sensibility that contemporary critics of the

SSN program make it out to be (not to mention a few individuals in the Department of External Affairs).[46] Perhaps Aristotle's injunction that we must be virtuous, but must first secure a livelihood, is appropriately kept in mind in discussing the record of Canada in nuclear matters. Clearly, we are far from the nuclear Manuel Noriegas that the arch-cynics would have us be; also clearly, we are unlikely to be mistaken for Little Nell, however much many of the contemporary SSN opponents would wish it to be otherwise.

In truth, Canada's current policy on the export of nuclear materials and technology is remarkably strict -- a strictness no doubt stimulated by our complicity in the 1974 Indian "peaceful" explosion, but a strictness nonetheless. Indeed, Canada's own policy on its exports is more restrictive than either the NPT or IAEA norms; for while the latter do allow for non-proscribed military uses of nuclear material, Canada's policy is to prevent its nuclear exports from being used for <u>any</u> military purposes.[47] At times this rigorous approach to nuclear trade can produce some illogicalities, as when Canadian uranium is kept out of use in U.S. nuclear-propelled submarines -- vessels that provide a major portion of the nuclear umbrella under which successive generations of Canadian policy makers have happily sought shelter.[48] Such can be the pitfalls of excessive rigor; and in any event, U.S. nonproliferation policy is no more tolerant, evidently, of Canadian military applications of U.S. nuclear technology, as I shall relate in the next section.

But for the moment, it might be useful, in attempting to place Canadian nuclear behaviour in the proper context, to dwell upon three related issues that, individually and collectively, should serve to dispel some of the sentimentality attached to the image of Canada as being among

the nuclear saints of the world. The first issue is that of nuclear weaponry. As everyone does or should know, Canada neither builds nor possesses nuclear weapons. What is perhaps forgotten is that Canada did play a part in the American atomic-bomb project during World War II, that Canadian uranium mines were an important early source of supply to the post-World War II U.S. nuclear arsenal, and that the Canadian Forces were equipped with nuclear weapons from 1963 until 1984, when the last nuclear-tipped Genie air-to-air missile left Canadian soil.[49]

Gone are the days when a Canadian politician can be caught heaping praise on nuclear weapons in public; but in the wake of the Hiroshima bombing, a Canadian cabinet minister, C. D. Howe, could and did announce with "particular pleasure ... that Canadian scientists and Canadian institutions have played an intricate part and have been associated in an effective way with this great scientific development."[50] Nevertheless, despite Canada's own renunciation of nuclear weaponry, it remains a committed participant in an alliance one of whose fundamental deterrent doctrines is that of the first use of nuclear weapons. Not only is Canada a member of NATO, but its role in NORAD has ineluctably been to lend support to the strategic nuclear retaliatory capabilities of the U.S. Air Force. Thus our rejection of nuclear weaponry can only be termed complete in a Pickwickian sense. And our membership in the NATO Nuclear Planning Group attests to the fundamentally ambiguous approach we continue to take to the question of nuclear weaponry.

The third issue concerns Canada's own tough policy regarding nuclear exports, one that, it will be recalled, prohibits the use of Canadian uranium (and other nuclear materials) for any military purposes. The SSN proposal raises, at the very least, the interesting prospect of Canada

seeking to acquire from foreign sources that which it would not supply to those same sources. By this I mean that Canada would of necessity (at least in the early stages) be forced to import enriched uranium to fuel its SSNs, all the while that its own nuclear-export policy would remain one of prohibiting its allies from using its uranium for their own nuclear submarines. The Department of External Affairs remains committed to the notion that even should we import enriched uranium for military purposes, there is no necessary reason why we would allow our own nuclear materials to be used for similar purposes, even though the NPT allows such applications. We are, DEA officials insist, not going to deviate from our nuclear-export standards, Canadian SSN program notwithstanding. What this position overlooks, of course, is that for the past several years Canadian uranium already has been put, and continues to be put, to non-proscribed military purposes. In other words, we have permitted our own strict and self-imposed export standards to be violated. Given this, own own use of nuclear materials for non-proscribed military purposes hardly constitutes a significant departure from our nonproliferation policy, at least in logic.

In what way has Canadian uranium been employed for non-proscribed military purposes? In armor-piercing conventional shells made with depleted uranium, which is a by-product of the enrichment process, where the isotopic "mix" of natural uranium is altered to boost the proportion of U-235 from its naturally occurring 0.711 percent. Unlike the enriched product, depleted uranium contains a greater percentage of U-238 than is found in nature. The virtue of this substance, from the point of view of weapons manufacturing, is that it is incredibly dense and heavy, and possesses superior penetrating capability if made into shells.[51] Moreover,

there are currently plans to install steel-encased depleted-uranium armor on the remaining batches of the main battle tank purchased for the U.S. Army, the M-1A1 Abrams. This new tank armor is thought to be impervious to Soviet antitank weaponry, and will be made from a mesh of depleted uranium that is two-and-a-half times as dense as steel. The first of the Abrams to be equipped with this new armor is expected to come off the General Dynamics production lines later this summer, and to be deployed with the U.S. 7th Army in Germany by the end of this year.[52] Given the high level of Canadian imports that are being processed by the U.S. Department of Energy's enriching facilities -- some 25 percent of the uranium hexaflouride enriched in the U.S. in 1986 -- it is inevitable that there be a good deal of "Canadian content" in the depleted uranium that is sold to weapons manufacturers in the U.S.[53]

