Outer Space And Canadian Terrestrial Sovereignty: Answering Canada's Arctic Surveillance Concerns With Earth-Monitoring Satellites

by

Brett Carter Eckstein

A thesis
presented to the University of Manitoba
in fulfillment of the
thesis requirement for the degree of
Master of Arts
in
Political Studies

Winnipeg, Manitoba

ISBN 0-315-63236-4

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A thesis submitted to the Faculty of Graduate Studies of the University of Manitoba in partial fulfillment of the requirements of the degree of

MASTER OF ARTS

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ACKNOWLEDGEMENTS

to my parents

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Chapter I

INTRODUCTION

1.1 INTRODUCTION

With the second largest geographical territory in the world and a disproportionate population, Canada has out of necessity relied upon innovation to mask the apparent inequality in this relationship. This innovation is apparent in many facets of Canadian life, and in particular, her foreign policy. Whether it be her war contributions, United Nations peacekeeping or any number of international events, Canada is able to magnify her importance in world affairs and seek her objectives through innovative means.

Canada has used innovative means to lay both legal and physical claim to her northern territories. In particular, she has found ways, despite recent threats, to strengthen her claim to the waters of the Arctic Archipelago. The recent focus upon the Arctic and the questioning of her own sovereignty has fueled the necessity for innovation once again. Mixed with the conventional need for physical control of a territory, Canada has claimed that surveillance, in particular space-based surveillance is an affirmation of Canadian sovereignty.

The ability of Canada to claim that the use of space-based surveillance is an affirmation of her Arctic sovereignty, although no current capability exists, is based upon, not the spatial convergence of the legal regimes of air and space, but their spatial divergence or functional convergence; the continued international acceptance of satellite reconnaissance, her physical ability to act upon the information provided, and the relationship between NORAD, SDI and the further evolution of continental defence policy. The purpose of this work is to determine whether or not Canada could acquire her own space-based surveillance system as an affirmation of sovereignty, and if so, what policy considerations, international obligations and innovative approaches would be required to acquire, maintain and protect such a system.

1.2 METHODOLOGY

The analytical methods used by political science are applicable to a variety of societal problems of international or domestic concern. As Eilene Galloway suggests, "[p]olitical science is one of the social sciences that can contribute to an understanding of problems that arise from the impact of space science and technology on society."[1] Further to this premise, although the degree is of some contention, "is the fact that orbiting satellites have altered

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[1] Eilene Galloway, "Government in Action: The Role of Political Science in Outer Space," Acta Astronautica, Vol. 13 (No. 617, 1986), p.467.

and expanded the concept of sovereignty."[2] Canada's attempt to explain the use of surveillance satellites as an affirmation of sovereignty exhibits the required need for political science to examine the various alterations to the concept and its impact upon future policy.

The motivation for this work is threefold. An interest in outer space, Canada and political science lends itself to the study of satellites, sovereignty and Canada's apparent desire to synthesize technology with a political-legal concept. The likely outcome of such a study should be a set of policy considerations for Canada to accomplish or further her objectives.

The method of analysis is important to the outcome of this work, as the quality of a road map is to the ability to reach a particular destination. In this instance that destination, although concluding with a set of policy considerations, is not necessarily a known quantity as the application of this work, being the acquisition of Canadian surveillance satellites, has yet to be borne out. The final outcome shall be determined through an examination of various factors of analysis to explain why Canada's proposed use of surveillance satellites must stress or emphasize a relationship to sovereignty. Clearly the factors analyzed must lend themselves to the central themes of sovereignty, the satellites in question and the Canadian interpretation of

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[2] Ibid. p.470.

their use. They must also be able to answer or explain what is sovereignty? How did Canada acquire it? Is Canadian sovereignty in doubt? Does surveillance affirm sovereignty? If so, can satellite surveillance affirm sovereignty and how can Canada accomplish this task? Associated with these questions an entire realm of internal and external relations and factors, institutional and conceptual examinations, an evaluation of both documents and historical accounts, as well as both consistencies and variations in the sources of policy which require analysis.

The methodology used in this work will be what is generally known as the historical-analytical approach.[3] This approach will offer the widest possible context and variety of analysis. This will provide a measurement of the changes in the contextual process and events and will broaden the factual basis of the major sources of analysis in a long-range perspective. Such an approach will focus upon both empirical and normative elements of analysis,[4] examining concepts, identifying multiple factors and relations as well as determining consistency and coherence in policy. The examination of normative elements will offer a prescriptive

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[3] See Jerome M. Clubb, "The Historical-Analytical Approach," in Donald M. Freeman, Foundations of Political Science. pp.643-673.

[4] See Evron Kirkpatrick, "From Past to Present" Part 1, A History of the Discipline, in Ibid. pp.10-15. Empirical theory offers an interpretation or explanation and prediction about facts and behaviour, while normative theory offers prescription based upon what should or should not be.

analysis of the merits of a Canadian space-based surveillance system. For the most part this work is dedicated to why Canada wishes to acquire space-based surveillance of its territory to affirm her sovereignty and how it should accomplish this task. The following chapters are divided with this purpose in mind.

1.3 RESEARCH AND ANALYSIS

The second chapter examines the concept of sovereignty from its historical roots to the present day, exploring the classical literature of Thomas Hobbes, Jean Bodin, John Austin and Jean-Jacques Rousseau to the modern literature of theorists such as Raymond Aron. From the content of this literature, the theory and tradition of the concept of sovereignty will be discussed, as well as the major perspectives, strengths and areas of neglect. From this historical view the modern concept of sovereignty will be discussed as well as its corollary, territorial sovereignty, in order to determine clarity and precision of the term from the broadest context of theory. The principles of state sovereignty and the internationally recognized process of states acquiring and maintaining sovereignty, and the various sources of interpretation, will be the end result of this chapter.

Chapter Three takes a specific look at Canada's legal and historical claims to her Arctic region. As a process of consolidation, Canada's claim has been disputed by various

states over the years. The most current dispute, involving the Northwest Passage will be examined and discussed, drawing upon both historical and contemporary arguments. The measures taken by Canada to strengthen her claims, such as the relationship between Inuit land claims and the Northwest Passage, as well as, the unilateral Canadian action to enclose the Archipelago will be examined with the process and prospects for dispute settlement in mind.

Chapter Four follows along similar lines as Chapter Three, however its focus is upon Canada's Arctic defence concerns, challenges and initiatives, examining the physical capabilities necessary to enforce Canadian jurisdiction and affirm sovereignty. The strategic considerations, which have necessitated a review of Canada's Arctic defences, the capabilities required and the commitments to be met, shall also be discussed. It will draw upon both government and non-government sources from Ministers, DND military personnel, Senate hearings and scholars. The chapter concludes with an examination of Canada's current surveillance capabilities and requirements.

Chapter Five begins the discussion of space-based surveillance systems examining the use of satellites for surveillance and the technology and rationale of its use available to Canada. This chapter refers specifically to Parliamentary reports on the issue and other supporting technical information to confirm feasibility. The future of

Canadian surveillance capabilities and requirements will be examined in terms of the relationship between NORAD and the United States' Strategic Defence Initiative (SDI) and possible Ballistic Missile Defence (BMD).

Chapter Six takes a very important look at the informally negotiated reconnaissance satellite regime and their internationally accepted use. Current and future challenges to the regime will be examined, as will the subsequent proposals for formal international agreement upon the use and dissemination of information acquired by earth-monitoring or remote sensing satellites. These considerations, the current and future legal views and other foreign policy concerns of satellite reconnaissance will be examined in an attempt to secure, for Canada, the internationally accepted use of satellites to affirm sovereignty. This chapter draws upon a wide range of political, technical and legal sources of international stature.

Chapter Seven concludes this study by assessing the relationship between Canadian sovereignty, surveillance satellites and outer space; and makes recommendations for future policy options, in keeping with Canada's policy objectives of national development and commercial profitability in outer space activities.[5] The following chapter examines the broad political and legal understanding of the term sovereignty.

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[5] David B. Dewitt and John J. Kirton, Canada as a Principle Power (Toronto: John Wiley and Sons, 1983), p.339.

Chapter II

SOVEREIGNTY AND TERRITORIAL SOVEREIGNTY

2.1 INTRODUCTION

It is the intent of this chapter to define and determine what is meant by the terms "sovereign," "sovereignty" and "territorial sovereignty" or "state sovereignty." The internationally recognized process of states claiming title to territory and the right to exercise sovereignty will also be discussed.

2.2 HISTORICAL VIEW OF SOVEREIGNTY

The term sovereignty has under gone a series of changes, meaning many things at different times, throughout the course of human history. The term itself originates from the latin word superanus refering to the "highest, uppermost or supreme" object.[1] In Roman times, sovereignty existed in much of the same way as it was later recaptured by classical writers, although its application was merely internal, as no relations between states existed. Prior to this period, the Greeks did not use the term but did describe some virtues of the state which approach the modern view.[2] During the middle

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[1] Steven Gorove, "Sovereignty and the Law of Outer Space Re-examined," Annals of Air and Space Law, Vol. II (1977), p.311.

ages, sovereignty was merely a superior authority in a hierarchy whose relationship to the state was not explained.[3] The concept of only one sovereign existing was a Roman invention and did not appear during the middle ages. Georg Schwarzenberger suggests that in medieval times the term 'sovereignty' had a limited meaning. "Anybody could justly claim to be sovereign if, in any particular matter, there was no appeal from him to any higher authority."[4]

2.2.1 Classical View

In classical doctrine, sovereignty defined what was believed to be, by right of natural law, a final "supreme authority, personal, indivisible and absolute," held by a ruler, monarch or head of a religious order.[5] The term was first described in its classical form by such theorists as Bodin, Hobbes, Rousseau and Austin. Their reasoning was purposeful in the sense that defining sovereignty was used for "justifying the use of absolute power or symbolyzing the actual possession of it."[6] In Bodin's case it was only log-

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[2] See Francis MacDonald Cornford, The Republic of Plato (Oxford: Oxford University Press, 1979), pp.119-129.

[3] Bertrand De Jouvenel, Sovereignty: An Inquiry into the Political Good, J.F. Huntington, trans. (Chicago: University of Chicago Press, 1957), pp. 170-172.

[4] Georg Schwarzenberger, Power Politics: A Study of World Society (London: Stevens and Sons Limited, 1964), p. 86.

[5] Paul W. Ward, Sovereignty: A Study of a Contemporary Political Notion (London: George Routledge and Sons Ltd., 1928), p. 23.

[6] F.H. Hinsley, Sovereignty. (Cambridge: Cambridge Univer-

ical that one supreme and perpetual authority for lawmaking existed.[7] Bodin states,

> it is clear that the principle mark of sovereign majesty and absolute power is the right to impose laws generally on all subjects regardless of their consent... And if it is expedient that if he is to govern his state well, a sovereign prince must be above the law...[8]

For Bodin the sovereign was not bound by any legal restraint, nor did he set any guidelines for his function other than the power to make and give laws, the power of appointment, the knowledge of warfare and the final resort of appeal from all courts.[9] However the sovereign was subject to natural law, according to Bodin, "[t]he absolute power of princes and sovereign lords does not extend to the laws of God and nature."[10]

Hobbes saw the sovereign as a means of maintaining order within political society. Man, according to Hobbes had to be constrained by a superior force, as he would only observe laws to his advantage. Thus he would consent to the will of the sovereign out of self-interest. The sovereign for Hobbes was,

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sity Press, 1986), p. 217.

[7] Ward, p.21

[8] Jean Bodin, The Six Books of the Commonwealth, abridged and translated by M.J. Tooley, (Oxford: Basil Blackwell) p. 32.

[9] Ibid. pp.43-49

[10] Ibid. p.29

> exempt from all resistance and interference, exercises judgement concerning freedom of speech, prescribes the rules governing property, has ultimate jurisdiction in order that internal peace may be preserved, determines matters of peace and war and dispense both offices and honours.[11]

For Hobbes however the sovereign's supreme power was conditional upon fulfilling the need for law and order. The sovereign governed with the consent of man so long as he fulfilled this basic task.

Rousseau envisioned sovereignty as the "exercise of the general will...of the body of the people, or that of only a portion."[12] He described the general will of the body of the people as "an act of sovereignty" constituting law; while anything less was "only a particular will, or an act of magistracy - it is at most a decree."[13] In such a society the social order could be corrupt, not man. Man may have a selfish interest but it was not to supercede the general will which determined the social order, which may be corrupt.

Austin on the other hand saw sovereignty as law not as government. He suggested that

> [e]very positive law, or every law simply and strictly so called, is set by a sovereign person, or a sovereign body of persons, to a member or

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[11] Ward, p.22-23.

[12] Jean-Jacques Rousseau, The Social Contract and Discourse on the Origin and Foundation of Inequality Among Mankind (New York: Washington Square Press, Inc., 1967), pp. 27-28.

[13] Ibid. p.28.

> members of the independent political society wherein the person or body is sovereign or supreme."[14]

Sovereignty for Austin rested upon consent or the "habit of obedience."[15] Sovereignty could be held by a sovereign body or a sovereign individual, but the number of people who recognized the sovereign power was significant.[16] By referring to Grotius, Austin describes sovereign power as being "perfectly or completely independent of other human power; inasmuch that its acts cannot be annulled by any human will other than its own."[17]

Austin differs from Hobbes on the question of sovereignty recognized by other states. For Hobbes de jure and de facto sovereignty were indivisible, while Austin distinguished between the two by stating that "a government de facto may be unlawful, whilst a government not de facto may be a government de jure." [18] This distinction became important as the concept of sovereignty began to take on both internal and external meaning as relations between sovereigns grew and the development of the international system began.

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[14] John Austin, The Province of Jurisprudence Determined, Etc. (London: Weidenfeld and Nicolson, 1954), p. 193.

[15] Ibid. pp. 193-194.

[16] Ibid. p. 224.

[17] Ibid. p. 214.

[18] Ibid. p.349

2.2.2 Development of the Modern Concept of Sovereignty.

Initially, the purpose of sovereignty was to assert the superiority of one religion over the other, or one ruler over the other, in order to subjugate the masses and defeat internal and external opposition. In fact the purpose of sovereignty as embodied in the modern nation-state is to justify or explain authority within a defined territory in order "to exclude from its jurisdictional preserve any exercise of alien sovereignty."[19] The sovereign, being the head of the hierarchy, was enshrined with absolute legal and political authority overall, which was considered unconditional.[20] As competing sovereigns came into contact with one another, each began to threaten each other's legitimacy and authority. This resulted in chaotic periods of war and internal strife. As a result of common interest, competing sovereigns began to relate on a basis of equality and mutual respect for each other's sovereignty. After many centuries of customs and common practices being developed between sovereigns, both in peace and war, the formal recognition of the equality of sovereigns and the birth of the modern state system was codified between European sovereigns with the Peace of Westphalia in 1648.[21] As a result of the formal

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[19] Charles DeVissher, Theory and Reality in Public International Law (Princeton: Princeton University Press, 1957), p. 5.

[20] Raymond Aron, Peace and War New York: Doubleday and Company Inc., 1966), p. 738.

[21] De Vissher, p. 8.

recognition of territorial sovereignty, Charles De Vissher states that "[s]overeignty therefore becomes something more than mere superiority; it is at once the greatest force and the supreme authority within defined territorial limits."[22] A steady rise in the number of nation-states claiming absolute legal and political supremacy over territory has occurred as a result of this treaty. From this point in time the philosophy of the modern international state has emerged, which "recognizes no international obligations other than those to which it has voluntarily agreed through practice hardening into custom, or through specific written consent expressed in treaties or other international agreements."[23] In otherwords, a state does not lose its sovereignty when signing an agreement which limits its actions. Rather the state agrees not to exercise its sovereignty as a matter of mutual convenience.[24]

Although this can explain the relationships between sovereigns, the internal workings of sovereignty has also under gone a series of changes. The classical doctrine of sovereignty, which is absolutist by nature, cannot adequately account for the political-legal order within modern states.

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[22] Ibid., p. 16.

[23] Louis Henkin et al, International Law, (St. Paul, Minn.: West Publishing Co., 1987), p. xxxix.

[24] "Every subject of international law may decide for itself whether to accept any further restrictions of its sovereignty." Schwarzenberger, p.92. In fact all that international law has fulfilled "is to fix with some precision the conditions of establishing sovereignty in a given territory." De Vissher, p.80

In fact, sovereignty as described by Hobbes in his Leviathan never really existed.[25] The concentration of sovereignty was never really located in the king, and parliament did not exist to check or balance this authority. "The crown" as De Vissher explains "had never been sovereign by itself, for before the days of parliament there was no real sovereignty at all; sovereignty was only achieved by the energy of the crown in parliament, and the fruits of conquest were enjoyed in common."[26] Democracies for instance, generally consist of a complex of institutions sharing power which is limited by the rule of law. Democracies are bound by some rules, like the parliamentary system, which diminish the absolutist nature of a single sovereign or group of sovereigns. Initially, democracies responded with the supremacy of legislative bodies.[27] Later, constitutional government emphasized responsibility and law rather than arbitrary personal prerogatives. In Anglo-Canadian constitutional law the sovereign, namely the Crown, has had most of its monarchs' prerogatives abrogated through Acts of Parliament and convention. Once a prerogative is taken from the monarch it

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[25] See Thomas Hobbes, Leviathan, reprint ed. of original 1651 English ed.(Oxford: Basil Blackwell).

[26] De Vissher, p.173

[27] De Jouvenel states that "[i]n England, after fifty years of revolutions, the king found himself defeated. That is not to say that sovereignty was weakened, but only that the part of the king in sovereignty was much diminished. Thenceforward parliament, under the formula 'the king in parliament,' became more and more the effective holder of sovereignty - the principle beneficiary of the monopolisation of sovereignty which king and parliament had effected jointly." De Jouvenel, p.179.

cannot be exercised as a prerogative, but can be returned to the monarch through Parliament, where it no longer is held as a sovereign right but a legal right.[28]

Sovereignty may no longer include the inherent right to absolute rule, rather constitutionalism and the rule of law have limited the sovereign or replaced him, but have not diminished sovereignty as a whole. Charles Burton Marshall describes this modern internal view of sovereignty.

> [A]pplied to a finite government, sovereignty merely is a term implicit of ascendancy established with respect to matters bearing on the governments' capacity to function as a going concern. Sovereignty denotes capacity to make and to give effect to public decisions. Sovereignty is the situation of being in charge of a domain."[29]

Whereas under classical doctrine, sovereignty is considered to be absolutist by nature, exercising the highest, final, illimitable, indivisible and perpetual power and authority within an independent state, under the modern pluralistic view it no longer requires these characterizations. As Raymond Aron suggests, "[t]he division of the de facto power in any constitutional-pluralist regime, results both from texts, from customs and from men."[30]

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[28] Gerald L. Gall, The Canadian Legal System (Toronto: Carswell Legal Publications, 1983), pp. 34-35.

[29] Charles Burton Marshall, The Exercise of Sovereignty: Papers on Foreign Policy (Baltimore: John Hopkins Press, 1965), p. 4.

[30] Aron, p.740.

The modern view of sovereignty stresses finality rather than absolutness, and is likely to be divided amongst a plurality of agents without diminishing the sovereignty of the final decision making authority. Aron concurs with this by refering to Morgenthau's Politics Among Nations, he suggests that sovereignty is indivisible, divided sovereignty is a contradiction "as a squared circle... Nor can there be two sovereigns within a politically organized collectivity."[31] Even in a democracy where authority is distributed and no one agency is absolutely supreme, sovereignty is maintained as a whole since "in every state there must be a man or a group of men assuming ultimate responsibility for the exercise of political authority."[32] This ultimate responsibility for the exercise of political authority is the locus of sovereignty in the state. Even if the locus of sovereignty is left undetermined in the agencies of the state "there remains the appeal to the electorate as the supreme arbiter. In the last resort, the people as the political sovereign is always in a position to assert itself either inside the framework of the federal constitution or by revolutionary action."[33]

Sovereignty, is thus the ultimate arbital agent entitled to make decisions and settle disputes within a political hierarchy with some degree of finality. Sovereignty implies

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[31] Ibid. p.739

[32] Ibid.