Thus Canada's nuclear-export practice, as opposed to its policy, is somewhat different from the stereotype maintained by those who see in Canada an exemplary nonproliferator. This does not mean that Ottawa intends to make it easier for NNWS to acquire the bomb; quite the contrary. It simply means that an SSN acquisition would not constitute the lapse from sanctity that many currently fear. A Canadian nuclear submarines program will mean, instead, that Canada has engaged in yet another military application -- only this time directly -- of nuclear materials.

The Other Nonproliferation Issue: U.S. Policy and the Canadian SSNs

If the uproar over the implications of the Canadian nuclear-submarine proposal for the global nonproliferation regime took the Department of National Defence by surprise, the tangle into which the Canadian proposal landed as a result of American nonproliferation policy must have come as a

shock. Indeed, not only were Canadian government officials initially unprepared for a problem to arise from this precinct of the nonproliferation realm, but so too were those members of the arms-control community who did so much to stimulate early debate on the SSNs and nonproliferation. The two sets of issues had this in common: in both, there was a clear relationship between the Canadian proposal and the question of nonproliferation. This similarity aside, there were some major differences in the manner in which the submarines and nonproliferation were interrelated. Perhaps the greatest difference was that in the instance of the American nonproliferation policy, it was the Canadian program that now found itself placed in the position of the "dependent variable"; that is, unlike the earlier concern over the extent to which Canada's program might affect the global regime, in this instance it was now the matter of the influence that American policy might exert on Canadian intentions that commanded attention of analysts.

As I noted earlier, American nonproliferation policy has been, by and large, much more restrictive than that of any other of the nuclear supplier countries over the past 40 years. Although it may be the case, as some have maintained, that Washington has not consistently adopted a tough nonproliferation stance on all of its nuclear exports, it is evident that U.S. policy compares favourably with other exporters in the degree to which it has evidenced a commitment to preventing nuclear commerce from making it easier for other states to acquire nuclear weapons.[54] The centrepiece of American nonproliferation policy -- and one that some analysts see as the subject of erosion under the current administration -- is the Nuclear Non-Proliferation Act of 1978 (NNPA), which reconfirmed and extended into new

categories Washington's restrictions on nuclear commerce, and its support for the IAEA.[55] However much renown this Act may have attained, it is a much older export arrangement, the 1958 U.S.-U.K. Agreement for Cooperation on the Uses of Atomic Energy for Mutual Defence Purposes, that is of critical importance to the contemporary Canadian SSN proposal. Also significant for the future shape of the Canadian program is a bilateral accord signed by Ottawa and Washington the following year, the 1959 U.S.-Canada Agreement for Cooperation on the Uses of Atomic Energy for Mutual Defence Purposes.[56]

The U.S.-U.K. agreement requires that Washington (in this case, Congress) approve any transfer of American-supplied nuclear technology such as that contained in the Trafalgar-class submarines that Canada is contemplating buying; the bilateral Canada-U.S. agreement of 1959 would, in the event the Trafalgar were chosen, once again require Congressional approval before the United States could provide highly enriched uranium to Canada for fuelling the boats. In either case, it is clear that the Congressional branch, whatever the wishes of the Executive branch, can if it chooses exercise a most decisive voice on the direction of the Canadian SSN program. Washington cannot, as some seem to believe, exert any "veto" power over the Canadian proposal; but it can make it less likely that the Trafalgar and more likely that the French contender, the Améthyste/Rubis, will get selected as the Canadian SSN. Indeed, advertisements placed by the Canadian subsidiary of the French producer, SNA Canada, have cleverly drawn attention to two nonproliferation advantages possessed by their boat: it is unencumbered by third-party restrictions regarding transfer of sensitive technology; and for good measure its power plant uses uranium that is enriched to only 10 percent, as compared to the weapons-grade 95-

percent fuel consumed in the Trafalgar.[57]

As late as two months ago, it seemed as if the British boat were going to win the competition over the French one as Canada's nuclear-propelled submarine. Noted one reporter for a major Toronto newspaper in early April: "The conventional wisdom on Parliament Hill is that the British will win the competition, hands down."[58] It was felt by many, throughout the period between the unveiling of the SSN proposal in the 1987 White Paper on defence and the early spring of 1988, that the Trafalgar simply possessed too many operational advantages over the Rubis that military requirements would compel it to be the vessel of choice. Today, the mood among those who follow the Canadian SSN program is remarkably different; and the current conventional wisdom has the French craft as the clear winner in the battle. So confident are those directly involved with the French bid that the president of SNA Canada, Lawrence Herman, could recently announce that "I am prepared to say the British option is dead."[59]

What has wrought this transformation, in such a short span of time? Although not the only factor, by far the most significant reason for the dramatic alteration in the competitive prospects of the two contenders is the fact that, for reasons stemming in the first instance from U.S. nonproliferation concerns, the Trafalgar has come to be seen, whatever its operational merits may be, as a major political liability for the Canadian government. This is so because to get it, Ottawa must count on securing Congressional approval of the technology transfer. This poses serious problems for two understandable reasons. The first is that it is far from certain that Congress would grant such approval, even though the administration has shown itself in favour of allowing the technology

transfer.[60] The second reason is that it is simply too embarrassing for Ottawa to have to put itself in the position of indirect mendicant in order to achieve an objective that has recently been billed as the single most important goal that the Department of National Defence has set: the acquisition of SSNs.