[33] Schwarzenberger, p.90

independence from external sources of power or other sovereigns and provides ultimate authority and dominance over internal groups. The highest power, for instance, may not necessarily refer to one single centre of authority at the top but rather a hierarchy of a cyclic nature, revolving within the political-legal system itself. Schwarzenberger contends with this view stating that democracy merely "changed the bearer of sovereignty."[34] Even in a federation like Canada "it is impossible to eliminate supreme authority. In this sense, sovereignty is perpetual so long as men are divided into rulers and ruled, into leaders and led. What changes are the forms of social organisation and the methods of direction."[35] In such federated states sovereignty resides in the federal government and "is in a position to exercise direct authority and control over the individual citizen."[36] This dynamic between the population and centres of decision-making lends itself to the sharing of sovereignty internally, but does not diffuse sovereignty externally.

The finality of decision-making authorities within a democracy such as Canada, may appear to be arbitrary, but they are not absolute. Accordingly, finality does not necessarily suggest that decisions are irreversible, but rather describes the authority of one superior centre of decision making over a subordinate one. The modern concept of sover-

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[34] Ibid. p.88

[35] Ibid. p.89

[36] Ibid. p.91

eignty implies a source or location of law, authority or finality, not absolute supremacy.[37]

Internally, sovereignty may even be superceded by law, while externally the state is considered to be the highest form of authority, no other source of authority, whether it be located internally or externally, exists above it. Paul W. Ward explains this relationship;

> [t]he distinction between two kinds of sovereignty, whether it be legal and political..., or internal and external...seems a dubious one. To call the State sovereign and then limit it internationally is like telling a small boy that he can go to any place he cares to, but he must stay in the back yard. Words do have meanings and not to have one meaning is to have no meaning, as Aristotle said. The organization of an international order which has an authority to which the specific State must defer is a denial of the sovereignty of that State.[38]

This description by Ward may be too simplistic for Aron, although not in complete contradiction. Aron recognizes that it is "impossible to avoid considering disputes between schools of interpretation."[39] He suggests that if internal and external sovereignty are absolute they "are essentially

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[37] Charles Burton Marshall further characterizes sovereignty as entailing " a ruling group...maintaining dependable social order over a demarcated area, [an] allegiance...of persons and groups,...a common...identity among such persons and groups,...a conscious general purpose,...a capacity and will to command means....enter into and to effectuate obligations,...[and an] agency capable of representing the realm in external dealings...to communicate authentically and conclusively on its behalf to others beyond the span of jurisdiction." Marshall, p.5

[38] Ward, pp. 146-147.

[39] Aron, p.738

different, since the first implies and the second excludes submission to a single authority."[40] Unlike Ward who attempts to avoid ambiguities by suggesting that 'sovereignty is sovereignty,' Aron recognizes that the term is filled with these ambiguities.

> Externally, sovereignty is identified with non-dependence, but the meaning of this non-dependence is itself subject to contradictory interpretations: if states are sovereign, must we say that they are not subject to the obligations of international law? If they are subject to such obligations, can we still say that they are sovereign, in the sense which sovereignty implies a supreme authority?[41]

Aron does not have any objections to the elimination of the concept of sovereignty by jurists who claim that international law is superior to states. Nevertheless, as the theory of absolute sovereignty may not entirely account for the theory of international law, Aron states that "it does not suffice" to sway the argument so heavily in favour of the internationalist perspective of an international law superior to states, which renounces "the 'subjective rights' that [states] have traditionally reserved. It does not suffice to evoke the transfer of sovereignty for so-called supranational organisms to replace national realities and authorities."[42] It is because of these "national realities and authorities" which Aron supposes that "realistic theoreticians of foreign policy are inclined to retain the concept

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[40] Ibid.

[41] Ibid. p.742

[42] Ibid. p.743

of sovereignty in order to recall that each political unit legislates for itself and does not yield to an external authority."[43] However, it has been the breakdown of the concept of sovereignty based upon the appeal of human beings to a higher authority for security rather than reliance upon a doctrine of international security resting in the hands of individual states to which most critics of sovereignty turn.[44]

John H. Herz, suggests that the rise of the modern state and the concept of sovereignty was based upon the need for human beings to feel secure. Herz further suggests that "[t]hroughout history, that unit which affords protection and security to human beings has tended to become the basic political unit; people in the long run, will recognize that authority, any authority which possesses the power of protection."[45] Herz believes that what ever the realities of a states' authority may be, states' are losing their sovereignty through cracks which appear in the principles afforded by territorality. He suggests that modern weaponry, namely nuclear weapons have made "the traditional defence structure of nations obsolete...paradoxically [no nation is secure, as] utmost strength now coincides in the same unit

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[43] Aron, pp. 738-739.

[44] These objections are furthered by transnationalism, the threat of multinational corporations and organizations etc., which are said to weaken territorial sovereignty.

[45] John H. Herz, "The Rise and Demise of the Territorial State," in James N. Rosenau, International Politics and Foreign Policy (New York: The Free Press, 1961), p. 81.

with utmost vulnerability, absolute power with utter impotence."[46] This however is confusing. If a particular weapon is rendered impotent by its omnipotent power, how then can it render the entire defences of a state impotent. Nuclear weapons in this instance are merely a negation of themselves, rather than a negation of state sovereignty. People may lose confidence in a state's ability to defend against nuclear weapons with a specific means of defence, but this lack of confidence does not diminish the ability of states to avoid their use. Thus states remain sovereign because they are able to avoid war, rather than being able to defend or not to defend against a particular weapon. In fact, states remain sovereign according to Aron not merely because their populations have confidence in their ability to defend them, but because sovereignty is more likely determined by the recognition that "measures taken by a state on its own territory with regard to possesions and persons, whether or not they are contrary to the customs of civilized states, are the exclusive concern of sovereign states."[47] In fact, Herz recognizes this legitimacy which is based upon mutual respect for sovereignty. "Depriving one sovereign of his rights by force could not but appear to destroy the very principle of which the rights of all of them rested."[48]

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[46] Ibid.

[47] Aron, p.743.

[48] Herz, p.83

2.3 MODERN CONCEPT OF TERRITORIAL SOVEREIGNTY.

Unlike the supremacy of the rule of law found in the Canadian Charter of Rights and Freedoms,[49] the principles of territorial or state sovereignty are themselves superior to the rule of law internationally.[50] As a political-legal concept, territorial sovereignty recognizes the final authority or supremacy of the state. Internally, a state does what it pleases, externally it denies the jurisdiction of international organizations and other states within its defined territory and its activities outside, or agrees not to exercise its sovereignty in particular, out of self-interest. Although international law, for instance, denies the use of force or the legality of war as an instrument of policy to settle disputes, it recognizes war as a means of self-defence and, nevertheless, the right of states to determine what constitutes self-defence.[51] Although sovereignty implies independence, no sovereign state is completely independent by the very nature of politics. Other sovereign and non-sovereign interests are likely to influence each other or threaten a state's sovereignty, however, a threat or influence to a state's sovereignty does not necessarily

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[49] Canada, Charter of Rights and Freedoms: A Guide for Canadians (Ottawa: Minister of Supply and Services, 1981), p. 1.

[50] Schwarzenberger states that inclusive in these principles, even the "principle of consent reigns supreme in international law." Schwarzenberger, p.92

[51] See Kellogg-Briand Pact 1928. Henkin et al, p.671 and Kegley and Whitkoff World Politics: Trend and Transformation (New York: St. Martins Press, 1985), pp.15-16, 509.

result in a loss of sovereignty. Nevertheless, although no definite definition exists, when one sovereign entity regularly influences, threatens or sways another, then it may be that the latter is no longer to be considered as being sovereign. These states may no longer be considered to possess the attributes which determined their statehood initially. They do not however require complete execution of sovereignty, which may result in an over-extension of their capabilities, nor do they require the ablity to withstand every single challenge or threat, only enough independence of action to maintain their status as a sovereign entity. Marshall explains this in particular with respect to developing nations.

> As political entities, as experiments in statehood, they are characteristically moved by ambitions hugely in excess of their power to fulfill. Sovereignty as an expression of juridic status is in hand, but sovereignty as the sum of attributes of a successful modern society seems beyond reach of many.[52]

Although one state may have developed its sovereign attributes further than the next state, this does not disqualify the latter from claiming statehood or sovereignty. Its sovereignty may be inchoate and require further treatment, but as long as its function as a final decision making entity has been established and recognized, it is considered sovereign, until influences upon its authority are so great it can no longer be recognized as such and its sovereignty is seen to rest in a higher authority. Thus in principle,

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[52] C.B. Marshall, p.207.

the relations between sovereign states must be based upon equality and mutual respect for sovereignty, otherwise, an influence by one sovereign over another, intentional or not, would lead to greater conflict, as the mere existence of other sovereigns in itself would become threatening.

Defining the territory of each sovereign and having it generally accepted and recognized had the functional effect of reducing points of conflict. This nevertheless produces a difficult task when applying sovereignty-to-state-to-territory. The term sovereignty is not a fact, in the same manner the concept of the 'state' may lead many to wonder whether a state truly exists or not.[53] The term 'sovereignty' is rather an assumption about authority. According to Hinsley it is but "a concept men have applied in certain circumstances to the political power that they or other men were exercising."[54] Using the application of sovereignty to claim jurisdiction[55] over territory was a natural progression of the

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[53] Richard Cox describes the abstract noun 'state', as bearing "those attributes which are held to be the irreducible signs that a political entity exists." He also notes that the term carries "a precise rather than general meaning... [when applied to] modern political societies in Western Europe....[or those] certain essential concepts and practices of the 'state' from Western Europe....[or] to modern political societies." Richard H. Cox (ed.), The State in International Relations (San Fransico: Chandler Publishing Company, 1965), pp.11-13.

[54] Hinsley, "The Concept of Sovereignty and the Relations Between States," Journal of International Affairs, Vol. 21 (1967), p. 242.

[55] It should be noted here that "even beyond their territorial limits, states have not been prevented by international law to invoke their jurisdiction on appropriate occasions and have, in fact, exercised their authority in

evolution of the term with practical application. As Oran R. Young states, "[i]t is conventional to speak of sovereignty or sovereign authority over the full range of functional activities taking place within a well-defined geographical area."[56] He also suggests that "jurisdictional claims are not indivisible," they may overlap, resulting in a functional jurisdiction over specific activities such as pollution control or continental oil and gas development.[57]

2.3.1 Acquisition of Territorial Sovereignty.

A state, by both political and legal standards, is defined as being "an entity that has a defined territory and a permanent population, under the control of its own government, and that engages in, or has the capacity to engage in,

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varying degrees....[for example] vessels and aircraft on or over the high seas and...the continental shelf beyond the territorial waters." Gorove,p.313. The Lotus Case (France v. Turkey) I.C.J. 1927, see Henkin et al, pp.46-56., noted that a state in its own territory could exercise its jurisdiction for acts commited in the high seas. It should be further noted that three types of jurisdiction are recognized; (i) Territorial jurisdiction, which is a states' authority over its own territory, (ii) Quasi-territorial, which is a states' authority over its own assets which travel outside its territorial jurisdiction, and (iii) Personal Jurisdiction, which is a states' authority over its own nationals outside of its own territory. See Bin Cheng, "The Legal Regime of Airspace and Outer Space: The Boundary Problem, Functionalism Versus Spatialism: The Major Premises" Annals of Air and Space Law, Vol.V (1980) pp.339-340.

[56] Oran R. Young, "Arctic Shipping: An American Perspective" Chapter 6 in Franklyn Griffiths (ed.), Politics of the Northwest Passage (Kingston and Montreal: McGill-Queen's University Press, 1987), p. 124.

[57] Ibid.

formal relations with other such entities."[58] Its purpose is to maintain the security of its population, both internally and externally. A state without people cannot exist. There must be an organized political and social life, with the competence and authority within the system to conduct relations with other states. The state must assert sovereignty, both internally and externally, otherwise it cannot form a government and relate with others.

The qualifications concerning territory are not so boldly stated. Throughout history many states have come into existence without their borders completely defined and their frontiers unsettled. The North American continent was one such region. The United States, Britain, France, Spain and later Canada have all had claims to frontiers at one time or another which remained unexplored or unsettled. Questions arose over where one claim ended and the next began. The final delimitation of these boundaries were left unsettled for many years. The right to assert sovereignty over these territories was in question and led to many disputes and even conflict. The question of statehood, nevertheless remained undisputed. What has been demonstrated as a result of these territorial expansions by European and North American powers is the political and legal process of acquiring territory, defining and settling borders, and having the right to exercise sovereignty over these territories recog-

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[58] Henkin et al, p.229. See also Philip C. Jessup, "When Does a State Exist?" in Richard H. Cox, pp.23-26.

nized.

Under international law, universally accepted principles govern the acquisition and maintenance of territorial sovereignty. Territorial sovereignty is defined as "the exclusive right to display the activities of a state. This right has as corollary a duty: the obligation to protect within the territory the rights of other states, in particular their right to integrity and inviolability in peace and in war, together with the rights which each State may claim for its nationals in a foreign territory."[59] According to Hinsley "[t]he idea that there is a sovereign authority within the community involves the corollary that this authority is one among other authorities which are ruling other communities in the same sovereign way."[60] This rationale constitutes the international obligation of sovereign states. Therefore the true measure of statehood is the ability of the state to protect the rights of other states within its territory. As K.J. Holsti suggests,

> [i]f a state is sovereign it cannot allow, without its own consent, other political entities to make or apply their own rules on its territory; it has the corresponding obligation not to intervene in the internal affairs of other states or compromise their territorial integrity."[61]

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[59] Henkin et al, p.288

[60] Hinsley, "The Concept of Sovereignty and the Relations Between States," p. 242.

[61] K.J. Holsti, International Politics: A Framework for Analysis (Englewood Cliffs, N.J.: Prentice-Hall Inc., 1967), p. 83.

However, only a minimum degree of protection is necessary. The assumption that sovereignty is continuous is correct only in principle, as manifestations of sovereignty most often assume different forms. It is therefore also recognized that "sovereignty cannot be exercised in fact at every moment on every point of a territory." [62]

A state which claims territory or defines its borders in order to assert its sovereignty legally, and have title to do so recognized by other sovereign states and reduce points of dispute and conflict, must meet certain conditions.[63] Title can be based upon discovery, which alone does not guarantee sovereignty, but provides the first opportunity to do so. Such a title based upon discovery would be considered to be inchoate or undeveloped, and must be completed within a reasonable time. Title can also be claimed upon the basis of a long and peaceful possession of the territory. This prescription does not however diminish a prior title if the current possession is adverse. Occupation is considered to be a basis for title only if the territory in question can be proven to be terra nullius or land belonging to no one. Title may also be attained through what is known as accre-

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[62] Henkin et al, p.288. Brownlie also recognizes this and states that "State activity as evidence of sovereignty need not press uniformly on every part of territory." Ian Brownlie, Principles of Public International Law (Oxford: Clarendon Press, 1966), p. 140.

[63] K.J. Holsti states that "without legal sovereignty, as recognized by other states, a political unit, be it a colony, protectorate, or trust territory, has no legal standing among other states." Holsti, pp.82-83.

tion, which is the expansion of a states' territory by an operation of nature, such as the shifting of rivers used to define boundaries or other such natural occurences. Cession has been the normal course of acquiring territorial sovereignty in the 20th Century, it is the transfer of territory and sovereignty from one sovereign state to another previous or newly formed state. Conquest has become a rare form of acquisition of title, being the complete and final subjugation or annexation of a territory through coercive means, generally war. For legal and political purposes conquest is more commonly refered to as cession, since the transfer of territory is normally committed through a formal treaty following a war, as retribution or the finalization of a dispute over territory. Title has also been claimed as a matter of contiguity or geographical proximity. This however is not automatic, since no positive law exists to support these claims. Nevertheless, such claims may be regarded as a form of inchoate title, if no other exists.[64]

The process of consolidation appears to be a common mode of acquisition. Not generally regarded as a legal principle, it is the method by which most international jurists or courts determine a case concerning disputed sovereignty over territory. Consolidation is described as a claim to title based upon proven long use which can be determined by a "complex of interests and relations [which are based upon]

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[64] For full account of the legal qualifications for claiming sovereignty, see Henkin et al, Chapter 4 section 6, pp.286-317.

political, as opposed to legal, claims to territory."[65] John Honderich explains this with respect to Canada. Accordingly,

> [a] nation can acquire territory for example by occupation, discovery, subjugation or cession from another state. In the case of the Arctic, Canada could invoke any one of these tests. Individually, each one might not stand the rigours of legal scrutiny, but taken together they provide a solid basis for Canada's claims to general 'sovereignty' over the North.[66]

It is in this vein that Canada has the best opportunity to have her Arctic claims recognized.

The extent of territorial sovereignty is limited to land, water and airspace.[67] A state's sovereignty over its territory is generally accepted and recognized through formal agreement between states. Usually, many disputed claims are settled by international arbitration or tribunal. Some basic principles have been accepted, such as the delimitation of a river, which is determined by its navigable qualities. States also assume sovereignty over the airspace above their defined territories. This principle was codified by

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[65] Ibid., p.309. See also Brownlie Chapters VI and VII. pp.98-160.

[66] John Honderich, Arctic Imperative: Is Canada Losing the North? (Toronto: University of Toronto press, 1987), pp. 27-28.

[67] According to international law and the recognized practice of states, three separate types of territories exist. The first is territorial sovereignty, which refers to land, the territorial sea, seabed, subsoil and the airspace over territory. The second category is the res nullius which is territory that can be claimed but is not yet claimed or placed under territorial sovereignty. The third category is the res communis. These are areas of the globe or universe which cannot be claimed as territorial sovereignty such as the high seas or outer space. See Brownlie, p. 98.

the Chicago Air Convention of 1944, which recognized complete and exclusive sovereignty over the airspace covering a state's land, internal waters and territorial sea.[68] Originally airspace was believed to continue indefinitely upwards, however, this has changed with the recognized sovereign free area of outer space. Although the question of delimitation of airspace and outer space will be examined in chapter six, it should be stated that only "the traditional aspects of territorial sovereignty are the ones that have been abolished in relation to outer space but the functional aspects of sovereignty, the exercise of sovereign rights and similar manifestations continue to be recognized."[69]

Once a legal claim to sovereignty has been made, based upon the various methods mentioned, sovereignty must be continuously asserted or maintained so that title does not expire due to inattention or challenges by other states. Generally speaking, a disinterest by a state over its territories or lack of capabilities to assert and maintain sovereignty will invite other states to seek greater influence within the territory or directly challenge the claim to title. This is done due to expansionist tendencies of states to acquire territory and expand their wealth, historical disputes over the territory or a genuine concern over the

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[68] Air defence zones have been claimed by states which exceed the limits of their territorial sea, such as Canada in 1951, where rules concerning the approaches to its recognized airspace have been implemented and subject aircraft to interception if violated.

[69] Gorove, p.321.

inability of the state to provide internal security. These principles are present within Syria's occupation of Lebanese territory, as are Isreali interests in the West Bank, Gaza and Golan Heights. Nevertheless, abandonment or derelicto does not occur if a state does not explicitly state so, as King Hussein of Jordan has recently done with respect to the Isreali occupied West Bank.[70] "Absence of a reasonable level of state activity may cause loss of title. However, by reason of the need to maintain stability and to avoid temptations to 'squatting', abandonment is not presumed."[71]

Two methods of claiming and consolidating title to a specific territory exist in order to enhance sovereignty. The first, symbolic sovereignty, is the undertaking of activities "to fulfill the formal requirements of sovereignty under international law."[72] Its purpose is to demonstrate to the inhabitants and the rest of the world that the state is sovereign. Such activities include, planting a flag or cairn, patrolling or establishing a postal station in a remote, isolated or uninhabitated region. The second, developmental sovereignty, is a more complex undertaking. It is the deliberate formulation of a specific policy for a

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[70] See "King's PLO Ploy: Hussein Renounces the West Bank -- And Buries the U.S. Peace Plan" Newsweek, Vol.112 No. 7 (August 15, 1988), pp. 30-31.

[71] Brownlie, p.135.