U.S. nonproliferation policy may be the mechanism for injecting an American influence over the future shape of the Canadian SSN program, but it is not the motivation for such intervention. Admittedly, as I noted above, the U.S. does remain committed to the objective of nonproliferation, and many in Washington do worry about the nonproliferation implications of nuclear-propelled submarines, no matter who possesses them. When in late April President Reagan came out in favour of allowing the transfer of Trafalgar technology to Canada, the State Department took some pains to point out how exceptional such an action was, one undertaken, in the words of Department official Charles Redman, "because of the unique circumstances involving the United Kingdom and Canada, two of our oldest and closest allies. U.S. policy remains opposed to the transfer of nuclear submarines to other nations."[61]

Redman could have added that many in the U.S. Navy seem to be opposed to their transfer to Canada, as well; for the reality is that the Canadian SSN proposal has engendered some surprisingly firm opposition on the part of influential figures, both in the Pentagon and on Capitol Hill. Significantly, among the reasons adduced by the opponents of the Canadian SSN program, one encounters few objections based on the desire to maintain inviolate U.S. nonproliferation policy. Instead, there are several differing explanations these opponents have put forward in their bid to persuade either Americans or Canadians (sometimes both) to arrest Ottawa's

campaign to acquire nuclear-propelled submarines.

Prominent among these explanations is one that links the Canadian SSNs to the oft-stated goal of protecting Canadian sovereignty in the Arctic. In this instance, it does seem that Ottawa -- whatever its "real" justification for the SSN program -- has convinced some Americans that its primary purpose is the sometimes-advertised one of safeguarding Canadian internal waters against prowling American submarines. Although it is often assumed that the main theatre of operation of any Canadian SSNs would be the Arctic, in reality it is highly unlikely that normal peacetime deployments would call for much of a Canadian SSN presence in the north. As one senior officer in Maritime Command stated unequivocally on the day the White Paper was tabled in June 1987: "We would want these subs just as much if the Arctic did not exist."[62] Yet some in the U.S. (as, indeed, in this country) appear to think that the raison d'être of the SSNs is their ability to patrol under the ice in the Canadian Arctic. This American disquiet over Canadian sovereignty claims may not be the most important source of U.S. opposition to the Canadian SSN program, but it was the first such source to arise.

For instance, more than a month before the SSN option was officially announced with the tabling of the White Paper, the New York Times published a story that related the fears of some unnamed Pentagon officials that a "future Canadian government would use the existence of its own nuclear submarine force as grounds to challenge the passage of American submarines along the protected routes through the [Canadian] archipelago."[63] A few months later, Congressman Charles Bennett, the Chairman of the Seapower Subcommittee of the House Armed Services Committee, restated this concern,

in an op-ed piece in the Globe and Mail. Asked Bennett, in reference to the fact that Canadian access to British nuclear technology could be impeded by Congress, "Should [the U.S.] help create a fleet that could be used to enforce a claim it doesn't recognize?"[64] This query was repeated in November by the American Naval Attaché in Ottawa, Capt. Robert F. Hofford, who observed that many people in Washington were wondering why the U.S. should help Canada get military assets that could have "adverse implications" for the U.S. Navy.[65]

Directly or indirectly, the source of these fears could be fairly easily discerned in the presence of Admiral Kinnaird R. McKee, director of nuclear propulsion programs for the U.S. Navy. McKee, assisted by Senators John Warner and Jim Exon (both of the Senate Armed Services Committee), as well as by Congressman Bennett, has been instrumental in drawing attention on Capitol Hill to the Canadian SSN program.[66] Although the Admiral's worry about the Canadian sovereignty claim should not be dismissed (it would, after all, be entirely consistent with the USN's long-standing aversion to anything that threatened to circumscribe its freedom of maneuver), there are some other reasons that McKee is so passionately opposed to the Canadian program.

Foremost among these is the worry that an accident on a Canadian nuclear submarine could have disastrous consequences for the nuclear program of the USN itself. In a peculiar twist to the precedential argument I discussed in the early sections of this paper, one now finds some in Washington speculating about the demonstration effect a Canadian nuclear accident could have for Americans and others. In a remarkably patronizing article published in the Globe and Mail, former Pentagon official Frank J. Gaffney claimed that the Canadian SSN proposal was

"dangerous folly." What especially upset Gaffney was his perception that a Canadian SSN program would be so under-funded that it would have to cut corners on safety, for reasons of financial exigency. And that, he argued, could "perpetuat[e] a catastrophe that would degrade public confidence and the operational flexibility of the NATO weapons systems critical to Western security."[67]

Another argument made against the Canadian nuclear submarines, and one that has an audience elsewhere in the Pentagon than the Navy Department, is the claim that the opportunity costs of the program are simply too high for the Western alliance. Senator Warner would like to see Canada spending its defence dollars building up its conventional forces, a view echoed with amplification recently by the Economist, which has its own preferences for how Canadian taxpayers' money should be spent: "[T]here are much better uses for [this] money: such as putting an armoured division or two into West Germany, instead of the lonely little brigade it has there now."[68] Closely related to this concern about opportunity cost is the argument that whichever boat Canada eventually did buy would be woefully obsolescent even before it entered service. Pentagon sources regard either the Trafalgar or the Rubis as being vastly inferior to the USN's Los Angeles class SSN -- and the latter they even consider to be outmatched by the SSNs the Soviets will be deploying in the mid 1990s, when the first Canadian boat is scheduled to become operational.[69]

It has even been suggested that the USN has a "hidden agenda" in its opposition to the Canadian SSN project -- an agenda having little or nothing to do with sovereignty, safety, opportunity costs, obsolescence, or nonproliferation. It is possible that the target of the USN's objections

is situated in Washington, not Ottawa; for it may be that McKee and others are concerned about the effect that an additional 10 or 12 SSNs in North America might have on their own struggle to win more dollars from Congress. This at least is the intriguing thesis of one defence analyst, who argues that "logically, one would expect the United States naval establishment, facing a major Soviet underseas threat, to welcome the addition of advanced submarine forces to western hemisphere defence.... United States naval leaders are concerned, however, about the effect on budget requests to the U.S. Congress of a significant added allied force in the hemisphere, for which they until now had the sole responsibility."[70]

Conclusion

Whatever the exact nature of the USN and Congressional unease with the Canadian SSN program, two things seem clear: the first is that, no matter how hard some in Washington huff and puff, they cannot blow down the Canadian SSN program. They can, and probably will, render the Trafalgar option too risky to take. But if Canada does not acquire SSNs, it will be as a result of domestic political and economic considerations, not because of pressure from certain quarters in the United States.

The second is that the tempest over the Canadian nuclear submarines has generated some ill-will on the part of normally well-disposed communities in both countries. There is surely something more than a little curious about members of the Canadian defence community railing against American intrusions upon Canadian sovereignty; that kind of talk typically comes from quite another domestic constituency in this country. Two ironies arise here. The first has to do with the Canadian arms control community's serendipitous reliance upon some heretofore unsuspected allies,

especially those in the USN. The second is that Admiral McKee and his colleagues may be engaging in self-fulfilling prophecies when they cite Canada's sovereignty objectives as a major (the major?) reason for their own opposition to the SSNs. Consider the following emotional commentary by one of Canada's defence analysts: "The important argument today," wrote The Wednesday Report's Mike O'Brien, "is no longer about doctrinal and economic aspects of SSN operations, but a question of sovereignty.... Some considerable damage is being done to Canada/U.S. relations. If Americans believe that the Canadian people can be driven to cure what the U.S. seems to think is SSN folly, they are misguided in their approach.... We are not Panama. We are not Central America."[71] It would be yet another confirmation of the principle of the opposite effect if USN opposition were to provide a fillip for the Canadian SSN program, by rallying nationalists around the Department of National Defence.

Nonproliferation policy and law in the U.S., as I have mentioned, will have an effect upon the Canadian submarine program, even if it is not the effect intended by American critics of that program. But what of the effect the Canadian nuclear submarines might have upon the nonproliferation regime itself? As I have argued, the claim that Canadian SSNs must do damage to that regime remains to be substantiated; it may turn out that critics of the Canadian proposal are right. But it will require more than incantation to make this argument convincingly. What must be taken into consideration are: a) the possibility that a Canadian "precedent" might have a positive effect on the regime; and b) the possibility that Canada's acquisition of SSNs will have absolutely no effect upon the global move (if that is what it is) toward SSNs. Above all, we simply need to know much

more than we do right now about the impact of SSNs on the prospects of global nonproliferation.

It is a convention for essayists to conclude their analyses (especially if they are academics) with the observation that "further research is called for." In most cases, this means that the writer has run out of things to say, and cannot think of a graceful way to exit. In this instance, however, I would suggest that invocation of this convention is justified. For until we know a great deal more about the policies of various relevant countries concerning SSNs, it is simply impossible to pronounce judgement upon Canadian nuclear submarines and their impact on the nonproliferation regime.

Notes

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

[2]For an analysis of the White Paper that raises these and other questions, see David Cox, "Living Along the Flight Path: Canada's Defense Debate," Washington Quarterly 10 (Autumn 1987): 98-112.