[72] William R. Morrison, Showing The Flag: The Mounted Police and Canadian Sovereignty in thje North, 1894-1925 (Vancouver, University of British Columbia press, 1985), p. 1.

territory under a state's control. The government will demonstrate a long-term commitment to development of the territory by explaining and enforcing laws, mining codes, customs regulations and establishing an infrastructure complete with modern institutions.[73]

The process of states acquiring, claiming and maintaining territory is a practical application of the term. As Hinsley suggests, the concept of sovereignty is necessary to maintain both the internal and external order of the "modern body politic" and international system, which "has withstood not only the criticism of theorists but even sustained efforts by states themselves to dispense with it."[74] The concept of sovereignty has developed and survived, not because it soley represents the interests of a single man or group of men who wish to justify or symbolize their power, but because it has "the deepest roots in the past...[and] the deepest relevance long into the future, and that the elimination of international disorder would only come, if it ever came, through an increase in the caution, wisdom and the responsibility of the separate communities and states."[75] The following chapter will discuss the process by which the Canadian Arctic became Canadian sovereign territory and the concerns regarding maintaining her Arctic sover-

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[73] Ibid., pp. 1-2. The postal service has long been recognized as an internationally accepted symbol of sovereignty.

[74] Hinsley, Sovereignty. pp. 215-216.

[75] Ibid. p. 212.

eignty.

Chapter III

CANADIAN ARCTIC SOVEREIGNTY: A PROCESS OF CONSOLIDATION

> Oh Canada our home and native land, true patriot love in all thy sons command. With glowing hearts we see thee rise, the true north strong and free.....[1]

3.1 INTRODUCTION.

Canadians, since childhood, have been subjected to a vision of Canada which extends all the way to the North Pole. For many years, Canadians have witnessed strong debates concerning the legitimacy of these claims and Canada's ability to defend them both legally and politically, as well as, militarily. It is the intent of this chapter to discuss the international law concerning Canadian claims to sovereignty over the Arctic islands and waters, and the process by which Canada has claimed and maintained her sovereignty over the region, despite numerous threats to such claims. Counter claims to sovereignty over specific areas of the region and the lack of Canada's ability to physically enforce her claim to the extent necessary, will also be discussed, with some possible solutions for a negotiated settlement.

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[1] First verse of traditional Canadian National Anthem, english version.

3.2 LEGAL CLAIM TO ARCTIC SOVEREIGNTY

Canada claims possession of the world's longest shoreline. Some six million, three hundred thousand kilometres, approximately one third of Canada's shores, lie within the Arctic Circle.[2] Canada, although requiring an improved physical means of asserting her sovereignty over such a vast territory, cannot rely upon economic, military or other physical assets entirely. By the nature of her geography, population and lack of monetary resources, Canada must pursue other approaches in order to build an international consensus which recognizes her Arctic claims, notably diplomacy and international law.

Canada, through the usage of international law, claims sovereignty over the Arctic as a right of statehood.[3] As discussed in chapter two, sovereignty implies an absolute right of state jurisdiction over a specific territory and population. A state must however protect the rights of other states under international law. Specifically, Canada must act within the law and use it to claim and maintain its sovereignty, given the lack of ability to act without respect to the law.[4] Thus, Canadian claims to the Arctic islands and waters are based primarily under the rules of international

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[2] See Honderich, p. 12.

[3] Henkin et al, pp.286-287

[4] The principles of state sovereignty provide that "[t]here is always the alternative to law: the appeal to power and force." See Schwarzenberger, p.93

law, and the establishment of new rules to legitimize claims based upon unique circumstances.

3.2.1 Historic Claim

Canadian claims are based upon the transfer of title from Britain, in 1880, and formal Canadian claims to discovery and continued peaceful possession. These claims to sovereignty over the Arctic are divided into two categories. Canada's primary claim refers to the lands of the Arctic Archipelago. As a corollary to this claim is the extension of jurisdiction to all waters throughout the Archipelago.[5] The land claim generally refers to all lands which are located between sixty degrees west longitude and one hundred forty-one degrees west longitude in straight baselines from the North American continent to the North Pole.[6] Canada does not

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[5] Joe Clark, Canadian Secretary of State for External Affairs, has stated that "[t]he policy of the Government is to maintain the natural unity of the Canadian Arctic archipelago and to preserve Canada's sovereignty over land, sea and ice undiminished and undivided." See Appendix in Griffiths (ed.), Politics of the Northwest Passage, pp. 270-271 for Joe Clark's "Statement on Sovereignty," 10 September 1985 to the House of Commons. Source: Canada, Parliament, House of Commons. Debates. 33rd Parl., 1st Sess., Vol.128, 6462-4 (10 September 1985).

[6] With respect to this method of land claim, Brownlie reports that "[i]n the making of claims to ice deserts and remote groups of islands, it is hardly surprising that governments should seek to establish the limits of territorial sovereignty by means of straight lines, and similar systems of delimitation may be found in different types of region... In polar regions use has been made of lines of longitude converging at the Poles to produce a sector of sovereignty. Whilst the 'sector principle' does not give title which would not arise otherwise.... It remains a rough method of delimitation, and has not become a separate rule of law. Confusion of claims has arisen primarily

rely upon this claim exclusively, but as a matter of convenience in order to describe the lands in question since no firm claims to sovereignty based upon this principle have ever been truly established.[7] Nevertheless, any dispute arising over the lands Canada has claimed within this defined sector have been settled for over fifty years and are no longer disputed by any nation.

Canada first claimed sovereignty over the Arctic upon the basis of an Imperial Order in Council, effective September 1, 1880, which passed into Canadian control all the lands in the Arctic previously afforded to the British Monarch.[8] The Order failed to define the territory, and fears of American annexation were raised. Nevertheless, after acquiring the

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from the indecisive nature of state activity in polar regions. However three reservations may be made: the 'sector principle' has the defects of any doctrine based upon contiguity; its application is a little absurd in so far as there is claim to a narrow sliver of sovereignty stretching to the pole; and lastly, it cannot apply so as to include areas of the high seas... [Given that only Canada and the U.S.S.R. have used this principle in the Arctic] it is very probable that it is recognition by treaty or otherwise which creates title in the Arctic rather than the sector principle per se." See Brownlie, pp.141-142.

[7] Canadian Senator Pascal Poirier declared in 1907 that Canada should make a formal claim for all islands within this region. He based his arguments on the Alaskan Boundary Treaty of 1825 between Britain and Russia, which set the Russian Alaska/British North America Boundary at one hundred forty-one degrees west longitude. The northeasterly most point of Ellesmere Island near what is now Alert, N.W.T. would provide the eastern demarcation. This division is more commonly known as the "Sector Principle," and is of Canadian origin. Canada settled its eastern demarcation with Denmark using the principle of equidistance. Canada does not claim exclusively the 1825 treaty, since it did not include the Arctic Ocean. Canada does however claim the 141st meridian for its territorial sea, conti-

Arctic, the Dominion Government did not concern itself with consolidating its inherited, inchoate title. Due to pressing needs to the south, such as building the railway and developing the west, the north became terra incognita. It remained so for as long as no other country attempted to gain influence or control over the territory.

Concern over American annexation began around 1889, as Herschel Island acquired strategic importance as a winter nest for America's Western Arctic Whaling Fleet, while the Sverdrup Expedition (1899-1901) laid claim to about 1,800,000 square kilometres for the King of Norway.[9] Canadian expeditions were sent to demonstrate Arctic sovereignty in 1903 and began to claim customs duties in 1904. The pres-

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nental shelf and exclusive fishing zone on the basis of the current Law of the Sea. See Donald Pharand in Morris Zaslow (ed.), A Century of Canada's Arctic Islands: 1880-1980. (Ottawa: Royal Society of Canada, 1981), pp. 116-117.

[8] The Imperial Government ordered, "[f]rom and after the first day of September, 1880, all British Territories and Possessions in North America, not already included within the Dominion of Canada, and all Islands adjacent to any of such Territories or Possessions, shall (with the exception of the Colony of Newfoundland and its dependencies) become and be annexed to and from part of the said Dominion of Canada; and become and be subject to the laws for the time being in force in the said Dominion, in so far as such laws may be applicable thereto." Excerpt from "Imperial Despatches and Orders in Council" dated July 31, 1880, in Dominion of Canada, Orders in Council, Proclamations and Regulations, Having Force of Law in the Dominion of Canada, Issued During the Years 1880 and 1881. (Ottawa: Brown Chamberlain, 1881), pp.1-2 Bound volume Canada, Statutes of Canada, 1880-81. (Winnipeg: University of Manitoba).

[9] Norman L. Nicholson, The Boundaries of Canada: Its Provinces and Territories (Ottawa: Queen's Printer, 1954), p. 41.

ence of Canadian authority provided a sense of order to Herschel Island and was welcomed by the Whaler captains in order to control their crews.[10] An 1885 Dominion Government Order in Council established Canada's claim to 83 1/4 degrees north latitude. Efforts to formalize these claims were made by captain Bernier aboard his ship the "Arctic," which sailed on two separate expeditions (1906-1907 and 1909). Bernier and his crew laid formal claim to the islands of the Archipelago by raising the flag and erecting a cairn. By the 1920's Canada was able to establish its presence, through the use of regular police patrols, to most of the High Arctic. This did not result in any great furor, as the Arctic remained terra incognita for the most part. In fact Canada's first public claims to the entire north were not made until 1925. Subsequent claims were rare, the most noted being Prime Minister Trudeau's in 1969, who claimed Canadian jurisdiction over all islands, sea-bed and the continental shelf according to the sector principle.[11]

This low profile to the Arctic by the government did not dispel any challenges to Canadian claims. Canada introduced the North West Game act in 1917 to protect musk ox. This was used to force the Inuit of the Thule (under Danish jurisdiction) to stop hunting on Ellesmere Island. Canada, through

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[10] Morrison, p. 73.

[11] See Bo Johnson Theutenberg, The Evolution of the Law of the Sea: A Study of Resources and Strategy with Special Regard to the Polar Areas (Dublin: Tycooly International Publishing Limited, 1984), p. 37.

Britain, sent the Danish government a request to stop their Inuit from hunting on Canadian territory. The Danes replied that Ellesmere was terra nullius, and the Canadian claim was doubted as Britain's title was inchoate at best and may have lapsed since the island was neither discovered nor occupied, but was only claimed from a distance on behalf of the British Crown.[12] This, the Norwegian claims based upon the Sverdrup Expedition, and the American claims to Herschel Island were the most serious challenges to Canadian sovereignty over the Arctic Islands of the Archipelago. In response, the Dominion Government claimed title and asserted its sovereignty over Ellesmere Island because of its possible future value and the fact it was always regarded as Canadian. The Government had established a police post on Ellesmere in 1922 and by the late 1920's had patrolled most of the Arctic. By 1932, The title of Canada over the entire Arctic Archipelago was recognized by Norway[13] after agreeing to withdraw their claim if Canada agreed to pay for the expense of the Sverdrup Expedition, while the claims of Denmark[14] and the United States[15] became void by continued Canadian occupation.

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[12] See Morrison, pp.162-172 for full Historical account of Danish Claims.

[13] Norway agreed to this on August 8, 1930, but did not recognize the sector principle. See Theutenberg, p. 37.

[14] Denmark and Canada agreed upon the delimitation of the Greenland/Canadian continental shelf in Ottawa on December 17, 1973. Ibid. p. 49.

[15] This however did not affect U.S. claims to the Northwest Passage.

By this time the government had assumed formal responsibility for the Inuit and had acquired radio, aeroplanes and patrol vessels to assert sovereignty. After World War II, the Canadian welfare system, the distribution of old age pensions and family allowance led to the control of the Arctic by civil servants. This resulted in the complete assertion of developmental sovereignty, which had evolved from the initial use of the North West Mounted Police as symbolic agents of sovereignty and their gradual imposition of control and law.[16]

3.3 DISPUTED ARCTIC SOVEREIGNTY.

The dispute involving Canadian claims to exercise sovereignty over its declared region of the Arctic does not arise over the lands contained within the Archipelago, but relate to the legal status of the waterways. The dispute, although considered to be an exceptional case given the unique nature of the Arctic, falls under the purview of the Law Of The Sea Conventions (LOS). There are four main areas within the LOS concerning waterways. International law recognizes: (1) internal waters, surrounded by land or baselines under the sovereign control of a state; (2) territorial waters with

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[16] The N.W.M.P. were the first agents of high policy for the Canadian Government. Initially used to curb U.S. influence in the west and later to establish control over the Yukon, Hudson Bay and much of the arctic. See Morrison pp.174-180 for further details. See also Louis-Edmond Hamelin, "Dominance of the Federal Government," Canadian Nordicity: It's Your North, Too (Montreal: Harvest House, 1979), chapter 4.

the right of innocent passage, being coastal waters historically regarded as extending three nautical miles (the range of early cannon fire) or twelve miles by the majority of coastal states, recognized by the 1982 U.N. LOS Convention[17] (3) high seas, which remain open to all states where no state can exercise its own control over other states; and (4) law of international straits, which is applicable to American claims over the Northwest Passage in the Arctic. The Status of a Waterway between seas, being an international strait, provides all states with the right of innocent passage, according to the precedent set by the Corfu Channel Case.[18] This case may be overturned by the new LOS,[19] but would not diminish American claims to its validity since they have failed to ratify the 1982 Convention.

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[17] The United States is one of only twenty-three remaining states who still adhere to a three mile territorial sea. See Carl Edgar Law, "Freedom of Innocent Passage Versus Territorial Expansion," International Perspectives (July/August, 1980) p. 15.

[18] The decision stated that it is "generally recognised and in accordance with international custom that states in a time of peace have a right to send their warships through straits used for international navigation between two parts of the high seas without the previous authorization of a coastal state, provided that the passage is innocent." Corfu Channel Case (United Kingdom v. Albania) 1949 I.C.J. Henkin et al, p.1262

[19] The right of innocent passage according to the new LOS "does not exist where a strait is broad enough to allow navigation through a high seas route in its middle or such a route through an exclusive economic zone of similar convenience." The same applies if "there exists an equally convenient route through the high seas or an exclusive economic zone seaward of the island." Louis B. Sohn and Kristen Gustafson, The Law of the Sea (St. Paul, Minn.: West Publishing Co., 1984), pp. 108-109.

The United States claims, according to its accepted understanding of international law and the LOS, that the waters of the Northwest Passage[20] constitute an international strait between high seas. The U.S. does not recognize Canadian claims to a twelve mile territorial sea, nor do they regard the Arctic Archipelago as Canadian internal waters. Canadian claims to a hundred mile pollution control zone[21] would only be considered applicable to Canadian ships, according to American interpretation. Canada claims that the right of innocent passage does not apply to the Northwest Passage as an international strait. According to the Canadian position, the waters (ice) in question have never been used as an international strait on a regular basis and therefore, because of its unique nature, the so-called passage is not normally used as such.[22] This is confirmed by the new LOS which states that "the right of archipelagic sea lanes passage may be exercised through the

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[20] The Northwest Passage is said to transit the waters (ice) of Lancaster Sound in the east from Baffin Bay through Melville Sound to the M'Clure Strait into the Beaufort Sea, or southerly through the Prince of Wales Strait from Melville Sound through the Amundsen Gulf to the Beaufort Sea. The southerly route requires passage within, what the U.S. recognizes as, Canada's three mile territorial sea. See Franklyn Griffiths (ed.), Politics of the Northwest Passage. (Montreal: McGill-Queen's University Press, 1987), pp. 28-29.

[21] For details concerning the Arctic Waters Pollution Prevention Act (1970), see Ibid. p. 67.

[22] Pharand reports correctly that the Corfu Channel Case of 1949 states "that a strait must have been a useful route for maritime traffic before it can be considered as an international strait." see Zaslow, p. 125.

routes normally used for international navigation."[23] Since the passage has not "normally" been used as an international strait, Canada would argue that the strait could never have been regarded as such in the past.

3.4 STRENGTHENING CANADA'S ARCTIC CLAIM

With the prospects of a possible adjudication by the International Court of Justice (I.C.J.) or bilateral talks with the U.S., the Canadian Government unilaterally declared the waters, as of January 1, 1986, enclosed by strait baselines. This had the effect of making all the waters of the Arctic Archipelago, including the Northwest Passage, internal Canadian waters subject to Canadian laws and jurisdiction, as prescribed by the LOS.[24] Canada, since it is not an archipelagic state, does not have to provide for the right of innocent passage if its waters are subsequently ruled internal.[25] The Northwest Passage, according to the Canadian

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[23] Sohn and Gustafson, p. 111.

[24] Article III of the U.N. LOS provides for the drawing of baselines along the most seaward points of the islands which extend from a coast. This provision was based on a previous decision of the I.C.J. regarding the Fisheries Case (United Kingdom v. Norway) 1951 I.C.J. Article 47 of the Convention provides for the drawing of baselines for archipelagic states, which provides for the innocent passage of foreign vessels. Canada refrains from this provision since it will gain more control if the waters are deemed internal and not territorial. See Henkin et al, pp. 1252-1258.

[25] Due to Canada possessing "continental mainland territory" it is not an archipelagic state. See Sohn and Gustafson, p. 56. Also see Article XIX LOS "The Meaning of Innocent Passage." Henkin et al, pp. 1257-1258. A distinction is made between waters of an archipelagic state (internal,

interpretation, can never be an international strait since it was never normally used as such and will never be due to Canadian sovereign control. The U.S. disapproves of such a move since they are of the opinion "that the baselines for measuring the territorial sea and other maritime zones are to be drawn around each island."[26]

By internalizing its waters, Canada can now control the passage of ships through the Arctic with the same authority which it exercises for any other internal waterway. Canada claims that the Arctic is a special and fragile ecosystem, different from any other part of the sea. There have been attempts to promote the ice-as-land theory, but this argument is weakened by submarine travel under the ice, which may or may not be a violation of international law depending upon the decided legal status.[27] Canada by virtue of the LOS has based its claim upon the unique nature of the Arctic and the historical use of the Inuit. The waters are said to be sui generis (in a class by itself). The Arctic Archipelago is an integral part of the Canadian mainland and represents "special conditions obtaining in the Canadian arctic

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with full sovereignty) and archipelagic waters. However, an archipelagic state cannot refuse the right of innocent passage if its waters encompass an international strait which existed prior to the ratification of the new LOS. Sohn and Gustafson, p. 79.

[26] Sohn and Gustafson, p. 57.

[27] Submarines are only permitted to remain submerged on the high seas, otherwise when traveling through a territorial sea or international strait which is part of another states waters they must surface and display their flag. Ibid., p. 105.

region."[28] Canada refers specifically to Article 234 of the New LOS, to which it played an important part in negotiating as a result of its 1970 Pollution Prevention Act, which extends Canadian jurisdiction one hundred miles beyond its coast in order to control shipping and ban violators.[29] Canada claims jurisdiction under the Act as part of its international obligations since states are responsible for the preservation of rare and fragile ecosystems. More specifically, coastal states under article 234,

> [have] the right to adopt and enforce non-discriminatory laws and regulations for the prevention, reduction and control of marine pollution from vessels in ice-covered ares within the limits of its exclusive economic zone, where particularly severe climatic conditions and the presence of ice for most of the create obstructions or exceptional hazards to navigation. Such laws and regulations are needed especially where pollution of the marine environment could cause major harm to, or irreversible disturbance of, the ecological balance.[30]

This provision codified for Canada under international law many of the principles entitled in its domestic pollution law and its desired consolidation of efforts to have, as a minimum, its custodianship of the Arctic waters recognized. The new LOS enables Canada to claim that the entire Arctic Archipelago encloses Canadian internal waters, from

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[28] See Pharand in Zaslow, p. 123.

[29] See John Kirton' and Don Munton, "The Manhattan Voyages and Their Aftermath" in Griffiths (ed.), Politics of the Northwest Passage, Chapter 4 pp. 91-92. and also D.M. McRae, "The Negotiation of Article 234" in Ibid., p. 98-114.

[30] Sohn and Gustafson, p. 209.

which extends a twelve mile territorial sea, a hundred mile pollution prevention zone included in its exclusive economic zone, a two-hundred mile fishing zone and the continental shelf. However, Canadian claims versus American claims which make specific reference to the 1982 U.N. Convention will not apply as treaty law, as the United States does not and will not ratify the new LOS. It is more likely that this dispute if refered to an international tribunal will be settled according to customary international law.[31]

3.4.1 Inuit Land Claims.

Canada had been cautious not to overly state the historic use of the Inuit. By claiming the waters to be historic, Canada would add considerable weight to Inuit land claims. As historic waters, Canada "must exercise sovereign authority over the area....regularly for a considerable time; and ....other states must acquiesce in such exercise of authority."[32] The Royal Proclamation of 1763 provided for the transfer of English Common Law to British North America, including the Arctic.[33] This however applied only to the

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[31] Henkin et al, pp. 1231-1234.

[32] Sohn and Gustafson, p. 58.

[33] King George III's Royal Proclamation of 1763 transfered English Common Law to the previous French colonies of Canada and Acadia, and its territories east of the Mississippi River after France had ceded the territory to Great Britain through the Treaty of Paris earlier in the same year. It is believed that the Maritimes acquired English Common Law in 1660, based upon the subsequent English conquest. See Gall, pp. 44, 133-134.

lands discovered before 1763.[34] It had been suggested by many scholars that Canada may wish to claim sovereignty over the waters of the Arctic Archipelago based upon the Inuit claims. This however has left Canada with the obligation to recognize Inuit property claims to much of the northern territories. As a result, the federal government has attempted to reach a northern land-claims settlement with these objectives in mind.[35] Thus accordingly,

> "[i]t is an established principle of international law and Anglo-Canadian constitutional law that when a nation acquires territory through peaceful occupation and discovery, that nation becomes subject to and respects the pre-existing property rights of the inhabitants, although these property rights are held at the goodwill of the sovereign."[36]

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[34] See Morrison, p. 164. Based upon Danish claim to Ellesmere Island. There is however a large body of evidence which supports Canada's claim to her Arctic based upon British Expeditions prior to the transfer of Title in 1880. Andrew Taylor has compiled a full listing of British Parliamentary Papers of evidence presented by Expedition participants and documents of their field records taken during expeditions up until 1880. See Andrew Taylor, British Parliamentary Papers on Exploration in the Canadian North (Washington: Government Printing Office, 1959).

[35] An Agreement in principle between the federal government and the Inuit combined with earlier agreements, would have given northern aboriginal peoples full or partial control of almost 40 percent of Canada's land mass, while providing $500 million plus 181,230 square kilometres of land. However, this agreement has be rejected by the Dene and Metis of the region. Once a new deal is negotiated and an agreement reached, one-tenth of Canadian lands will likely be owned by aboriginal peoples, and traditional land right use over an additional 2.5 million square kilometres recognized. See "True Owners of the True North," Toronto Globe and Mail (September 3, 1988), p. D2., "PM signs record land settlement," Winnipeg Free Press (September 6, 1988), p. 1,4., "Deal of the Centu-

These principles would apply to Inuit claims to the off-shore waters of the Archipelago. Under international law, Canada could claim full sovereignty of the waters, subject to pre-existing aboriginal property rights under domestic law. In order to do so Canada would have to prove the exercise of sovereign authority for a considerable time, which is recognized by other states. It is also required that "an indigenous group must establish that it has developed the concept of property."[37] It would appear that four thousand years of extensive historical and anthropological evidence concerning exploration and archaeology would prove both the Canadian and Inuit claims.[38]

3.5 DISPUTE SETTLEMENT.

Canadian claims to the Arctic waters are consistent with the New LOS and emerging international legal regime to control ocean use. The Canadian approach is to exhibit a functional control of the waters in order to consolidate its claims to sovereignty.[39] The innovative approach taken by

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ry," Time, Vol. 132, No. 12 (September 19, 1988), p. 39., Miro Cernetig, "Arctic pact completes largest land claim," Globe and Mail. (May 1, 1990) p.A3. and "NWT land-claim settlement rejected," The Globe and Mail. (July 20, 1990) p.A4.

[36] Donna Leaman (ed.), Ocean Policy and Management in the Arctic (Ottawa: Canadian Arctic Resources Committee, 1984), p. 95.

[37] Ibid, p. 96.

[38] See Peter Schledermann's chapter " Inuit Prehistory and Archaeology," in Zaslow, pp. 245-256.

Canada places the Arctic waters in its control and signifies a form of custodianship for those states which fail to recognize the emerging legal regime. The recent Canadian-American agreement over the Arctic, signed January 11, 1988, recognizes Canadian control over the Arctic waters, specifically the Northwest Passage. The agreement deals with the issue of sovereignty by avoidance, in order to forego possible confrontation and I.C.J. adjudication.[40] Neither side contends that the agreement alters their position, vis.a.vis. sovereignty. Canada still maintains that the waters in question are internal, while the United States maintains that the passage is an international strait, consistent with its interpretation of the LOS, entitling nations to the right of innocent passage. The United States did agree to seek Canadian consent and assistance if necessary, prior to any future passage.[41]

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[39] The degree of control required is not readily known and may itself be disputed as Brownlie suggests that "[t]ribunals require little in the way of maintenance of sovereignty, particularly in regard to remote and uninhabited areas." See Brownlie, p. 135.

[40] Joe Clark described the deal as a "practical step that leaves... the question of sovereignty intact." See Jeff Sallot, "Arctic accord signed: Shultz won't budge on acid rain issue" Toronto Globe and Mail (January 12, 1988), pp. A1,A2.

[41] The Research Branch of the Parliamentary Library reports that the Agreement on Arctic Cooperation, signed January 11, 1988 allows "U.S. icebreakers to travel through the Northwest Passage. Under the agreement though, the U.S. must obtain Canadian consent for its ships to travel the passage, Washington will not acknowledge Canadian claims to sovereignty in the waters." See Marc Leman, "Canadian-American Relations: Significant Developments," Current Issue Review. (Ottawa: Research Branch, Political and Social Affairs Division, Library of Parliament, April 15,

Canada's recent trek with the Soviets across the North Pole as a symbol of Arctic cooperation may lead to a bi-lateral or multilateral conference of circumpolar states to settle legal claims and other political/strategic issues, such as demilitarization.[42] Such a conference may be the most likely scenario for dispute settlement.

Although the United States maintains that it does not recognize Canadian sovereignty, only control of the passage, Canadians may view this as a step toward further consolidation of their claim and the development of customary international law, to which any dispute regarding the adjudication with non-signatory nations to the New LOS Convention is likely to draw upon. Under the convention, states may voluntarily submit to an "international tribunal for adjudication."[43] However, old disputes "are totally exempt from dispute settlement under the Convention"[44] and the United States would "not be able to resort to the dispute settlement procedures provided for in the Convention even with respect to those parts of the Convention which it considers as reflecting customary law."[45] The U.S. could "file a sup-

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1988), pp. 12-13.

[42] Demilitarization will still require policing, which the nuclear-powered submarines are best capable of doing. Canada, Senate. "Proceedings of the Special Committee of the Senate on National Defence," (Tuesday, March 8, 1988), No. 15, p. 18.

[43] Sohn and Gustafson, p. 77.

[44] Ibid, p. 243.

[45] Ibid, pp. 245-246.

plementary declaration....by which it would accept the jurisdiction of the court with respect to those rules of customary international law which have been codified in the LOS Convention."[46]

The dispute over the Arctic waters between Canada and the United States may be settled for the time being, given the recent agreement. Nevertheless, "a disagreement on a point of law or fact, [in which] a legal conflict exists"[47] between the two parties over the actual status of the Northwest Passage and the other disputed internal or international waters of the Arctic Archipelago. This may result in future confrontations regardless of the recent agreement. The major stumbling block appears to be Canada's persistent use of every means possible to protect its economic, environmental and strategic interests, while the United States recognizes its strategic and economic interests and legal consequences upon its other disputes involving waterways such as the Black Sea, Strait of Hormuz and the Gulf of Sidra, the so-called strategic 'choke points' of international relations.

Oddly enough, both Canada and the United States share similar strategic interests in denying Soviet access to the Canadian High Arctic. If the Northwest Passage is ruled as an international strait, the Soviets would have unfettered

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[46] Ibid. p. 246.

[47] Definition of legal dispute. Henkin et al, p. 568.

legal access to a location which provides them with a much shorter missile route to North American targets. The United States presently is of the opinion that it is in its interest to have unhindered access (the recent agreement notwithstanding) under international law to the Arctic, in order to respond to its strategic needs, given its uncertainty of possible unilateral Canadian action to protect the environment. The unfettered presence of U.S. naval vessels in the Canadian Arctic could, however, entice a Soviet presence. However, according to Joseph T. Jockel, Canada's use of nuclear-powered submarines would not have physically prevented U.S. or Soviet attack submarines from entering Canadian waters.[48]

Canada is of the opinion that its right to protect the Arctic environment is at stake, and its ability to maintain sovereignty may diminish if foreign Arctic activity is increased. The legal answer to this question may require time to develop a customary international law which can be beneficial to both the members of the new legal regime and non-members. In the meantime further bilateral and multilateral cooperation is needed, which will provide the capabilities for Canada to increase her physical ability to assert its Arctic sovereignty.

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[48] Canadian submarines would only log the location, time and character of Soviet submarines for future diplomatic and legal proceedings. See Joseph T. Jockel, "The U.S. Navy, Maritime Command, and the Arctic," Canadian Defence Quarterly. Vol. 19, No. 3, (Winter, 1989) p.26.

Edward M. Spiers has stated that "the Mulroney government would seem likely to profit from a resolution of the dispute with the United States over the Northwest Passage, and the subsequent creation of a maritime version of NORAD.[49] Spiers was of the belief that a maritime version of NORAD "would provide Allied confirmation of the perceived Soviet submarine threat, and would provide the basis of Allied agreement before Canada began her operational patrols in the Arctic."[50] This may provide a solution, however, it is the intent of the Canadian Government to pursue a more independent role in her mutual defence commitments to strengthen sovereignty. As one scholar suggests, Canada's oldest post-war objective is to ensure that "defence activities undertaken in Canada not be left entirely to U.S. forces, especially in the North."[51] Given the current concern over NORAD,[52] another NORAD type agreement may create more problems for Canada instead of solving the current ones. The following chapter will concentrate upon Canada's concerns vis.a.vis. current physical capabilities, threats to her sovereignty and the physical requirements for asserting sovereignty.

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[49] Edward M. Spiers. "Refurbishing Canada's Defences," British Journal of Canadian Studies, Vol. 3 (No. 1, 1988), p. 41

[50] Ibid.

[51] Jockel, p.26

[52] See Chapter 5.4

Chapter IV

CANADIAN ARCTIC DEFENCE CONCERNS, CHALLENGES AND INITIATIVES

> "If Canada assumed the responsibility the government would have to send a force of some kind there....It would be the greatest madness to submit the House to assume the responsibility of governing that territory extending from the borders of civilization to the Arctic Ocean."[1]

4.1 INTRODUCTION.

Canada's 1987 White Paper on Defence placed a great emphasis on the need for Canada to maintain control over her own Arctic region in light of increased U.S. and Soviet military presence and the use of the Arctic approaches to Canadian territory.[2] Many possible solutions for enhancing Canada's ability to exercise sovereignty have surfaced over the past few years, from nuclear-powered submarines to fixed under ice sensors. This chapter will examine Canada's defence concerns, requirements and needs to assert and main-

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[1] Conservative MP Peter Mitchell (Northumberland, N.B.) quoted in Bruce Hodgins et al, The Canadian North: Source of Wealth or Vanishing Heritage? (Scarborough, Ont.: Prentice-Hall, 1977), p. 233. An excerpt from 1878 Canadian House of Commons Debates. Also found in House of Commons, Debates 1878 volume 2 p.2389.

[2] The White Paper affirmed that "[t]he ability to exercise effective national sovereignty is the very essence of nationhood." See Canada, Department of National Defence, Challenge and Commitment: A Defence Policy for Canada (Ottawa: Minister of Supply and Services, 1987), p. 23.

tain her sovereignty and security in the Arctic.

4.2 STRATEGIC CONSIDERATIONS.

Canada has always relied upon a great power to provide the lion's share of her defence. Currently, like most western states, it is the American nuclear and conventional deterrent upon which Canada relies. Although not making a large contribution, Canada does play a relatively important role in sharing continental defence with the Americans and seeks to maintain her own forces to provide for her own self-defence.[3] This commitment, unlike her more symbolic, yet necessary NATO contribution, provides a vital and necessary component in maintaining her immediate security, and national interests.[4] Nevertheless, the reality of Canada's historical and geo-strategic position in world affairs requires that she maintain many mutual defence agreements with the United States. This tightrope between independent and mutual defence which Canada walks, has been a dominant influence in Canadian strategic thinking since the late 1930's.

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[3] The White Paper recognizes that "[t]he protection and control of our territory are fundamental manifestations of sovereignty." Ibid.

[4] General Paul D. Manson defines National Interest as "survival...freedom, territorial sovereignty and economic well-being, all of these encompassed within a satisfactory system of world order." Paul B. Manson, Speech to the Canadian Defence Association, (Ottawa, January 16, 1987), pp.2-3.

Although not a one way street, the United States clearly is the dominant partner in its continental military relations with Canada. This overwhelming strategic domination by the U.S. has led many observers to call for a greater independent Canadian defence component in its mutual defence agreements with the U.S., while others believe the price would be too great and its effect marginal at best. Recently, the need for Canada to assert a greater capability to control her own territory, especially her Arctic regions, has been cited in many Canadian policy statements.[5] Canadian General Paul B. Manson has stated in reference to this, that "[w]e cannot expect help from our alliance partners if we are unwilling to defend our own security interests."[6]

The Arctic contains an uncounted wealth of natural resources which provides an enormous economic potential. Politically, Canadians have inherited the traditional British view of the North. The Arctic is seen as a wondrous natural sublime environment requiring constant protection from harmful intrusion.[7] Nevertheless, the same environment evokes a fear amongst Canadians, who understand the severity

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[5] Canadian Secretary of State for External Affairs, Joe Clark has stated that "[c]ontrol over national territory, airspace and coastal waters is essential for our sovereignty and our security." Canada, Department of External Affairs. Competitiveness and Security: Directions for Canadian International Relations. (Ottawa: Minister of Supply and Services, 1985), p. 38.

[6] Manson, p. 16.

[7] Griffiths (ed.), Politics of the Northwest Passage. pp. 17-18. This was described as the "Victorian Vision" of the north.

of its climate. Strategically, the evolution of technology has created many doubts over Canada's ability to control the Arctic. The north, once a buffer against invasion, has become increasingly vulnerable to such weapons as nuclear armed bombers, inter-continental ballistic missiles and more recently, sea launched ICBM's and cruise missiles from submarines.[8] Canadian Brigadier-General Clayton Beattie says that the Soviet Arctic threat is real, as an enemy could easily land forces and cut off the Northwest Passage as a distraction at the very least, or once established threaten the south. He continues to state that "[t]he principle of surprise is still a principle of war for the Soviet Union and I would [not] discount that possibility."[9] General Manson echoes this in terms of sovereignty protection and North American defence, by refering to Canadian capabilities which reflect her inability "to conduct surveillance of our northern waters, and to counter any hostile intrusion in the Arctic."[10] Recent improvements in superpower and east-west relations, including the democratization of Warsaw Pact countries and German re-unification may alter the Soviet

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[8] Although no confirmation of ongoing Soviet submarine operations under the Canadian Arctic ice has been made, the technology, rationale and threat does exist. See Commander Peter T. Haydon. "The Strategic Importance of the Arctic: Understanding the Military Issues." Canadian Defence Quarterly, Vol. 17 No. 4 (Spring, 1988).

[9] Canada, Senate, No.15, p.19. Printing error occured in English text. The opposite French translation refers to this statement in the negative, therefore I have inserted a correction.

[10] Manson, p. 14.

threat, although the potential and capability remains unaltered due to the effeciency created through Soviet force reduction and modernization.

Energy shortages have produced threats of increased shipping and pollution.[11] The voyages of the American icebreaker/supertanker Manhattan (1969/70), the Swedish cruise ship Lindblad Explorer (1984) and the U.S. Coast Guard Cutter Polar Sea (1985) through Canadian-claimed waters have caused a great amount of concern and controversy among Canadians regarding their ability to assert sovereignty. The Polar Sea voyage resulted in domestic controversy, according to Joe Clark, "not because the transit occurred, but because we had so few means to assert our claim of control."[12]

The Manhattan voyages influenced Canadian efforts throughout the 1970's and 1980's to build a new international legal regime more consistent with Canadian claims to its northern waters. The Arctic Pollution Prevention Act was part of an attempt to gain recognition and establish a LOS which would bolster Canadian claims and jurisdiction, while protecting the Arctic environment. The Polar Sea voyage once again sparked an enormous debate in Canada and led to the unilateral action of the Canadian government to enclose the archipelagic waters with baselines, declaring them internal.

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[11] The recent Alaskan 'VALDEZ' disaster of March 1989, reflects the hazards of such a catastrophy occurring in the Canadian Arctic.

[12] See "Clark urges more action on Arctic" Ottawa Citizen (April 23, 1987), p. A5.

The pledge by the federal government to build a five hundred million dollar icebreaker, the Polar 8[13] and acquire a dozen nuclear-powered submarines were also in response to the perceived threats to Arctic sovereignty.

The United States views the Arctic as a region which offers an economic potential, secure supply of energy resources and more importantly, a security threat to the continental heartland. The maintenance of international straits and waterways has been a prime objective of American foreign policy and continued to be so under the Reagan Administration and appears to be the same for President Bush. The U.S., as discussed in the previous chapter, recognizes a three nautical mile territorial sea, an absence of any special status for ice-covered regions and denies Canada its claim to sovereignty over the Northwest Passage. In response, Canada has attempted to develop an independent perspective for the north using diplomacy, international law, technology and other physical assets. Canada has been slow over the years to take bold unilateral actions and broadly assert her sovereignty claims, since the capabilities to do so are limited. As a trading nation and member of the Western Alliance, Canada also desires to maintain the freedom of the high seas. Instead of bold action, she has

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[13] Joe Clark stated that Canada will build the "worlds' most powerful icebreaker to be serviceable by late 1990." See Leman, p. 18. This was reconfirmed in May of 1989, however its completion date is uncertain. See "Tories now deliver Polar 8 but refuse to provide details," Globe and Mail. (May 9, 1989) p.A10.

used innovative approaches in law and diplomacy. Only recently has Canada made serious attempts to acquire the capability to sustain physical control as well.[14] Recent budget cuts have shelved much of these improvments and those called for by the 1987 Defence White Paper.[15]

4.3 COMMITMENT V. CAPABILITY.

Years of neglect to her defence forces (particularly naval), threats to her sovereignty in the Arctic by increased civilian and possibly military incursions has forced Canada to improve her defence capabilities, as well as, and as part of, her legal claims. As discussed in chapter three, Canada has enclosed her Arctic Islands with baselines and had already negotiated and implemented the New LOS. The legal disagreement with the U.S. has been settled for the time being by American recognition of Canada's control over the disputed waters and ice-covered areas, but not sovereignty. American threats to Canadian Arctic sovereignty may have subsided in the meantime, nevertheless, the Soviet and American military presence has been on the increase, or

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[14] Such measures have taken place. In 1986 the Canadian government increased Aurora aircraft patrols, conducted limited Eastern Arctic naval deployments, and maintained its Arctic land forces. Nevertheless, her strategic and tactical view is expected to "turn increasingly northward in the years to come." Manson, p. 15.

[15] Micheal Wilson's 1989 budget cut the nuclear submarine programme, CF-18 attrition replacements, six additional Aurora aircraft, and the entire fleet of mid-range Tracker aircraft. See W. Harriet Critchley, "Does Canada Have a Defence Policy?" Canadian Defence Quarterly. Vol. 19, No. 2, (Autumn, 1989) pp.7-14.

at least the threat of increased submarine activity has risen with improvements to Soviet SLBM and cruise missile capabilities. Canadian capabilities to monitor and patrol the Arctic are minimal, if not negligible. Canada's inability to adequately patrol the Arctic has left her unable to determine the extent of foreign military presence in her Arctic waters. This is a serious setback to her Arctic sovereignty claims, which are being challenged. As General Beattie states "[i]f we do not get up there to look after our own territory, someone else will."[16]

Physical control of a territory is a requisite to sovereignty and a principle of international law. "[A] nation is considered to assert sovereignty over an area only when it can be shown to have the capability of physically exercising that control."[17] The need for Canada to increase its capabilities at sea and under the ice has been noted by many authors. Nevertheless, the enforcement of sovereignty need not be entirely through the use of force or increased physical presence. As a principle of international law, the use of peaceful means to settle disputes and the avoidance of the use of force has been stated in numerous international and bi-lateral treaties, however, if physical control of a territory is a requisite for sovereignty, it may also have the function of reducing or detering threats to sovereign-

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[16] Canada, Senate, No.15, p. 18.