[3]See, for this view, Tariq Rauf and Dan Hayward, "Nuclear-Powered Attack Submarines; Does Canada Really Need them?," Arms Control Communiqué, no. 36 (Ottawa: Canadian Centre for Arms Control and Disarmament, 15 May 1987). A lengthier version of the CCACD's negative assessment of the SSN proposal is found in Idem, "O Canada e os Submarinos Nucleares," Politica e Estratégia 5 (April/June 1987): 211-23. Also see the letter to the editor written by Senator Philippe D. Gigantes, "Subs Are First-Strike Weapons," Globe and Mail (Toronto), 28 May 1988, p. D7.

[4]Some months after the White Paper's release, DND sought to temper some of the criticism through the publication of a pamphlet that, among other things, gave the reassurance (which evidently some seem to need) that in obtaining SSNs the government was not renouncing its policy of eschewing nuclear weaponry. See Government of Canada, Department of National Defence, Facts About Canada's Nuclear-Propelled Submarines (Ottawa: DND, n.d.).

[5]Marc Clark and William Lowther, "Keeping Canada Out of the Sub Club," Macleans, 11 April 1988, pp. 12-13.

[6]A useful introduction to the current debate over the meaning and importance of regimes is Stephen D. Krasner, ed., International Regimes (Ithaca: Cornell University Press, 1983). Also central to this inquiry are Robert O. Keohane and Joseph S. Nye, Power and Interdependence: World Politics in Transition (Boston: Little, Brown, 1977); Robert O. Keohane, After Hegemony: Cooperation and Discord in the World Political Economy (Princeton, N.J.: Princeton University Press, 1984); Oran R. Young, "International Regimes: Problems of Concept Formation," World Politics 32 (April 1980): 331-56; and Friedrich Kratochwil, "The Force of Prescriptions," International Organization 38 (Autumn 1984): 685-708.

[7]It should be noted that not all analysts (or, evidently, all governments) accept the argument that proliferation is inimical to security. The most well-known contrary statement is Kenneth Waltz, "The Spread of Nuclear Weapons: More May Be Better," Adelphi Papers, no. 171 (London: International Institute for Strategic Studies, 1981).

[8]Lawrence Scheinman, The International Atomic Energy Agency and World Nuclear Order (Washington: Resources for the Future, 1987), pp. 21-39.

[9]Ibid., pp. 16-21; and William C. Potter, Nuclear Power and Nonproliferation (Cambridge, Mass.: Oelgeschlager, Gunn and Hain, 1982),

chap. 2.

[10]Scheinman, International Atomic Energy Agency, p. 31.

[11]David Fischer and Paul Szasz, Safeguarding the Atom: A Critical Appraisal (London: Taylor & Francis, 1985), p. 7.

[12]The procedural basis of safeguards is discussed in International Atomic Energy Agency, IAEA Safeguards: An Introduction, SG/INF/3 (Vienna: IAEA, 1981); and Idem, IAEA Safeguards: Aims, Limitations, Achievements, SG/INF/4 (Vienna: IAEA, 1983).

[13]Scheinman, International Atomic Energy Agency, p. 129.

[14]U.S. General Accounting Office, "New and Better Equipment Being Made Available for International Nuclear Safeguards," GAO/NSIAD-84-46 (Washington, 14 June 1984), p. 4. Also see Hans Blix, "Safeguards and Nonproliferation: The IAEA and Efforts to Counter-act the Spread of Nuclear Weapons," IAEA Bulletin 27 (Summer 1985): 3-7.

[15]For an analysis of both the Iraqi nuclear program and the Israeli raid, see Jed C. Snyder, "Iraq," in Limiting Nuclear Proliferation, ed. Jed C. Snyder, and Samuel F. Wells, Jr. (Cambridge, Mass.: Ballinger, 1985), pp. 3-42. Although not a signatory to the NPT, Israel does belong to the IAEA.

[16]Pakistan's relations with the IAEA, to which it belongs, are discussed in Rodney Jones, "Strategic Responses to Nuclear Proliferation," Washington Quarterly 6 (Summer 1983): - ; Idem, "Nuclear Supply Policy and South Asia," in The Nuclear Suppliers and Nonproliferation: International Policy Choices, ed. Rodney W. Jones, et al. (Lexington, Mass.: D. C. Heath, 1985), pp. 163-73; and Richard P. Cronin, "India and Pakistan," in Limiting Nuclear Proliferation, pp. 59-88.

[17]Don Oberdorfer, "U.S. Asks Pakistan to Stop Producing Bomb-Grade Uranium," Washington Post, 23 July 1987, p. 37; Simon Henderson, "Pakistan Builds Second Plant to Enrich Uranium," Financial Times (London), 11 December 1987, p. 28.

[18]This concern is not recent, for in the early 1970s there was a short-lived spate of alarm about terrorists availing themselves of nuclear weapons to achieve political ends, in this case income redistribution. For this earlier fear, see Robert L. Heilbroner, An Inquiry into the Human Prospect (New York: W. W. Norton, 1975), pp. 41-45. For a discussion of nuclear terrorism in the context of contemporary Middle Eastern politics, see Robert A. Friedlander, "Terrorism and Nuclear Decisions," Social Science and Modern Society 23 (January/February 1986): 59-62.

[19]John H. Cushman, Jr., "Rising Nuclear Trade Stirs Fear of Terrorism," New York Times, 5 November 1987, p. 5; Daniel Charles, "DOD Sees Risk in Plutonium Trade," Science, 13 November 1987, p. 886; Cass Peterson, "U.S. to Allow Unrestricted Transfer of Plutonium," Washington Post, 22 April 1988, p. 4.

[20]M. I. Shaker, "The Third NPT Review Conference: Issues and Prospects," in Nuclear Non-Proliferation and Global Security, ed. David B. Dewitt (London: Croom Helm, 1987), p. 3. Article VIII(3) of the NPT calls upon the adherents to convene and review the Treaty's functioning every five years.

[21]The full text of the NPT can be found in Dewitt, Nuclear Non-Proliferation, Appendix A.

[22]For a critical, and sometimes biting, analysis of the asymmetrical nature of the NPT exchange of commitments, see Ashok Kapur, "The Future of the NPT: A View from the Indian Subcontinent," in Dewitt, Nuclear Non-Proliferation, pp. 201-15.

[23]Contrasting export policies of the industrialized states are examined in Pierre Lellouche, "International Nuclear Politics," Foreign Affairs 58 (Winter 1979/80): 336-50; Erwin Hackel, Karl Kaiser, and Pierre Lellouche, Nuclear Policy in Europe: France, Germany and the International Debate (Bonn: Forschünginstitut der Deutschen Gesellschaft für Auswartigesamt, 1981); and John Simpson and Anthony G. McGrew, eds., The International Nuclear Non-Proliferation System: Challenges and Choices (New York: St. Martin's Press, 1984).

[24]A comprehensive treatment of the challenges facing the IAEA is given in Lawrence Scheinman, The Nonproliferation Role of the International Atomic Energy Agency: A Critical Assessment (Washington: Resources for the Future, 1985).

[25]Marie-France Desjardins and Tariq Rauf, "Opening Pandora's Box? Nuclear-Powered Submarines and the Spread of Nuclear Weapons," Aurora Papers, no. 8 (Ottawa: Canadian Centre for Arms Control and Disarmament, pre-publication edition of February 1988), p. 22.

[26]There is some confusion among anti-SSN advocates on the matter of the legality of the SSN proposal. Greenpeace's John Willis, for example, seems to think that the NPT requires that Canada not use or allow to be used nuclear material for any military purpose. See his letter to the editor, "A-Subs Would Put Treaty at Risk," Globe and Mail, 16 January 1988, p. D7. For a useful corrective to this, also by an analyst who opposes the SSN proposal, see John Barrett's letter to the editor, "Submarines Slip through Loophole," ibid., 30 January 1988, p. D7.

[27]This discussion of the legal aspects of the SSN project is based largely on interviews I conducted with IAEA and Canadian officials in Vienna and Ottawa between December 1987 and February 1988.

[28]International Atomic Energy Agency, The Structure and Content of Agreements between the Agency and States Required in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons, INFCIRC/153 (Vienna: IAEA, June 1972).

[29]International Atomic Energy Agency, The Text of the Agreements

between Canada and the Agency for the Application of Safeguards in Connection with the Treaty on the Nonproliferation of Nuclear Weapons, INFCIRC/164 (Vienna: IAEA, June 1972).

[30]Ibid., p. 5.

[31]From the Canadian side, the negotiating team will be made up of officials from DEA, AECB, and DND; from the Agency, the relevant actors will be the divisions responsible for External Relations, Safeguards, and Legal matters.

[32]For the NSG, see U.S. Congress, Office of Technology Assessment, Nuclear Proliferation and Safeguards (New York: Praeger, 1977), pp. 220-23; Leonard Spector, Nuclear Proliferation Today (Cambridge, Mass.: Ballinger, 1984), pp. 447-51; and Charles N. Van Doren, "Nuclear Supply and Nonproliferation: The IAEA Committee on Assurances of Supply," Report no. 83-202-8 (Washington: Congressional Research Service, October 1983), pp. 60-65.

[33]Ken Romain, "Ottawa to Sign Agreements on Nuclear Subs," Globe and Mail, 15 January 1988, p. B5; Sharon Hobson, "Canada Completes Talks to Build Nuclear Submarines," Jane's Defence Weekly, 19 March 1988.

[34]Richard House, "Brazil Says Uranium Enriched," Washington Post, 10 September 1987, p. 29.

[35]Michael Kepp, "Brazil on Verge of the Atomic Bomb; Next Step Is in Hands of the Military," Baltimore Sun, 21 October 1987, p. 2. The conditionality of the Brazilian nonproliferation pledge stems from Brasilia's insistence that its commitment to eschew nuclear weaponry depends upon the Treaty of Tlatelolco being ratified by all Latin American countries. Brazil has ratified this 1968 regional nonproliferation accord, but Argentina has yet to do so. (Cuba has neither signed nor ratified the Treaty, and is not likely to do either.) See John Redick, "The Tlatelolco Regime and Nonproliferation in Latin America," in Nuclear Proliferation: Breaking the Chain, ed. George Quester (Madison: University of Wisconsin Press, 1981), pp. 103-34.