[17] Law, p. 13.

ty.[18] The ability of Canada to engage in the use of force to assert her claims to sovereignty are required. As Schwarzenberger suggests "it is the function of the principle of sovereignty, and the liberum Veto of the sovereign state, to maintain intact the supremacy of the rule of force over the rule of law in international society."[19]

4.3.1 Government Policy

In 1971 the Canadian White Paper on Defence proclaimed that the maintenance of sovereignty especially in the Arctic, was its primary concern.[20] It called for surveillance overflights, the use of Inuit Rangers (a paramilitary force of 640) and occasional military exercises to assert sovereignty. Many considered this approach to be inadequate. In response to the Polar Sea and the threat of increased foreign military presence, the federal government announced its intention to build the modern Polar 8 icebreaker, as mentioned in in section 4.2. More recently, the 1987 White Paper on Defence called for the purchase of ten to twelve

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[18] According to the Canadian Government, "[t]he military role in sovereignty is that of the ultimate coercive force available when the capabilities of the civil authorities are inadequate to enforce Canadian laws and regulations or when Canada's right to exercise jurisdiction is challenged by other states." Canada, Challenge and Commitment. pp. 23-24.

[19] Schwarzenberger, p.94.

[20] See Canada, Department of National Defence. White Paper on Defence: Defence in the 70's (Ottawa: Queen's Printer, 1971). The Inuit Rangers now increased to 1500. See Canada, Defence Update 1988/89. p. 12.

nuclear-powered submarines, the ability to forward base CF-18 fighters, increased overflights and an overall increase in Canada's Arctic military presence. There has also been discussion to place deep sea sonar under the ice and use earth-monitoring or remote sensing satellites for surveillance. The debates which are occurring presently refer to the extent to which Canada should commit itself to northern defence, but most agree however, that an increase in physical control should be made.

The White Paper recognizes the growing geo-strategic importance of the Arctic and its prime operating areas for submarines.[21] The Canadian Government believes that to be effective, Canada's Navy must be aware of what is going on under the ice in order to "deter hostile or potentially hostile intrusions."[22] Canada's current naval modernization programme has as its purpose, the ability to provide Canadian decision makers greater policy or military options. Flexibility is believed to be best achieved through a balance among air, surface and underwater capabilities, including an effective three ocean navy.[23]

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[21] The Arctic is heavily militarized already. The Soviet Kola Peninsula has the "greatest single concentration of naval and naval air forces in the world, as well as missile forces...[and is] almost entirely within the Arctic Circle." See Perrin Beattie, Speech to the Empire Club, (Toronto: January 15, 1987), p. 6.

[22] Canada, Challenge and Commitment. p. 50.

[23] It is not known what effect current budget cuts will have upon this programme in the long run. Nevertheless the cancellation of the nuclear-powered submarine purchase is certain, as it was announced in Micheal Wilson's extra-

4.3.1.1 Naval Modernization

As an update to the 1987 White Paper, the Department of National Defence declared that it will "provide the navy with modern, capable vessels for operations in the three oceans contiguous to [Canadian] territory; bolster [Canada's] ability to survey and defend Canadian territory [and] revitalize and enlarge the reserves to assume a greater role in the defence of Canada."[24] Also mentioned was the establishment of an Arctic training centre near the end of the eastern portion of the Northwest Passage.

The most controversial component of Canada's naval modernization programme was the acquisition of ten to twelve nuclear-powered submarines. Their proposed usage would have constituted both 'denial' and patrol roles. The nuclear power requirement is essential for Canada, as they are the only vessels capable of sustained operation and surveillance under the Arctic ice of Canadian waters.[25] Although the pur-

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ordinary 1989 Budget speech. As a result many scholars have expressed concerns that Canada has given up her goal for a three ocean navy.

[24] Canada, Defence Update 1988/89. pp.7. The naval modernization will consist of the refitting of the TRIBAL Class Destroyers, the ALGONQUIN, ATHABASKAN, HURON and IROQUOIS (all at least 15 years old), will be undertaken to extend their life beyond the year 2000. The replacement of antiquated naval vessels with six newly constructed frigates is already underway, with the purchase of six more confirmed. The purchase of new helicopters and the development of new sonar systems for ASW vessels and fixed under ice sensors are required. See Canada, Challenge and Commitment. p. 51.

[25] Ibid p. 51.

chase of these vessels has been cancelled due to current budgetary constraints, if purchased, they would have been of either the British TRAFALGAR[26] class or French RUBIS/AMETHYSTE class, and would have been partially or fully constructed in Canada.

Rod Byers has stated that sovereignty is the "primary rationale" for the programme and a possible means for resolving the Canadian-American dispute in the Arctic.[27] On the other hand, retired Canadian Rear Admiral S. Mathwin Davis contends that the submarines are not optimal for asserting or affirming sovereignty. He states that "[r]ecognition of Sovereignty in the Arctic is not likely to be achieved or possibly enhanced by military means; whatever difficulty exists can be resolved only by international law and agreement."[28] According to Admiral Davis, icebreakers are just as good for recognition, as there is no evidence of Soviet submarines only the possibility of the threat. What is omitted here is the fact that the ability to control a territory effectively is a requisite of sovereignty under international law. How can Canada claim control if she does

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[26] For further details on British TRAFALGAR class nuclear-powered submarines, see "Canadian Sovereignty: A Submarine for Canada" A Special Marketing Supplement Prepared by Canadian Defence Quarterly. (April, 1988).

[27] R.B. Byers, "An 'Independent' Maritime Strategy For Canada," Canadian Defence Quarterly, Vol. 1 No. 1 (Summer, 1988), p. 28.

[28] Rear Admiral S. Mathwin Davis (ret.) "'LE MIEUX EST L'ENNEMI DU BIEN:' The Nuclear-Powered Submarine Programme" Canadian Defence Quarterly. Vol. 18 No.2 (Autumn, 1988), p. 54.

not know if the perceived threat is real or not? Currently Canada must rely upon the word of the Americans to determine the status under the ice. This is unacceptable in order to claim sovereignty. With the cancellation of the nuclear submarine programme, alternatives must be found in order to reverse this trend.

The nuclear-powered choice appeared to be the best and only practical alternative for truly representing Canadian sovereignty under the ice. It would have provided both surveillance and patrol, as well as denial capabilities. A senate committee has reported that the conventional submarine is a "vehicle of position" while its nuclear counterpart is a "vehicle of manoeuvre."[29] More startling is the fact that the nuclear submarine's operational effectiveness was judged to be three times greater than its conventional cousin.[30] This effectiveness would have allowed Canada to maintain her traditional NATO naval contribution according to former Canadian Minister for International Trade, Pat Carney. She stated that "only nuclear-powered submarines can operate in the Arctic Ocean...[b]ut more importantly are more cost-effective and operationally effective than conventional submarines for fulfilling the Navy's primary role - the protection of the Atlantic sea lanes."[31] This appeared to be the

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[29] Canada, Senate, "Proceedings of the Special Committee of the Senate on National Defence," No. 24, p. 6.

[30] Ibid. p.7.

[31] See Pat Carney, "Canadian Foreign Policy: Preparing for the 21st Century," Speech to the Canadian Institute for

best rationale for the submarine purchase. The submarines were more properly assumed to be used for Canada's traditional naval role in the North Atlantic, while providing the capability to operate under the Arctic ice and affirm Canada's sovereignty there.

The disparity between Canada's defence commitments and capabilities for Arctic and National Defence, are equally apparent in her NATO commitment. Although beyond the scope of this study, Canada's NATO commitments are often regarded by many as detrimental to her Arctic defence, although this is debatable considering the larger deterrence umbrella that NATO provides.[32] Former Canadian Minister of National Defence Perrin Beattie has stated that "[t]here can be no doubt that the defence of Western Europe continues to be critical to the defence of the Canada we wish to preserve."[33] Thus, a multipurpose role for the submarines, given Canada's tradition of acquiring capabilities for two or more commitments at a time, appears to be the best solution to the debate. This would provide adequate sovereignty protection in the north, as only a minimum capability is required. The elimination of the programme now places a greater emphasis upon alternatives. It is not known how

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International Affairs, (Ottawa: March 25, 1988), p. 7.

[32] See Honderich, Chapters 11,12 & 13 for discussion.

[33] Beattie, Empire Club Address. p. 3. The NATO Summit meetings of July, 1990 have set a course to redefine NATO's role in European and Atlantic defence as a result of the rapid changes occurring in the traditional NATO-Warsaw Pact States' relations.

seriously the cuts will effect Canada's plans, but it is presently presumed that a new Naval modernization plan will be submitted and a programme undertaken. Presumably this will include new methods to monitor Arctic submarine activity and the ability to respond to it.

4.3.2 Surveillance.

Surveillance has been declared most recently to be "an affirmation of sovereignty and a contribution to security."[34] The use of surveillance as an affirmation of sovereignty is an aspect of Arctic defence upon which Canada places great emphasis. The physical ability to interject forces necessary to assert sovereignty requires that the ability to know where to send them should also be a high priority. This is asserted by the 1987 White Paper, accordingly, "[i]t follows that an important manifestation of sovereignty is the ability to monitor effectively what is happening within areas of Canadian jurisdiction, be it on land, in the air or at sea, including under the ice."[35] Nevertheless, the report recognized that monitoring alone was not sufficient to provide effective control. This could only be done through the ability to respond with force. Given the vast region of land, sea and ice in the Canadian Arctic,

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[34] Ibid. p.10. The White Paper echoed this. "Surveillance is an affirmation of Canadian sovereignty and a contribution to Canadian and Collective security." Canada, Challenge and Commitment. p. 55.

[35] Ibid. p. 24.

surveillance becomes a primary concern. The Canadian Government requires surveillance for "[w]arning, assessment and defence against hostile activity."[36] This is achieved through the use of 18 Aurora CP-140 aircraft which patrol the Arctic for three days once every three weeks providing aerial photo reconnaissance. The use of 1500 Inuit Rangers for ground patrols enhance the CP-140's, but are limited in their range. The R.C.M.P. and Coast Guard also provide sovereignty surveillance and patrol, but like the Rangers are ineffective for monitoring the entire Canadian Arctic. The White Paper supports the modernization of NORAD through the North Warning System (NWS) to replace the Distant Early Warning Line (DEW Line) and the use of the Canadian NORAD Region Operations Control Centre, CF-18's and associated communications to enhance her surveillance requirements. The White Paper also called for the upgrade of five existing Northern Airfields to forward base CF-18's, and other fields for American owned and commanded AWACS. The Paper was also supportive of the modernization of Canada's fleet of TRACKER mid-range aircraft and purchase of more long-range patrol aircraft.[37] However, given the previously mentioned sizable reduction in DND's spending authority by Wilson's 1989 budget, programmes such as these have been delayed or cancelled. This has led many observers to conclude that Canada is without a current defence policy of any consequence. At the

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[36] Ibid., p. 55.

[37] Ibid. pp. 55-57.

very least it has been argued that Canada has created a much larger commitment-capability gap as a result.

The following chapter discusses the use of Earth monitoring satellites for surveillance and the affirmation and assertion of sovereignty.

Chapter V

REMOTE SENSING AND CANADIAN ARCTIC SOVEREIGNTY

5.1 INTRODUCTION.

The intent of this chapter is to discuss the current earth monitoring satellite technology available to Canada and answer whether or not Canada should pursue an independent earth monitoring satellite capability for her own defence purposes, such as Arctic sovereignty and independent verification.

5.2 SPACE BASED SURVEILLANCE.

Of the many possible solutions to Canada's Arctic defence woes currently being debated, the use of independent Canadian earth monitoring or remote sensing[1] satellites for air, land and maritime surveillance has received some of the least attention from Parliament and the media. Given the reported eight billion dollars which was to be spent upon the ten to twelve nuclear-powered submarines, the debate has

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[1] Carl Q. Christol suggests that the legality of remote sensing is assumed, nevertheless, "[a] definition of remote sensing must include the central function of such a process or method, namely the observation and gathering of identifiable facts through the use of space objects and their component parts." Carl Q. Christol, "Remote Sensing and International Law," Annals of Air and Space Law, Vol. V (1980), p. 383.

attracted many cheaper alternatives such as ice breakers, under ice sensors, conventional diesel-electric submarines (inadequate for the long patrols necessary under Arctic ice) and long range patrol aircraft with anti-submarine warfare capabilities, or a purchase of U.S. AWACS for air surveillance. Nevertheless, the use of space-based surveillance systems to offer an alternative or supportive role to the more conventional means of patrolling the Arctic has been mentioned and recommended by at least two parliamentary committees since 1985. Canada's national security requirements, with regard to space-based systems, were defined by a 1985 Canadian Senate report on Territorial Air Defence. The report stated that,

> Canada could control the use of its own satellites and make sure that they remained dedicated to passive detection and surveillance needs.... [t]he number of satellites required for a viable system might consist of four to six air surveillance satellites, one or two maritime surveillance satellites, and three to four communications satellites, stationed most of the time over Canadian territory or areas relevant to Canadian military and diplomatic communications.[2]

The Defence White Paper echoed these findings. It referred to the apparent need for a military space programme, as well as exploring space-based systems for surveillance requirements which in time could be used to replace ground-based radars. The linkage of satellites to surveillance as an affirmation of sovereignty was made by

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[2] As reported by Canada, House of Commons, NORAD 1986: Report of the Standing Committee on External Affairs and National Defence, (Ottawa: Minister of Supply and Services, 1987), p. 46.

DND accordingly, because "only space-based surveillance has the potential for complete coverage of Canadian territory and adjoining air and sea space."[3] Their use was seen as a continuation of current policy, as Canadian forces currently use communication satellites and will use the American Global Positioning Satellite for navigation.

Since the parliamentary report, Canadian Major-General R.W. Morton has written that "[a]s few as two satellites in polar, low-earth orbit could very significantly augment the current NORAD surveillance systems, whereas a constellation of ten or more satellites could provide an unprecedented North American and indeed a worldwide surveillance capability."[4] This system would provide the best all-weather, day/night coverage of Canadian territory, providing the ability to track airborne targets, cover maritime regions and enhance NORAD's warning and assessment function.[5] The two satellite system would compliment the NWS and the forward based CF-18's, while filling the void out over the Arctic and providing more time for crisis-management.[6]

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[3] Canada, Challenge and Commitment, p. 58.

[4] Major-General R.W. Morton, "Surveillance: A Fundamental Aspect of Deterrence," Canadian Defence Quarterly, Vol. 18 No. 5 (April, 1989), p. 14.

[5] Ibid, p. 11.

[6] Ibid, p. 14.

The linkage between space-based surveillance and terrestrial sovereignty appears to be a uniquely Canadian claim. No current legal principle exists in which a state can acquire territory or affirm sovereignty by surveillance methods outside, what would normally be considered its own territorial airspace.[7] Nevertheless there could be functional connection between the two, as Christol suggests "[r]emote sensing serves many functional purposes."[8] It would appear that space-based surveillance of a territory would affirm sovereignty in a functional sense, as a state could act upon the information provided to enforce its will within territorial limits already recognized as belonging to the state in question. As a means of claiming sovereignty over res nullius, the use of surveillance satellites could not be recognized, as other states could do the same for disputed territory. It is therefore important to distinguish between affirming sovereignty and claiming sovereignty. A claim would suggest a single act or series of acts, while an affirmation would constitute a continual process which a state uses to assert the basis of its claim. Affirmation therefore, is more closely associated to the political process of consolidation rather than the strict legal requirements associated with demonstrating a claim.

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[7] Generally, remote sensing has been described as a technology not a mission-oriented concept. See L.W. Morley, "International Organization for Remote Sensing: a Gordian Knot" Annals of Air and Space Law. Vol. II (1977), p. 427.

[8] Christol, "Remote Sensing and International Law," p. 387.

The sovereignty issue, although important for domestic political consumption as well as an international legal claim, like the submarine programme, is not as vital as the security aspects. As General Morton states, "[c]onfidence in our security would improve if we could 'see' over the pole."[9] More importantly however is the linkage to western security doctrine, as "vigilance" is a "key component" of deterrence.[10] It may therefore be more correct to stress the security aspects of the system, while the sovereignty issue, although necessary, is merely an adjunct to the overall determination of policy.

5.2.1 Technological and Financial Feasibility

Such surveillance satellites could be built in Canada drawing upon acquired Canadian expertise in remote sensing[11] and communication satellites, at a cost substantially less than current surveillance systems. The cost of a Canadian space-based radar system, developed and built in Canada, which could be deployed around 1992-95, may be around $1.5-2

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[9] Morton, "Surveillance: A Fundamental Aspect of Deterrence," p. 14.

[10] Ibid, p. 12.

[11] Canadian remote sensing technology uses electromagnetic radiation to record data of the environment from a distance. Space-based systems use radars, passive microwave scanners, "photographic cameras, retum-beam vidicon cameras, infra-red detectors and multispectral scanners." See Canada, Department of External Affairs, The PAXSAT Concept: The Application of Space-based Remote Sensing for Arms Control Verification, Verification Brochure No. 3 (Ottawa: Minister of Supply and Services, 1987), p. 12.

Billion, plus $250-300 Million annually to replace satellites.[12] John Honderich has placed this figure at $150 million a year for the first five years and a subsequent $350 million a year for the following ten years.[13] On the other hand, Canada's contribution to NORAD for yearly operations, procurement and construction was $664 million in 1984-85, while NORAD modernization is expected to total more than $7 billion. Canada's construction of the North Warning System will cost $600-700 million alone, while the yearly costs associated with the programme will be split 60/40 between the U.S. and Canada.[14] It has been reported that the "associated operations and maintenance contract at a steady state, will cost some $100 million annually, making it the largest undertaking of its kind ever tackled in Canada."[15] Canada, for reasons above, is committed to determine the affordability, feasibility and practicality of space-based radar, and if so determined will "devote over the next 15 years, significant resources to the establishment of a space-based surveillance system for North American Air

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[12] See David Cox, Trends in Continental Defence: A Canadian Perspective. (Ottawa: Canadian Institute for International Peace and Security, 1986), p. 41. And also Canadian Press, "Satellites Better Than Subs to Establish Sovereignty." Winnipeg Free Press (February 1, 1987) p.8. In this article Cox's scenario calls for "2 clusters of 4 satellites each."

[13] Honderich, p. 129.

[14] Canada, House of Commons, NORAD 1986, pp. 27-31.

[15] Colonel George E.C. Macdonald, "The Air Force Programme: Implementing the White Paper," Canadian Defence Quarterly, Vol. 17 No. 4 (Spring, 1988) p. 38.

Defence."[16]

5.2.1.1 Technology.

Canada's new White Paper on Defence called for an "imaginative use of technology."[17] General Manson states that "[a]ll parts of Canadian territory and its adjoining waters and airspace - including even under the Arctic ice - are now credible combat environments. They must somehow be defended with modern technology and against modern technology."[18] The technology for space-based radar is however already present in Canada.

Canada's ability to build her own satellites for military purposes in the Arctic, stems from Canadian involvement in the European Space Agency's (ESA) Earth Monitoring Satellite Programme (ERS-1) and Canada's own RADARSAT programme.[19] The RADARSAT programme was initiated by the Canadian Centre for Remote Sensing in 1981 and has become a Department of Energy, Mines and Resources programme. Its development is a

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[16] Canada, Challenge and Commitment, p. 59.

[17] Ibid. p. 55

[18] Manson, p. 5.