[36]Michael R. Gordon, "Brazil and Argentina Start Nuclear Discussion," New York Times, 22 July 1987, p. 3.

[37]Whether the historical enmity between the two can be overcome is discussed in two recent articles written in conjunction with a symposium on Argentine-Brazilian relations held in Buenos Aires in April 1987. See Deodécio Lima de Siqueira, "Brasil-Argentina: Término ou Transformaçao do Conflito"; and Luis Santiago Sanz, "Argentina-Brasil: Término ou Transformaçao do Conflito," both in Politica e Estratégia 5 (July/September 1987): 293-320.

[38]Enrichment levels, which refer to the proportion of a given unit of uranium accounted for by the fissile isotope, U-235, have reached 20 percent at Pilcaniyeu. Weapons-grade uranium would have to attain a level of about 90 percent; a similar level would be needed to fuel many SSNs

(e.g. the British Trafalgar class). Brazil's Ipero centrifuge enricher should now be approaching the 20-percent level. Brazil also has an IAEA-safeguarded civil enrichment facility at Resende, built with German help; this currently has attained an enrichment level of 0.85 percent, and is intended ultimately to reach the 3-percent range that most civilian nuclear power reactors require for fuel. "In Search of Enrichment," Economist, 5 March 1988, p. 86.

[39]Richard House, "Brazil Steps Back from Race to Build Nuclear Weapons," Washington Post, 28 August 1986, p. E1.

[40]The Indian submarine, which is nearly 20 years old, is powered by one reactor. Its conventional armaments include 14 torpedoes and a potential eight SS-N-7 cruise missiles, which have a range of 35 miles. "India's Leased N-Sub Said One-Reactor Type," Washington Times, 10 February 1988, p. 2.

[41]Paul Beaver and Richard Sharpe, "New Members for SSN Club," Jane's Defence Weekly, 9 January 1988, p. 11.

[42]The Chakra's fuel is weapons-grade, and the Soviets have assured Washington that they will strictly monitor the fuel while it is out of the Soviet Union on board the Indian vessel. Adam Kelliher, "India's Nuclear-Powered Submarine Causes Widespread Concern," Ottawa Citizen, 27 February 1988, p. B5.

[43]Kapur, "The Future of the NPT," p. 201.

[44]Ron Finch, Exporting Danger: A History of the Canadian Nuclear Energy Export Programme (Montreal: Black Rose Books, 1986), p. 13.

[45]Paul Koring, "Projected Role of New Submarines Naive Plan, Arms Expert Tells MPs," Globe and Mail, 11 May 1988, p. A4.

[46]A good example of the idealistic interpretation of Canadian policy is found in Douglas Roche, "Canada and the NPT: The Enduring Relationship," in Dewitt, Nuclear Non-Proliferation, p. 165: "Canada's record in its efforts to prevent the proliferation of nuclear weapons is indeed unique. Canada has a set of non-proliferation credentials which is shared by few other countries in the world. In non-proliferation -- horizontal and vertical -- Canada has led, and continues to lead, by example."

[47]For Canadian policy on nuclear exports, see James F. Keeley, "Canadian Nuclear Export Policy and the Problems of Proliferation," Canadian Public Policy 6 (Autumn 1980): 614-27; and Michael C. Webb, "Canada as an Insecure Supplier: Nonproliferation, Economic Development, and Uranium Export Policy," in The New Geopolitics of Minerals: Canada and International Resource Trade, ed. David G. Haglund (Vancouver: University of British Columbia Press, forthcoming).

[48]For a discussion of this, see David G. Haglund, "Protectionism and National Security: The Case of Canadian Uranium Exports to the United States," Canadian Public Policy 12 (September 1986): 457-72.

[49]For an analysis of Canada's experience with nuclear weapons, see Jon B. McLin, Canada's Changing Defense Policy, 1957-1963: The Problems of a Middle Power in Alliance (Baltimore: Johns Hopkins Press, 1967), chap. 6: "The Problem of Nuclear Weapons." Also see Tom Kent, A Public Purpose: An Experience of Liberal Opposition and Canadian Government (Kingston and Montreal: McGill-Queen's University Press, 1988), chap. 15: "The Nuclear Error."

[50]Quoted in Kyle McIntyre, "The Limits of the Functional Principle: Canada and Atomic Energy Policy, 1941-1949" (M.A. thesis, Royal Military College of Canada, 1988), p. 63.

[51]Among the ordnance in the U.S. arsenal that is composed of depleted uranium are the 20-mm. round for the ship-based anti-aircraft gun, Phalynx, and the 105-mm. anti-tank ammunition fired by the M-60 and M-48 tanks. Warren Strobel and Karen Field, "Uranium-Core Shells to be Sold to Jordan, Probably Two Others," Washington Times, 10 March 1988, p. 2.

[52]On the Abrams armor, see "Effort Disclosed to Improve Armor on Tank," New York Times, 15 March 1988, p. A20; George C. Wilson,"Tougher Tank Armor Developed by Pentagon," Washington Post, 15 March 1988, p. A4; and "M1A1's Uranium Shield," Jane's Defence Weekly, 26 March 1988, p. 573.

[53]In 1986, U.S. domestic utilities delivered 12.9 million pounds of foreign-origin uranium to the Department of Energy's enrichment facilities. This amount represented nearly 42 percent of U.S. utility requirements, and some 59 percent of this amount was accounted for by uranium originating in Canada. U.S. Department of Energy, Domestic Uranium Mining and Milling Industry: 1986 Viability Assessment (Washington: Energy Information Administration, November 1987), p. 66. Uranium hexafluoride (UF_6) is an intermediate stage in the process of transforming uranium concentrate (U_3O_8) into enriched uranium.

[54]For an argument that challenges the notion of American nonproliferation preeminence, see Lawrence Scheinman, "The Case for a Comprehensive U.S. Nonproliferation Policy," in Limiting Nuclear Proliferation, pp. 319-36.

[55]For a good analysis of the NNPA and of U.S. export policy, see Peter A. Clausen, "U.S. Nuclear Exports and the Nonproliferation Regime," in ibid., pp. 183-212.

[56]Barbara Starr, "Reagan's Endorsement of Sub Technology Transfer May Pressure Canada," Defense News, 2 May 1988, p. 7.

[57]Michel Van de Walle, "Les Français misent sur l'économie de couts et l'indépendance technologique," Le Devoir (Montreal), 7 May 1988, p. B3. For an example of a SNA ad that prominently features the nonproliferation advantages of the French boat, see "Take a Deeper Look at the Facts," Financial Post, 9 May 1988, p. 41. But for a stinging rebuke to the French contender's nonproliferation claims, cf. John M. Lamb and Tariq Rauf, "Canada Sets Sail in Dangerous Water," Globe and Mail, 12 May 1988, p. A7.

[58]Carol Goar, "How France May Win Nuclear Subs Deal," Toronto Star, 7 April 1988, p. A23.

[59]Mathew Horsman, "French Claim Edge over British Sub," Financial Post, 17 May 1988, p. 4. Also see Giles Gherson, "Submarine Choices Evaporating," Financial Post, 18 May 1988, p. 13; and "La France croit avoir de bons atouts pour obtenir le contrat de sous-marins," La Presse (Montreal), 16 May 1988, p. B1.

[60]Bob Hepburn, "Reagan to Seek Okay for Canada's Sub Purchase," Toronto Star, 28 April 1988, p. A10; Jennifer Lewington and Ross Howard, "U.S. Won't Block Subs Plan, Reagan Says," Globe and Mail, 28 April 1988, p. A1. Also see Jonathan Manthorpe, "U.S. Vow to Canada May Aid French Sub," Defense News, 2 May 1988, p. 1: "One Canadian involved in the competition for the submarine fleet said last week it would be 'absolute folly' for the government to 'hold itself hostage' to the approval of Congress where there already has been vocal disquiet with the project."

[61]Herbert H. Denton, "Reagan: Canada Can Buy Sub Reactors," Washington Post, 28 April 1988, p. A1. Also see Michael S. Serrill, "Go Ahead Friend, and Dive Right In," Time, 9 May 1988, p. 47.

[62]DND briefing on the White Paper, National Defence Headquarters, Ottawa, 5 June 1987.

[63]Richard Halloran, "U.S. Suspicious over Canada Atom-Sub Plan," New York Times, 4 May 1987, p. 14.

[64]Charles E. Bennett, "Tough Questions Rise to the Surface," Globe and Mail, 29 October 1987, p. A7.

[65]John F. Burns, "Canada May Lose Nuclear Sub Plan," New York Times, 27 November 1987, p. 21.

[66]Jonathan Manthorpe, "Admiral Tries to Sink Canada's Submarines," Ottawa Citizen, 22 April 1988, p. A9.

[67]Frank J. Gaffney, Jr., "Could Canada's Subs Torpedo NATO Navies?," Globe and Mail, 12 April 1988, p. A7. For an impassioned rejoinder to this article, written by no less a figure than Canada's Ambassador to the United States, see Allan Gotlieb, "Canadian Sub Deal Will Go Forward," Defense News, 2 May 1988, p. 24.

[68]"Canada's SSN Buy Faces Opposition in US Congress," Jane's Defence Weekly, 26 March 1988, p. 551; "Arctic Antic," Economist, 7 May 1988, p. 14. Also see Anthony Cordesman's argument that the SSNs would "mortgage Canadian defence investment funds for a generation." Cordesman is a national security adviser to Senator John McCain, an Arizona Republican who is a member of the Senate Armed Services Committee. "'True Cost' of Subs Will Bleed Military Defence Expert Says," Winnipeg Free Press, 21 April 1988, p. 26.

[69]George C. Wilson, "Transfer of U.S. Nuclear Sub Technology Considered," Washington Post, 22 March 1988, p. 4.

[70]"From the Editor in Chief," Journal of Defense & Diplomacy 6, 3 (1988).

[71]Mike O'Brien, "Comment: Sovereignty Crisis," The Wednesday Report: Canada's Defence News Bulletin, 13 April 1988.