[19] RADARSAT also includes U.K. and U.S. participation. Frank Oberle, "Notes for remarks to the University of Manitoba Student Union Conference on Frontiers of Canada-U.S. Cooperation in Space," (Winnipeg, Man.: January, 30, 1987), p. 14. This is in keeping with the current international trend of spending a large portion of a countries space budget on international projects to "share the burden of high costs...[and] avoid wasteful duplication." Lydia Dotto, Canada in Space (Toronto: Irwin, 1987), p. 277.

direct result of Canada's involvement in ESA's ERS-1 project. The ERS-1 is based upon the French Spot Image design. It will use a Synthetic Aperture Radar (SAR) capable of penetrating darkness, fog and cloud cover. Canada joined the ERS-1 programme to participate in the planning and acquire the technological expertise to build SAR in Canada for its own RADARSAT project. Both ERS-1 and RADARSAT will provide Canada with the ability to monitor and classify Arctic ice flows and depths, winds, as well as her extended two hundred mile coastal zone. In the meantime, the White Paper suggests the use of "SAR in existing aircraft."[20] Canada's ERS-1 involvement has provided useful knowledge in developing ground stations and pre-processing equipment, and a near real-time processing for SAR. Canada will also benefit from SAR vessel detection algorithms for the automated detection of surface vessels. As a civilian project with international and commercial applications, RADARSAT will provide a "continuous, unimpeded monitoring of land and sea conditions, and will provide....the information needed for more efficient resource management, ice ocean monitoring and Arctic surveillance."[21]

As of January 1987, Canada had invested over $40 million in the programme which is expected to bring $75 million in

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[20] Ibid. p. 58.

[21] See government brochure for further details. Canada, Energy Mines and Resources, RADARSAT (Ottawa: Minister of Supply and Services, 1987).

benefits to Canada as a civilian satellite alone.[22] There are however constraints to the use of satellites for surveillance, such as, limited resolutions, sensor limitations, environmental and climatic concerns, spacecraft lifetime, data processing, cost and expertise and including interference and deception.[23] Nevertheless RADARSAT technology can overcome many of these obstacles.[24] The programme has also undergone a redesign so that it may be serviced in-space, or returned to earth by the shuttle.[25]

With a fine resolution of ten metres, the ability to perfect SAR technology for military purposes is a foregone conclusion.[26] For the prescribed role of "passive detection" as a means of surveillance, the current civilian standard of

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[22] As of January 1987, eight countries had expressed interest. See Oberle, p. 14. In total Canada will contribute $300 million to RADARSAT's $520 million price tag. See Dotto, p. 296.

[23] Canada, The PAXSAT Concept, pp. 17-18.

[24] See Floyd F. Sabin (ed.), Remote Sensing: Principles and Interpretation (New York: W.H. Freeman Company, 1987), Chapter 6 for SAR technology. pp.177-233.

[25] Lydia Dotto notes that "batteries, tape recorders and solar panels could be replaced, fuel tanks refilled and sensors updated....[and these] design changes expected to cost about CDN $40-million,... would double the satellites lifetime from five to ten years and increase the economic returns by about CDN $500-million." Dotto, p. 295.

[26] For instance, a French SPOT IMAGE satellite with a 10m resolution, if moved from its normal 500-1000km orbit to a 200km orbit, will improve its resolution to 3m without any technical improvements. See Ann M. Florini. "The Opening Skies - Third Party Imaging Satellites and U.S. Security," International Security, Vol. 13 No.2 (Fall, 1988), p. 95. Current resolution for U.S. military

ten metres resolution, initiated by France's SPOT IMAGE, may be all that is required by Canada. These needs may go beyond the ten metre limit and SAR technology since both air and maritime surveillance are required.[27] In fact, a ground resolution of 4.5m is required to detect aircraft, while .9m is needed to identify them.[28] Canada would not require a capability equal to that of the U.S. or Soviet Union, however, she may still wish to acquire technology that would compare with the heat-seeking capabilities of an American Teal Ruby infra-red surveillance satellite designed for launch in 1991 to detect bombers and cruise missiles from space. In fact, Canada is committed to a "five year research program on space-based radar for detection and tracking of aircraft and cruise missiles," and is part of the Allied research effort for TEAL RUBY.[29]

For the purpose of affirming sovereignty Canada would only require a passive system of detection and presumably early warning, not one capable of so accurately targeting

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reconnaissance satellites is believed to be measured in the few inches or centimetres.

[27] "Area surveillance imagery in resolution range 1-3m may be inferred as capable of providing precise or near-precise identification of most military targets, while close-look imagery in the resolution range of 0.1-0.5m would enable target description and analysis." K. Santhanam, "Use of Satellites in Crisis Monitoring," in Bhupendra Jasani (ed.), Outer Space - A New Dimension of the Arms Race (London: Taylor and Francis Ltd., 1982), pp. 268-269.

[28] Canada, The PAXSAT Concept, p. 13.

[29] Canada, Challenge and Commitment, p.59.

the intruders to launch defensive weapons as envisioned in the American SDI programme.[30] Such systems of passive detection may interest Canada in order to replace or complement the current inadequate, yet necessary ground-based surveillance offered by NORAD.[31] In order to do so, Canada and the U.S. have joined forces in a bilateral Aerospace Defence Advanced Technology Working Group to assess future needs and have been engaged in the North American Air Defence Modernization Programme.[32]

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[30] It is likely that these systems will be either corporate-fed or space-fed phased array radars, which will be amongst the largest spacecraft ever launched. See Morton, "Surveillance: A Fundamental aspect of Deterrence," p. 12.

[31] The evaluation of these systems and continental defence will have to be re-examined once new technologies such as transatmospheric vehicles become commonplace within the next 20 years. Currently the U.S. is developing its X-30 hypersonic test vehicle, capable of using a conventional runway for take off and landing, entering and maintaining orbit at speeds of Mach 25 or greater, and atmospheric flight of Mach 12. The Soviets, Japanese, British, Germans and French are all believed to be developing their own versions of the X-30. The Strategic Implications will be of an enormous consequence to continental defence. The hypersonic transatmospheric vehicle will be able to carry out "interdiction, reconnaissance, surveillance, and precision targeting and weapons guidance missions;...strategic bombing operations; and.... transport for strategic airlift missions." Plus a whole range of other military air and space operations. See United States, General Accounting Office. National Aero-Space Plane: A Technoloy Development and Demonstration Program to Build the X-30 (Washington, D.C.: April, 1988), p. 49.

5.3 FUTURE OF CANADIAN SURVEILLANCE.

The promotion of an independent Canadian system will likely be determined by the cost of currently proposed systems such as alternatives to the cancelled nuclear-powered submarine purchase and Canada's association, partnership or future relations with the United States in the sharing of continental defence. More specifically, the role of NORAD in continental defence and surveillance, and the direct linkages between the Air Defence Initiative (ADI) and the Strategic Defence Initiative (SDI) will ultimately determine the future path of Canada's military space and satellite surveillance programmes.

The fear that most Canadian policy-makers have is the eventual combining of NORAD and the U.S. Space Command through the SDI programme. Although Canada cannot become involved in SDI or a Ballistic Missile Defence (BMD) through NORAD without her approval, it is genuinely feared that if the U.S. develops a BMD system which will undoubtedly incorporate bomber and cruise defence with BMD into one entire system, Canada will be shut out of continental aerospace defence. Already this has occurred for space surveillance according to General Morton who states that "most space surveillance responsibilities have now been assumed by the

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See chapter six for a full discussion of future threats.

[32] Morton, "A Priority Task: North American Air defence Modernization," Canadian Defence Quarterly, (Winter, 1986/87).

United States Space Command and USAF Space Command."[33] As of now, Canada does "anticipate continuing participation with the United States in all forms of early warning and surveillance relevant to North American air defence, whether the means be ground, air or space-based."[34] The White Paper did however recognize the question of SDI and stressed the need for effective surveillance regardless of SDI. Nevertheless, the Paper did continue to stress that research into space activities will continue to relate to "security and arms control policies."[35] Canada maintains that she will pursue space-based and space-related surveillance systems with the U.S. since as a logical partnership exists in air defence, so does the same logic apply to space. It is likely that this partnership will not be passive for air-breathing threats, as Canada has participated in the active tracking of U.S. Cruise Missile tests.

The NORAD of the future may force Canada to commit to SDI or go it alone in Aerospace defence, otherwise the U.S. will maintain NORAD as a costly redundant system. As NORAD and the Space Command become closely integrated, Canada is likely to be offered a lesser role in continental defence, if not committed to SDI, since most of the information gathered

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[33] Morton, "Surveillance: A Fundamental Aspect of Deterrence," p. 16. He further adds that this may be overcome by Canada upgrading its St. Maragaret's Tracking Facility and becoming more involved with the U.S. in the cataloguing of space debris and objects.

[34] Canada, Challenge and Commitment, p. 59.

[35] Ibid.

will become vital to the survival of the U.S. BMD system.[36] Geographic proximity to the U.S. maintains Canada's strategic importance to American aerospace defence, however, technology will likely diminish Canada's role in sharing responsibility for continental defence. Canada it appears will only receive information concerning air defence from its NWS ground stations, which are inadequate for all of her surveillance needs. As a House of Commons Committee reviewing NORAD reported, Canadian personnel in NORAD will likely continue to be involved in the processing of space surveillance data. This space role will likely end with an improved U.S. posture through SDI and the closing of Canada's Baker-Nunn Satellite Tracking Camera at St. Margaret's N.B. which acted as a USAF targeting base for its ASATS. Canada's military role in space will be only a communications link from the North Warning System (NWS) Radar via its ANIK satellite to the regional command in North Bay. By the mid-1990's it is likely that the NWS will begin to be phased out by American space-based radars.[37]

Of the two options currently available to Canada, the first being less access to information from NORAD concerning its air defence and Arctic surveillance; and the second being a closer association with a combined American air

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[36] See United States, Congress, Office of Technology Assessment, Strategic Defences (Princeton: Princeton University Press, 1986). Such a system is likely to require the use of Canadian territory and Canadian support.

[37] Canada, House of Commons, NORAD 1986, p. 45.

defence and BMD in a proposed SDI programme, the first option becomes the most likely scenario if no other initiative is undertaken. Given Canada's stated commitment to her Arctic sovereignty and her willingness to develop space-based surveillance systems, a possible third option to acquire a space-based system independent of SDI, with the U.S., through an International Satellite Monitoring Agency (ISMA), NATO, or possibly alone, should be developed. The independent route may provide the best alternative since Canada does need to build its own military space programme to solve concerns over a currently inadequate air defence arrangement with the U.S. regardless of the future links between NORAD and SDI.[38] Otherwise Canada's only other alternative may be to enter into an agreement with the U.S. to build a joint space-based surveillance system and enhance any future U.S. BMD system. An all-encompassing aerospace defence as part of SDI would mean a greater commitment to continental defence and even closer ties to U.S. strategic nuclear doctrine for Canada.

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[38] NORAD's NWS does not meet Canadian surveillance requirements. There is only a partial fulfillment of Arctic surveillance, as much of the Canadian Arctic territory is without air surveillance and defence capabilities. The new NWS only meets the U.S. and southern Canada's defence needs. General Beattie suggests that Canada move the NWS to the "outer edge of the Archipelago...That way it would define and reinforce our perceived limits of what Canada is and where it ends, and it would give us warning out over the Arctic Ocean." Canada, Senate. No.15, p.20. Currently the radar range is only 400km and no control over aircraft exists until south of the Northwest passage. Ibid. p.24. However, the NWS will have "interspersed short range gap-filler radars which will lower the detection floor." Morton, "Surveillance: A Fundamental Aspect of Deterrence," p. 12.

It is questionable, since Canada shares its defence with the U.S. through many mutual security agreements, that a complete divorce from the U.S. and SDI could be accomplished with Canada establishing her own independent system. It is more than likely that as far as the Soviets would be concerned, Canadian involvement in strategic reconnaissance may violate the ABM treaty if the U.S. can gain access to information from Canadian satellites which have BMD targeting capabilities. SDI will undoubtedly violate the ABM treaty, however if the two superpowers avoid deployment, Canada may be compelled not to proceed with its plans since it is an associated third party to the treaty.

Canada is currently pursuing an active civilian space programme in which many surveillance needs may be met, without violating any treaties, in order to provide adequate surveillance of her northern regions.[39] Nevertheless, the House of Commons Committee concluded that "without a vigorous military component in this space program, Canada stands to deal itself out of NORAD activities in which it has heretofore been involved."[40] Such a Canadian military space programme would be used for the surveillance of Canada's airspace and oceans, search and rescue, communications,

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[39] Canada currently has developed or is in the process of developing a civilian space-based surveillance and communication satellite system capable of providing search and rescue, navigational assistance, meteorological information, ocean monitoring and arms control verification which could be used in a revived ISMA (see chapter VI).

[40] Canada, House of Commons, NORAD 1986, P. 79.

navigation and as a complement to NORAD systems, thus gaining air defence information but acquiring its own space-based system and remaining relatively free from any U.S. BMD system. It is possible that the military component could also be associated with Canadian civilian agencies through the coordination of the new Canadian Space Agency,[41] in order to lower cost and attempt to prevent a divergence in policy similar to the situation between U.S. civilian and military space authorities.[42]

Although the appearance of Canada's commitment to a military space programme has been questioned there does not appear to be any hesitation in pursuing one vigorously if required. According to the recent White Paper, "[s]pace is not and should not be the exclusive preserve of the superpowers. We are prepared to use it in pursuit of defence and other national objectives and in conformity with our international obligations."[43] It is difficult to speculate how-

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[41] Montreal was awarded the site for the new Agency. See "Space Agency Lands in Montreal," Winnipeg Free Press. (May 2, 1989) pp.1,4.

[42] See Walter A. Mcdougall, the Heavens and the Earth (New York: Basic Books, Inc., 1985). Mcdougall refers to this throughout his book. See also Paul B. Stares, The Militarization of Space: U.S. Policy, 1945-1984 (Ithica, New York: Cornell University Press, 1985). and William J. Durch, National Interests and the Military Use of Space (Cambridge, Mass.: Ballinger, 1984). All authors specifically refer to the attempts by the U.S. military to monopolize the U.S. space programme. Although this approach has been for the most part unsuccessful, NASA has been under fire since the Challenger accident but has been recovering slowly despite Department of National Defense and some Congressional efforts to minimize her role.

[43] Canada, Challenge and Commitment, p. 59.

ever, whether or not Canada could maintain her aerospace defence commitments through NORAD and acquire its own passive space-based detection system while the U.S. seeks an active system. Such a reorganization of NORAD may make Canadian involvement in space-based radars difficult since Canada shares most of its defence development and production with the U.S. It is unlikely that Canada's continental air defence arrangements with the U.S. could force Canada to accept an active BMD role without first renegotiating the NORAD agreement. Nevertheless, Canada would ultimately be tied to an American BMD even if it agreed to a missile surveillance role with NORAD.[44]

The demise of NORAD as an aerospace defence with only passive capabilities would force Canada to commit to either an active BMD through NORAD or place the monitoring of Canadian airspace in the trust of the U.S. intelligence community. This of course could only occur if Canada fails to commit to a long term independent surveillance programme of its own. Since the maintenance of the NWS and construction of more ground stations at higher latitudes to meet Canadian requirements would not be feasible without the support of the U.S., a cheaper, diverse, efficient and effective space-based system seems to be Canada's only genuine alternative if it wishes to remain absent from any U.S. BMD programme

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[44] The combining of air and space defence makes good financial sense for the Americans since space-based radars and TEAL RUBY heat-seeking sensor satellites will make the NWS obsolete and Canadian involvement in NORAD minimal.

and still provide adequate, if not substantial, air, sea and land surveillance of all of Canada's territory.

Canada must remain at the forefront of space technology with or without being involved in an American space-based BMD, otherwise, the failure to do so will outweigh the current and projected costs of a passive military space programme and an active civilian programme. Space has already become a vital arena for Canadian security interests. Canada can no longer delay utilizing such a valuable resource to protect those interests. A decision upon Canada's future space-based radar system will be made within the next five to ten years according to government sources. "Failure to meet this challenge could mean forfeiting the responsibility for surveillance of Canadian airspace to the United States."[45] These decisions must however be made with care as Canada and the U.S. share in many civilian cooperative space activities.[46] Any fallout over military space policy and NORAD may have negative effects upon Canada's efforts in telecommunications, remote sensing, launches, the purchase of remote manipulator systems and the space station.

Given the many defence and military space related agreements between Canada and the U.S.,[47] Canada's relationship

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[45] Canada, Challenge and Commitment, p. 59

[46] See P.P.C. Haanappel, "Co-operation Between Canada and the United States in Civilian Space Activities," Annals of Air and Space Law, Vol. XII (1987), pp. 235-244.

[47] See Dewitt and Kirton, pp. 313-354 for further details.

to SDI may already be predetermined. However the results may not be as catastrophic since Canadian space policy has been able to avoid such intrusive linkages. According to Dewitt and Kirton a major shift began in Canadian space policy after the launch of Sputnik in 1957, whose "broader impact was felt in a steady reduction of the military orientation and United States presence in Canada's bilateral programs within North America."[48] They further argue that the development of a "defined planned overall policy further led Canada towards unilateral approaches to ESA and Japan, in which consultation with the United States was confined to those diplomatic discussions required to gauge American reaction and ensure an effective implementation."[49] Canada has been able to gain control over facilities within its borders and develop stronger relationships with other space powers. This may well provide Canada with enough diversity in its policy options to reject any linkages between her civilian and military space policies with continued U.S. persistence in SDI.

The following chapter discusses the legitimacy of satellite reconnaissance, the current threats to this regime and how Canada might contribute to the regime and have its satellites protected and recognized as an affirmation of her sovereignty.

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[48] Ibid., p. 324.

[49] Ibid. p. 353.

Chapter VI

SATELLITE LEGITIMACY: NEW POLICY CONSIDERATIONS

6.1 INTRODUCTION

Unlike anti-aircraft systems plotted against high altitude reconnaissance aircraft, the slow development of anti-satellite weapons (ASATS) allowed the United States and the Soviet Union time to develop restraints against a large military build-up in outer space, and time to legitimize satellite reconnaissance.[1] The intent of this chapter is to describe the process of reconnaissance satellite legitimization, discuss current and future challenges to this regime,[2] and provide policy options for Canada in her pursuit to use surveillance satellites to affirm her Arctic sovereignty.

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[1] See Gerald M. Steinberg. Satellite Reconnaissance: The Role of Informal Bargaining (New York: Praeger, 1983), Chapters 3 and 4. Also see Stares' section "The Legitimization of U.S. Satellite Reconnaissance," in Stares, The Militarization of Space, Chapter 4, pp.62-71. Throughout this section, I draw upon the general view of both authors that the process was informal and based upon reciprocal activities.

[2] In this instance I refer to the term 'regime' as a "quasi-legal method of regulating interactions... whether explicitly or tacitly... [being] 'sets of implicit or explicit principles, norms, rules and decision-making procedures around which actors' expectations converge in a given area of international relations.'" Kegley and Wittkopf, World Politics, pp. 504-505.

6.2 CONSTRUCTING THE RECONNAISSANCE SATELLITE REGIME

The important role of satellite reconnaissance became instantly recognized during the Cuban Missile Crisis of October 1962.[3] Since that time, their widespread use, technological growth, legitimization and tacit acceptance by the two superpowers and their allies has tempered much of the fear and tension of the previous Cold War period and has led to a greater mutual understanding and commitment to international stability.[4] Nevertheless, their legitimization was a tenuous exercise in informal bargaining, and at times placed great strain upon superpower and east-west relations.

Initially, the Soviets were adamant about preventing the Americans from using satellites for reconnaissance over their territory. After rejecting Eisenhowers's "Open Skies" policy in 1955, and later shooting down an American U2 reconnaissance aircraft during an overflight of the Soviet Union in 1960, the Soviets set out to use all legal, diplomatic and technical means available to also prevent American "spying" from outer space. Not until the Soviets launched their own satellite in October of 1962, did they realize the importance of satellite reconnaissance as a means to enhance

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[3] The Americans were able to accurately detect a Soviet missile build-up upon the Island of Cuba, while the Soviets were able to substantiate American resolve to use force if necessary to remove the missile.

[4] This point may be debatable, since improvements to warfighting capabilities, such as strategic targeting and force multiplication or enablement have been made. At worst, satellite reconnaissance is a mixed blessing.

both intelligence-gathering and war-fighting capabilities.

The Soviets began to shift emphasis from preventing satellite use for reconnaissance purposes to a more favourable position of seeking their legitimacy, due to positive American activities and responses to Soviet concerns.[5] These positive American signals, namely, avoiding embarrassment of the Soviets through indiscriminate revelations of Soviet activities or American capabilities, had the functional effect of protecting U.S. satellites. The slow development of Soviet and American ASAT capabilities coincided with both superpowers reciprocating their activities and policies for reconnaissance satellite use and information dissemination. This tacit form of agreement, through informal bargaining, led to the international acceptance of satellite reconnaissance as a legitimate form of peacetime surveillance.[6]

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[5] This strategy has progressed to the point where it is considered "that remote sensing from space which provides data on military capabilities is a peaceful, lawful, and stabilizing space activity." Christol, "Remote Sensing and International Law" p.379.

[6] The only formal reference to satellite reconnaissance came in the 1972 SALT I accord which recognized "National Technical Means of Verification" for arms control. These means are considered to be photographic reconnaissance satellites, aircraft with radars and optical based systems as well as ground-based radars and antennas for telemetry. The international acceptance of satellite reconnaissance does not have the approval of all states, since some developing nations who are non-space powers object to their territory being "sensed" from outer space. This however is seen not as prejudicial by those who claim customary international law applies to the legitimacy of satellite reconnaissance. For the Text of the 1972 ABM Treaty, Its Agreed Interpretations, and its 1976 Protocol, see OTA, Strategic Defenses. pp.272-282.

Much of the credit for protecting American satellites through tacit acceptance can be attributed to James Killian, Eisenhowers first Science advisor and Head of the Foreign Intelligence Advisory Board, who believed that "U.S. actions and behaviour could decrease the probability of Soviet interference, or at least delay it."[7] He also suggested adopting the traditional low profile of intelligence collection and dissemination in an attempt to avoid embarrassing the Soviets. This low profile approach was in direct response to the U2 incident and later resulted in the 'blackening' of U.S. satellite reconnaissance. The policy of preventing public disclosure of information and capabilities would conceal American methods of intelligence gathering, increase Presidential control and manoeuverability during crises, avoid Soviet embarrassment and hostile reactions, as well as, minimizing the concerns from other nations. The 'blackout' policy also concealed domestic inter-service rivalry, financial expenditures for satellites, arms control negotiations, and attempted to prevent another 'Vienna-like' summit failure.

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[7] Steinberg, p.30.

6.3 CHALLENGES TO THE REGIME

As the previous section has demonstrated, maintaining tight control over the dissemination of information gathered through satellite reconnaissance in order to conceal and protect U.S. capabilities, has been essentially U.S. policy since the outset of the satellite era. The emergence of third party imaging satellites, like Canada's proposed RADARSAT or her potential for an independent military surveillance capability, has provided a great deal of concern for both the Americans and Soviets, requiring a re-examination and re-evaluation of their dissemination policies. In fact, France's SPOT IMAGE, Canada's RADARSAT, ESA's ERS-1, plus Indian, Chinese and Japanese efforts in remote sensing, and even America's civilian LANDSAT,[8] has effectively broken the superpowers duopoly over military satellite imaging technology and information gathering.

Both superpowers already have new concerns regarding their peacetime foreign relations, military activities, crisis management and wartime operations due to the emergence of third party satellites with commercial applications and countless military and foreign policy repercussions.[9] As

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[8] The United States supports freedom of collection and dissemination of civilian satellite information. Ivan A. Vlasic, "The Evolution of the International Code of Conduct to Govern remote Sensing by Satellites: Progress Report," Annals of Air and Space Law, Vol. II (1978), p. 563.

[9] Much of this discussion draws upon the thesis presented by Ann Florini who suggests this and other possibilities in her article concerning third party satellite activities. See Florini, pp. 91-123 for full account.

John M. Logsdon and Tracie Monk suggest, the "dual use characteristics" of many civilian remote sensing satellites have untold national security aspects.[10] Currently there exists a dual purpose trend in satellite technology which incorporates "sensors for both military and...civilian missions into the same satellites."[11] The further proliferation of satellite technology and information will result in new security measures for military facilities and may lessen the impact that satellite reconnaissance has had upon international stability.[12] Third party satellites may threaten other national security interests by allowing many more nations to detect in advance, invasions or hostage rescue attempts. Such proliferation is also likely to affect American and NATO negotiation flexibility.

Questions of misinterpretation or disinformation also arise. Unrestricted media use of such capabilities may seriously influence events on a much greater scale than they now do for hostage takings or terrorist incidents. The media may not have the expertise in analyzing data and could lead

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[10] John M. Logsdon and Tracie Monk. "Remote Sensing from Space: A Continuing Legal and Policy Issue," Annals of Air and Space Law, Vol, VIII (1983), p. 422.

[11] Elisabeth Mann Borgese, "Towards a World Space Organization," Points of View, Canadian Institute for International Peace and Security. Number 5, (November,1987).

[12] The HIDE factor can be increased by "disruptive painting, tonal blending and installation of dummy facilities and equipment," nevertheless, some satellites can detect camouflage and deception techniques. Santhanam in Jasani, p. 267. Other active counter-measures include, electronic jamming, spoofing, blinding or destruction by ASATS.

to disastrous effects. For example, if the technology were available to the media during the Cuban Missile Crisis, contradicting data analysis could have inadvertently refuted American claims, causing domestic turmoil and fueling Soviet and American anxieties.

The proliferation of satellite technology and information places at risk many sensitive activities of the two superpowers and may also disrupt security alliances. Information which is properly managed has been proven to reduce fear and tension, nevertheless, improved European capabilities may lessen their dependence upon the U.S. intelligence community to assess the Soviet threat, and could lead to an eventual decline of American influence in Europe. In the same way Canadian surveillance capabilities could alter current continental defence sharing-agreements. Regional arms control may be possible, thus reducing American influence in Middle Eastern, Asian, African, European and Central American peace negotiations. Such challenges are of concern to both superpowers and their allies, as change in the dissemination policies may not necessarily result in beneficial change to alliances.

In order to adequately respond to the emergence and challenges of third party imaging satellites, the United States has begun to re-evaluate its current policy of restricting the dissemination of military satellite information in order to preserve the current satellite regime. Many policy considerations have been examined over the years, such as,

1. allowing the complete and unfettered free flow of information, thus providing the world with complete knowledge of U.S. reconnaissance information and capabilities;
2. the negotiation, through international treaty, restraints upon the dissemination of critical information, by organizing current and future global satellite monitoring capabilities through an International Satellite Monitoring Agency (ISMA) or World Space Organization; or
3. improving all active counter-measures against such satellites.

The first and third options appear to be the least likely scenario for a peaceful solution to maintaining the present reconnaissance satellite regime of non-interference and discrete dissemination of information. By providing open and unrestricted use of satellite information, and by making U.S. capabilities known world wide, the U.S. would be jeopardizing its own security, by telling the enemy all it knows and all it can know. More importantly, the first option would break the tacit agreement between the superpowers over the use of such information. By adopting the third option of active counter-measures during peacetime, U.S. action would be viewed as aggressively violating the tacit agreement against such activity, blatantly destroying years of satellite legitimization. By initiating the idea that such

peacetime surveillance techniques were no longer legitimate, the U.S. would jeopardize the verification of numerous arms control treaties, as well as violate the 1967 Outer Space Treaty on Peaceful Uses.[13]

The best possible solution would be for Canada to negotiate, or influence the United States to negotiate or support the organization of third party satellites into a single agency or organization, which would limit the resolution upon commercial satellites and manage the dissemination of other vital and strategic information. Since other nations, like Canada or France, may encounter security concerns similar to those faced by the U.S. and the Soviet Union, they may restrict the dissemination of information themselves. Such reciprocal activities may lead to an informally bargained functional restraint upon the proliferation of satellite information. Recent Soviet proposals making the state responsible for commercial dissemination of information, although seen as restrictive by American entrepreneurs, may be part of the answer. This however may be too much to hope for, since the spread of satellite technology has already made it difficult to restrain the open dissemination of strategic information through these means. The use of satellites to view the Soviet Kola Peninsula and verify attacks during the Iran-Iraq War, as well as the Chernobyl acci-

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[13] See Christol, The Modern International Law of Outer Space, pp. 851-857, for the text of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and other Celestial Bodies, January 27,1967.

dent[14] has had negative responses by those parties involved. The U.S. publication of satellite pictures of Chernobyl inadvertently provided the Soviets and the rest of the world with the degree of U.S. reconnaissance capabilities. By allowing more nations or any unrestrained media organization to freely display satellite information, however analyzed, could be harmful to international security. If on the other hand such information was properly organized, analyzed through reputable means and disseminated with care, it could have positive effects. Canada's recent support for the new 'Open Skies' proposal will add considerable weight to this argument.[15] The 'Open Skies' discussions may eventually lead to proposals for satellite reconnaissance similar to those already undertaken for regular air reconnaissance missions of each alliance's own territory.

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[14] Civilian satellites have also shown Soviet SA-5 missile sites in Libya, under ice launch tests of Soviet SLBM's, Soviet space shuttle facilities at Tyuratam and the Iraqi chemical weapons plant. Canada, The PAXSAT Concept, p. 14.

[15] See "Soviets want changes to proposal by Canada for surveillance flights," Globe and Mail. (January 9, 1990). "Open skies and open secrets, NATO and Warsaw Pact overflights will further the cause of detente," and "Sharing information is the next step," Globe and Mail. (January 23, 1990) p.A7., also "U.S., Soviet Differences Could Prevent Planned Signing of Open Skies Treaty," Aviation Week and Space Technology. (April 21, 1990) pp.41-43., and "Soviet stance clouds Open Skies," Globe and Mail. (April 27, 1990) p.A7.

6.3.1 Absence of Formal Agreement

The proposal by the Government of France at the First United Nations General Assembly Special Session on Disarmament in 1978 to establish an International Satellite Monitoring Agency (ISMA), may accomplish the second policy option of negotiated restraints upon dissemination, providing the have-not states with similar information as the haves, and may be the best environment underwhich Canada may have her satellites accepted and protected.

Both the Soviets and Americans strongly opposed the proposal at the time, nevertheless, given the changes in east-west relations, the current cooperative response to arms reduction negotiations and other confidence-building measures, now may be the time for them to reconsider and for nations like Canada to help them realize the benefits. ISMA would observe the implementation of international disarmament and security agreements as a specialized U.N. agency controlled by the General Assembly or Security Council; or as an independent organization. ISMA would have the ability to "monitor compliance with arms control agreements, and to keep a close eye on global trouble spots and provide early warning of impending crisis."[16] It could also be used to help settle disputes between states and assist the U.N. in its peacekeeping role, making the dissemination of information about conflicts like the Iran-Iraq war much more pala-

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[16] Florini, p. 114.

table to the parties concerned than if by some unrelated third party. ISMA could also make the negotiation of treaties much easier via a multi-layered verification process of satellites and collateral information.[17]

As proposed, ISMA would provide information in the form of factual reports, based upon the analysis of raw data, by various teams, even if information were inconsistent or contradictory. Access could be given to all U.N. members or only ISMA members, the Security Council or only those states directly involved in a dispute or treaty. Such an agency has been found to be technically, financially and legally feasible,[18] although probably not viable. In fact the lack of superpower consent, based upon the possible revelation of the most guarded 'National Technical Means,' threats to national security, and cost are reported to exceed the annual budget of the entire U.N. These factors are most often cited as the major impediments.[19]

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[17] The Canadian Government is currently working toward this end, regardless of the ISMA outcome. See Canada, External Affairs, "Verification Research: Canada's Verification Research Program," Verification Brochure No. 3. (Ottawa: Minister of Supply and Service, 1987).

[18] See M. Abdel-Hady and A. Sadek, "Verification using satellites, feasibility of an international or multinational agency," in Jasani (ed). The cost could be formidable however, without U.S. support since the value of the U.S. technical intelligence system is reportedly $100 billion.

[19] Canada, The PAXSAT Concept, pp. 37-38.

Political restrictions seem to be the only true impediments toward creation of ISMA, since revisions to ISMA planning could be made, if so desired. American opposition toward ISMA is based upon the technical improvements it would provide to Soviet capabilities and the vital information, however restricted, which could be accessed by America's adversaries. The U.S. also objected since the proposed agency may not be objective in its evaluation of legitimate national security concerns. The U.S. is also aware that the interpretation of data can also be difficult, and requires the acquisition of collateral information which the agency may not be able to acquire nor adequately analyze. American objections were based upon the effectiveness of the organization since no evidence, other than what may have been the case in October 1962, suggests that satellite reconnaissance has prohibited the outbreak of hostilities.[20] It may even be possible that more information may lead to conflict enlargement. Nevertheless, under a properly supervised international organization these difficulties may be overcome. It may not be a perfect system nor meet all the requirements, nonetheless, it would certainly be unwise for the United States to leave the proliferation of satellite technology and

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[20] These objections went further as the U.S. claimed that ISMA was "neither feasible for the foreseeable future," and had "serious technical problems." It was also claimed that it was "unrealistic," would lead to "unreasonable disputes," and "weakening rather than strengthening support for the disarmament process." Nicolas Mateesco Matte, "International Verification Procedures: Past and Future Prospects," Annals of Air and Space Law, Vol. XI (1986), p. 246.

information unorganized. It would be equally unwise for Canada to commit to an independent satellite surveillance programme if such a programme would contribute to, or find itself in, an environment where the use of satellites for surveillance was unacceptable.[21]

Since the defeat of the ISMA concept upon the floor of the U.N. General Assembly, Canada has proposed the idea of PAXSATS,[22] which would use existing and future versions of RADARSAT to verify only multilateral and not bilateral treaties, thus excluding the two superpowers' bilateral agreements. Such concepts as ISMA or PAXSATS are in Canada's and the United States' best interests, given the rise of third party satellite proliferation and the threat of instability to the regime. The random and unorganized development of such technologies by the various nations of the world could lead to instability caused by a tendency to use them for offensive military applications, or to subvert current superpower verification. Canada considers that "[t]he

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[21] Canadian ground-based surveillance radars also depend upon the sanctity of the space environment as the NWS delivers its detection data to its command centres via satellite. Morton, "Surveillance: A Fundemental Aspect of Deterrence," p. 12.

[22] The term 'PAXSAT' uses the latin pax meaning peace. The PAXSAT concept would require the use of two different types of satellites. PAXSAT-A would be used for space to space surveillance while PAXSAT-B would use space to ground technology. Its purpose would be to pool the resources of the many non-superpower space-faring nations, although not excluding superpower involvement. The satellites would be used for treaty-specific verification in regional arms control, such as in the European context to enhance security and establish further confidence measures. See Canada, The PAXSAT Concept.

PAXSAT concept in no way impinges upon the critical role played by these systems."[23] This is an important requirement of Canadian policy, as V.S. Vereshchetin suggests, "[f]reedom of space should not be used as a pretext for violating sovereign rights on earth."[24]

The Soviet Union has also made a subsequent proposal resulting from the ISMA concept. Soviet Foreign Minister Eduard Shevardnadze called for the establishment of a World Space Organization at the U.N. General Assembly on September 24, 1985.[25] As a primary function, it would "facilitate the necessary monitoring of compliance with agreements which have already been concluded or will be concluded with a view to preventing an arms race in outer space."[26] It was not certain whether this organization would assume the functions of the ISMA proposal. Nevertheless, the U.N. Secretary-General's report stressed the similarity and the more comprehensive nature of the WSO. The functions were quite broad, including an independent legal status, dispute settlement, three-tiered membership and control and development of space activities.[27] Such an organization, may be too sweeping or restrictive for Canadian or Western purposes. Certainly for

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[23] Ibid. p.13.

[24] V.S. Vereshchetin, "On the Principle of State Sovereignty in International Space Law," Annals of Air and Space Law, Vol. II (1977), p. 429.

[25] See Borgese article for full account.

[26] Borgese, p. 4.

[27] Ibid. pp. 5-7.

the United States, the proposed organization is designed to restrain SDI development. Nevertheless, the Soviets may be willing to adopt a less stringent proposal as an adjunct to 'Open Skies.' Canada could benefit through the use of its PAXSAT-A technology to monitor and verify a comprehensive outer space weapons ban. As Elisabeth Mann Borgese contends, Canada could also strengthen the United Nations by "assuming leadership in building a synthesis between the various proposals now before the United Nations...."[28] This would be in keeping with Canada's traditional remote sensing policy "to promote an incremental, pluralistic approach that included bilateral, limited multilateral, and ultimately international ventures."[29] It also reflects the "growing compatibility between the Canadian and the European approaches to space activity as a whole."[30]

ISMA or the World Space Organization, if their functions were appropriately redefined, could be used by both the United States and Canada to build a healthy civilian satellite component, and restrict the independent dissemination of strategic information. Using the information available through an ISMA-like organization, the U.S. or Canada could make information public, which they would normally like to make public but were restricted from doing so due to diplomatic or other political considerations. American and Cana-

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[28] Ibid., p.7.

[29] Dewitt and Kirton, p.337.

[30] Ibid. p.346.

dian involvement in such an organization would also provide contracts for their firms and prevent European and Asian domination, while gaining political approval and influence amongst the developing nations for allowing equal access to information,[31] lessening the discrimination and providing technology for other global concerns such as the environment.

Decisions should not be made in haste however, as there has been an over-reaction of the developing nations concerning the possible harm of remote sensing to their national interests as well as the benefits it would bring them.[32] Nevertheless, Canada should not abandon or dismiss these arguments, as remote sensing does require special "regulation to avoid information on foreign countries' resources being used to the detriment of their sovereign rights."[33]

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[31] This would be in keeping with "the traditional American concern with rapid, depoliticized international dissemination of scientific information." Dewitt and Kirton, p.338. Canada has already attempted to attract RADARSAT customers, not through PAXSAT, but the U.S./international Space Station. This was a deliberate attempt to secure RADARSAT funding by attaching the programme to the more popular and costly space station. The linkage however was suspect as RADARSAT operates in a totally different orbit at a higher altitude. RADARSAT lost out in the funding war with the space station. RADARSAT thus became "dependent for survival largely on its ability to attract a new coalition of supporters, including provincial governments, the private sector and possibly international partners." Dotto, p. 280.

[32] See N. Jasentuliyana. "Civilian and Military Space Activities: A Third World Perspective," Annals of Air and Space Law, Vol. XII (1987), p. 249.

[33] Vereshchetin, "On the Principles of States Sovereignty in International Space Law," Annals of Air and Space Law, Vol. II (1977), p. 435. See also Vlasic, who claims that

Canada should continue to seek compromise between the "restrictionist" states and the "open skies" states,[34] through such bodies as the U.N. Committee on the Peaceful Uses of Outer Space (UNCOPOUS). Whichever means Canada selects, she should continue "to reduce the oligopolistic features," of the current regime to allow greater global participation in remote sensing, similar to her efforts with the American civilian LANDSAT system.[35]

6.3.2 Anti-satellite Weapons and SDI

6.3.2.1 ASATS

The acquisition of ASATs by the superpowers, and other powers, provide the greatest current threat to Canada's proposed surveillance satellites. The current incentives for both the Soviets and Americans to acquire ASAT weapons, even though both accept the use of each others satellites (notably for verification), are two-fold. First, the ability to retaliate in kind for attacks upon satellites and the prevention of military imbalances; and second, the ability to forestall and counter the growing use of satellites for military purposes such as force enablers and multipliers. In

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efforts have been falling behind technology. This is true even today as technology continues to make regulation of remote sensing a difficult task.

[34] The term "Open Skies" is used here to indicate those states who support the free exchange of remote sensing satellite data. It does not refer to NATO or Warsaw Pact states in particular.

[35] Dewitt and Kirton, p.343.

otherwords, both the Soviets and Americans have predictablly attempted to counter, through the threat of force, military systems which they find to threaten their existing security. Since the military use of space has both positive and negative effects upon stability, it may be more logical to mutually reduce the military threat from space, thus reducing the need to acquire ASAT weapons. The superpower's asymmetrical dependency upon space systems may make this scenario less likely however.[36]

Regardless of the asymmetry involved, both the Soviet Union and the United States possess numerous satellites for military purposes. The use of satellites in reconnaissance, surveillance, communications, navigation, meteorology and geodesy; for early warning, command and control, intelligence gathering, targeting, retaliation, damage assessment and force multiplication and enablement are all, to a certain degree, necessary for maintaining stability and security through mutual deterrence. Nonetheless, the threats associated with enhanced war-fighting capabilities through satellite use, if asymmetrical, can drive the development of ASAT weapons and destabilize deterrence, regardless of their value to maintaining peace. Canada should avoid acquiring surveillance satellites with these capabilities.

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[36] It is generally regarded throughout the literature that the U.S. military relies upon its space systems to a much greater extent than the Soviet Union.

The Soviet ASAT weapon[37] is a result, in part, of the asymmetry between U.S. and Soviet dependence upon satellites. The establishment of Trans-Atmospheric Vehicles (TAV) reconnaissance by the U.S. (see next section), will increase the Soviet desire to pursue ASAT development, and may further jeopardize the current regime, much to the detriment of Canada's policy objectives. At present, it is uncertain however, if the current U.S. congressional moratorium on testing of ASATS has jeopardized U.S. security, since the effectiveness of countering a Soviet attack upon U.S. satellites with their own ASAT may have little military benefit other than avoiding escalation to the next level of conflict.

Many current Soviet and American weapons systems can be adapted for ASAT use or have inherent ASAT capabilities such as the Soviet ABM interceptor around Moscow. In fact as William B. Wirin suggests, "almost anything can be used as a weapon. Any effort to define 'weapons' ultimately hinges on the way in which an object or instrument is used rather than on the nature or physical characteristics of the object or instrument itself."[38] Future ASATS will undoubtably be

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[37] The Soviet co-orbital interceptor uses a radar sensor and a pellet-type warhead which can be used to attack all lower altitude satellites. The U.S. ASAT, successfully tested but cancelled, used a two-stage miniature homing vehicle (MHV) launched from an USAF F-15 Eagle Jet Fighter. The propulsion was adapted from a SRAM missile and the fourth stage from a Scout rocket. The ASAT was launched at a high altitude in a direct ascent toward its target in low earth orbit where the MHV was deployed.

[38] William B. Wirin, "Using Outer Space to Promote Peace"

developed as a part of any SDI or BMD system. Both the Soviets and Americans are currently researching and developing laser, particle beam, radio-frequency, and kinetic energy technologies for ASAT or BMD use. Besides these destructive ASAT concepts, many non-destructive and difficult to defend against ASAT capabilities exist. These include electronic jamming, spoofing and blinding techniques. The uninhibited development of such technologies for ASAT use are considered to be "escalatory, costly and unstable during crises,"[39] and currently require restraints placed upon their possession and use through formal or informal arms control.

ASAT weapons should be eliminated through treaty in order to maintain stability. Unlike anti-aircraft or anti-ship weapons which defend against direct attacks, ASAT weapons inherently jeopardize the verification of arms control treaties and the stability associated with early warning and other vital intelligence gathering. Such weapons will of course threaten all, including Canadian, satellites. Although the ability to enhance terrestrial-based military forces by using enhanced resolution remote sensing satellites does exist, no current space-based direct weapons threat is believed to be deployed by any nation. Therefore

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Presented to the 30th Colloquium on the Law of Outer Space, held by the International Institute of Space Law in Conjunction with the XXXVIII International Astronautical Federation. (Brighton: United Kingdom, October 10-17, 1987). p. 3.

[39] See Paul B. Stares, "Space and U.S. National Security" in William J. Durch, National Interests and the Military Use of Space (Cambridge, Mass.: Ballinger, 1984) p. 55.

a ban upon space-based weapons would logically follow any ban upon ASATs, and should be pursued by Canada in order to better protect any possible future passive space-based system of her own. Direct terrestrial threats can still be dealt with terrestrially, thus securing the stability afforded by passive space systems.

6.3.2.2 Orbital Debris

Related to the ASAT issue and SDI are the effects of orbital debris and nuclear-power sources which are of vital concern to the security of satellites. Currently there is an estimated 10,000 pieces of orbital debris,[40] of which only half can be effectively monitored. With the testing and deployment of a BMD system, the threat of increasing amounts of debris exists, thus increasing the hazards to spacecraft and the cost of liability coverage for commercial vehicles. The debris problem will continue to exist due to an increased number of launches and in-space testing of weapons. The greater number of space objects, debris, pollutants and contaminants, the greater risk to both commercial and

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[40] The term debris may not only refer to objects, it may also be regarded as a pollutant or contaminant. These may "be the conduct of nuclear tests in space, the interfering use by many broadcast entities with a given radio spectrum, the attempt by several States to place several space objects in a given geo-stationary orbital position at the same time, the use of electric impulses employed by an interceptor-type satellite against another space object, the continued and unregulated use of high energy laser beams, possible harms from high-frequency microwave emissions, the introduction of disease-laden objects into the space environment, among others." Christol, The Modern International Law of Outer Space p.131.

military space activities. The high orbital velocities and increased number of objects makes tracking much more difficult and collision catastrophic. This makes the utility of space-based weapons less practical as they must cope with a wide range of possible hazards as well as their own creation of the same. This same logic will apply to space-based commercial and other military assets. Nevertheless, the desire of the U.S. to place components of a BMD system in space is likely to provide the incentives to overcome these problems. Canada should be concerned for the safety of her own satellites and pursue a similar goal of cleaning up earth's orbits, although her motivation for doing so may differ.

Responsibility for debris is a major hurdle yet to be overcome, since the right of states to collect it is at issue due to the fact that states retain their sovereignty over their objects launched into space. Settlement of salvage rights will be in Canada's interest since this may allow commercial operators the opportunity to clean up earth's orbits and lower the risk of catastrophy occurring to commercial or military assets. The debris caused by SDI in-orbit testing however, will essentially destroy the future use of the orbit used for the test. Canada should therefore work toward securing a ban upon all space-based testing, a clean up of debris, and restrictions upon pollutants and contaminants, in order to enhance security of her space systems and future surveillance satellites.

6.3.2.3 Nuclear Power Sources

The use of nuclear-power sources in orbit can also be hazardous to Canadian space assets, human life and the environment.[41] The risks associated with NPS may be overcome by distinguishing between working and parking orbits and higher orbits in order to lessen the possibilities of un-controlled re-entry. Improvements may also be made to safeguard against launch failures. These provisions could be negotiated through treaties similar to the ban placed upon the placing of nuclear weapons in space. The 1967 Outer Space Treaty, the 1963 Limited Test Ban Treaty, the Threshold Test Ban Treaty and the Nuclear Non-Proliferation Treaty may all prohibit the use of NPS in any BMD system.[42] Such restrictions, plus those of the ABM treaty, make BMD testing and deployment difficult to achieve unilaterally, given the consequences of disregarding these treaties. Canada should make

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[41] They are the dangers of uncontrolled re-entry, causing explosion and dispersion of radio active material in the atmosphere; the leakage of radio-isotope in orbiting manned vehicles; and the explosion of in-orbit nuclear devices, which can also interfere with satellite transmissions. For further details on NPS use in orbit see Nandasiri Jasentullyana, "A Perspective of the Use of Nuclear Power Sources in Outer Space," Annals of Air and Space Law, Vol. IV (1979), pp. 519-522.

[42] "Article IV of the 1967 Outer Space Treaty prohibited placing in orbit a BMD satellite which contains a directed-energy weapon that is powered by a nuclear explosive device." The 1963 Limited Test Ban Treaty would do the same for testing. The Threshold Test Ban restricts testing to a 150 Kiloton threshold. It is believed that 1,000 Kiloton or higher explosion is necessary for directed energy weapons. The Non-proliferation treaty, prohibits acquiring nuclear weapons and calls for a "cessation of the arms race." See OTA, Strategic Defenses. pp.283-284.

every possible effort to uphold current and negotiate future agreements which restrict or ban the testing and deployment of a BMD system in order to reduce the risks associated with orbital debris and nuclear-power sources.[43] Canada should also pursue agreements directly related to these two issues in order to lessen the threats against her space assets and create a far less hostile space environment. Canada and the United states may very well be at the forefront of this issue, as the NORAD catalogue of space objects is vital to accurately track and pinpoint re-entry of these hazards.[44]

6.3.2.4 Strategic Defense Initiative and Space Technology

Another area of which Canada should be cognizant, is the relationship between SDI and the pace of technological development in the United States, which has inherent characteristics that may threaten Canadian satellite security. Canada should not commit to any SDI-related research if she cannot separate the two issues of development and deployment

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[43] It has been reported that the nuclear reactors required for SDI will be 10,000 times the radio-activity of the Soviet satellite which broke up over Northern Canada in 1978. Currently there are approximately 33 Soviet and 9 U.S. spacecraft using nuclear-power sources in-orbit. See Stephen Strauss, "Space-based reactors foreseen for Star Wars," Toronto Globe and Mail, (January 19, 1989), p. a15. See also William B. Wirin, "The Sky is Falling: Managing Space Objects," Presented at the XXXV Congress of the International astronautical Federation Colloquium on Cooperation in Space, held by the International Institute of Space Law, (Lausanne, Switzerland: October 8-13, 1984) for details of Soviet Cosmos 954's crash over Canada and NPS use.

[44] See Ibid. pp.4-5.

in her policies. The pace of U.S. space technology is presently linked to the improvements in nuclear weapons and weapons systems such as SDI. Commercial development is only a secondary source of technology. The pace of technological development is linked to the need to survive a first strike and enhance deterrence. Commercial development operates at a much lower pace of technological development because the present priority of the U.S. is to assure the invulnerability of its strategic forces and improve its ability to successfully employ nuclear weapons at any level of conflict. Space has become a valuable resource in which to achieve these goals. Commercial development merely aids these efforts by providing new and efficient means to successfully utilize the space environment.

Canada, while assessing its position on SDI, should be aware of the dynamics between technology, weapons and commercial development. Canada must be able to keep pace with the developments in both commercial and military satellite technology. Her relationship in pursuing satellite technology with the U.S., such as TEAL RUBY as part of a comprehensive U.S. BMD system, should be more closely examined. Canada, by not formally associating herself with SDI, then picking and chosing which projects and technology she wishes to become involved in, may be slowly manoeuvering, unknowingly, toward an irreversible position of tacitly accepting SDI in the view of American decision-makers. Thus Canada

should be explicit on where she stands on the issues of SDI development and deployment.

There are however, linkages between the development of a nation's economic and technical base with the development of weapon technology. The metaphoric 'arms race' in defensive systems which the U.S. contends is presently advantageous to her interests, is likely to improve the pace of commercial space development and therefore benefit Canada in any joint venture. Since SDI enjoys a broader technical community than any other former or current U.S. mega project, spinoffs are likely to benefit commercial space development globally. It may however, be more beneficial for the U.S. to spread the money around domestically, in order to stimulate the development of space technology than place it in one large mega project. Nevertheless and regardless of the emphasis upon military space spending in the U.S., benefits will still be increased to commercial and scientific space development by the transfer of multidisciplinary research between academia, industry and government.[45] Canada is likely to benefit from these linkages, but must not allow her indirect involvement in SDI to lead to a position of tacit acceptance, thus eliminating any alternatives in which to reject SDI involvement outright if so desired. Consequently, Canada may wish to

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[45] See Harvey Brooks, "The Strategic Defense Initiative as Science Policy," Gerald Yonas, "Research and the Strategic Defense Initiative," and Bernard J. O'Keefe, "The SDI and American R&D," in International Security. Vol. 11 No. 2 (Fall, 1982) for further discussion of these effects of SDI upon Technological development.

re-examine her own space science and research policies in order to assist the fixing of the new Space Agency's mandate, as well as, meet her domestic and international requirements for the future in general.[46]

6.3.3 The Future Challenge Of Trans-Atmospheric Vehicles

Proposed TAV reconnaissance and the other military uses of such vehicles will undoubtably increase the Soviet's desire to develop anti-aircraft and ASAT weapons capable of eliminating the TAV threat, similar to the development of weapons to counter the U2 and SR-71. Canada should be aware of such future challenges to the regime if it commits itself or not to its own or joint Canadian/U.S. military surveillance satellites. The emergence of third party imaging satellites and the development of ASAT weapons pose a definite threat to the continuance of the current regime.[47] These threats however can be contained within the existing legal framework for arms control. Satellites have already been approved through international opinion as legitimate, although certain uses of the information provided by them may alter this position. ASAT weapons, although placing satellites in jeopardy, if inactive during peacetime do not violate the regime. On the other hand, TAVS pose a threat

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[46] See Ruth Fawcett, Canadian Science Policy: Development and Trends. Ottawa: Library of Parliament Research Branch, Science and Technology Division, 1989.

[47] In this instance I refer to regime in both its quasi-legal and scientific meanings. The technical regime refers to the flight envelope of the vehicle.

from outside the regime. TAVS will likely operate in orbit as a surveillance vehicle and could most likely be included in the current satellite regime. Nonetheless, they must originate from an entirely different regime where penetrative surveillance of another state's territory during peacetime is not accepted.

One such vehicle currently under development, which best fits the description as a TAV, is the United States' X-30 test vehicle. Although many other TAVS are being developed,[48] the X-30 best meets the specifications as a vehicle which could operate effectively in both air and space as a reconnaissance vehicle. According to a United States General Accounting Office Report, the X-30 is a test vehicle designed to facilitate both hypersonic cruise and single-stage-to-orbit regimes. In otherwords it will operate as both an aircraft and spacecraft. The X-30 however, has no current operational mission or requirements, and will only be used to demonstrate enabling technologies. Thus it is unlikely that the X-30 itself would fundamentally alter the current separate legal regimes of air and space reconnaissance. Nevertheless, future operational aerospace vehicles will be an outgrowth of the X-30 programme. Such prototype or operational vehicles would probably not have full X-30

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[48] European vehicles include the two stage SANGER, ARIANE launched HERMES and the unmanned single stage sled launched HOTOL. Japan has her HOPE vehicle and an experimental HIMES vehicle. The Soviets are also believed to be developing a vehicle as a hypersonic interceptor and space-based reconnaissance vehicle.

capabilities since the GOA Report has not specified nor does it foresee any present or envisioned operational requirement existing for a vehicle with both a Mach 5-14 hypersonic cruise and a Mach 25 single-stage-to-orbit capability.[49] A Mach 5-14 vehicle would therefore be confined to the current air-breathing reconnaissance regime and would not be legally permitted to violate another state's sovereign airspace. A Mach 25 vehicle, if not designed with full X-30 features, would not be able to sustain an atmospheric Mach 5-14 cruise, and would very likely only be considered as a space vehicle operating in the current reconnaissance satellite regime, similar to the present U.S. Space Shuttle upon re-entry.

There is however, some concern about the GOA Report and its accuracy, given the proposed military uses of such vehicles and current revelations that the U.S. may already possess a reconnaissance vehicle capable of Mach 5.[50] The GOA Report clearly states that,

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[49] United States, GOA, National Aero-Space Plane, p.49.

[50] A 1985 Pentagon budget document listed under the title 'Air-Breathing Reconnaissance,' a "black" strategic programme headed for production. Aurora, as it was called, was estimated at $2.1 billion for the year. Aurora was never listed previously and has not been seen in any official document since. Speculation, based upon design configuration and the cloak of secrecy, in keeping with Air Force reconnaissance tradition, claims that Aurora is a radar evading reconnaissance vehicle capable of attaining a cruising speed of Mach 5 and an altitude of 100,000 plus feet. It is believed to be built by Lockheed, while being deployed and recovered in mid-air by a Air Force C-5. See T.A. Heppenheimer, "Mach 5 Spy Plane," Popular Science (November, 1988) pp.71-73, 114-116.

> [a] single-stage-to-orbit space launch vehicle could also have important Air Force and Navy mission applications such as, high altitude reconnaissance, and deploying, servicing, repairing, and retrieving communications, surveillance, navigation, warning and weather satellites in low earth orbit.[51]

The report also suggests a reconnaissance role, amongst other aerial functions, for a Mach 5-14 vehicle.[52] It is unlikely that the U.S. military would not desire an aircraft which was also capable of Mach 25 given its history of building reconnaissance aircraft, like the U2 and SR-71, which were initially able to avoid the anti-aircraft systems of their day.

The utility of spaceborne reconnaissance is no secret to current military strategists. The use of a TAV capable of flight in both regimes, thus capable of providing quick-look or replacement space-based reconnaissance is justified by military strategists since "[w]ithout spaceborne assets, military aircraft already commited to and depended upon by commanders engaged in other vital operations would have to be diverted to both strategic and tactical surveillance operations."[53] One time Reagan science advisor, Dr. George A. Keyworth has also stated that with the convergence of atmospheric and space flight, both U.S. military and commercial interests will continue to depend upon American

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[51] U.S. GOA, National Aero-Space Plane, p.49

[52] Ibid.

[53] United States, Department of Defense. The Soviet Space Challenge, (Washington, D.C.: November, 1987), p. 19.

superior airpower. The future development of low earth orbit and its strategic importance, requires the same superiority for space. Keyworth also stated that the U.S. must be able to operate effectively in both space and the atmosphere. The current X-30 programme was described as a "road map" for development, to bring technologies to "maturity and readiness."[54]

If a TAV were given a reconnaissance role which required operation in both regimes, it is almost certain that the sanctuary provided for satellites currently, would be severly threatened. U.S. security concerns, and similar Soviet concerns would not permit such activities to take place if the technology were available. Currently the primary U.S. national security objective is to deter aggression against the United States and its allies on land, at sea, and in the air and outer space, through the development of credible conventional and nuclear forces. Deterrence ultimately depends upon Soviet and other possible adversaries' perceptions of American capabilities and willingness to employ them during a crisis. In order to protect its space assets and maintain the freedom to use space as a resource, deterrence must also extend to this frontier. It is unlikely that a military vehicle with the ability to carry out both tradi-

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[54] United States, Congress. High Speed Aeronautics: Hearing Before The Subcommittee on Transportation Aviation and Materials of the Committee on Science and Technology. U.S. House of Representatives, Ninety-Ninth Congress, First Session, July 24, 1985 No. 21 (Washington, D.C.: U.S. Government Printing Office, 1985), p. 15.

tional aerial reconnaissance and space reconnaissance would be allowed to function during peacetime if employed as a penetrative airborne reconnaissance platform. Such a threat would, although not directly affecting deterrence, threaten current strategic stability and provide incentives to violate the legitimacy of space reconnaissance.

Canada, since she would be new to the satellite reconnaissance regime, would be forced to depend once again upon U.S. initiatives to protect its space assets. As mentioned, the means of protecting U.S. interests in space has varied over the years. Initially, the U.S. was able to deter aggression through mutual restraint with the Soviet Union. This process led to the legitimization of satellite reconnaissance. Since that time the growing militarization of space and dependence upon space systems for war-fighting has provoked both sides to pursue policies of satellite protection and satellite negation. TAVS would undoubtedly provide incentives to further these policies given the current trend in military space activities.

Two courses of action arise, each intended to protect U.S. and ultimately Canadian space assets. The first would be to negotiate an arms control treaty in order to minimize the ability of both sides to use force in outer space thus ensuring the survivability of all space systems, Canada's included, regardless of their use during a conflict. The advent of TAVS would undoubtedly affect current legal param-

eters and would jeopardize such a treaty, if their use were not incorporated into the text and scope of the treaty.

The second proposed course of action, presently inherited by the Bush Administration from President Reagan, is intended not to pursue any treaty nor agreement which may restrain a possible BMD, but to keep the door open for ASAT testing and development in order to deter the use of ASATS by the Soviets through reciprocal attack. Current American deterrence strategy has both defensive and offensive merit. The first objective is to use ASATS to deter threats against U.S. and Allied space systems. The second objective is to deny any one of America's adversaries the use of space based systems to support military forces. This current and open view of the space regime and American deterrence strategies make the use of TAVS for reconnaissance even more apparent, and the possibility of the Soviets countering such threats entirely probable. Canada must come to terms with these possibilities if she wishes to pursue an independent space-based system, and should as Col. Wirin suggests "explore regulating or controlling the generation of space debris; or protocols governing the operation of transatmospheric vehicles....."[55] Such negotiations, for formal agreement upon space-based reconnaissance, should be made prior to TAV use so that the institutional framework is present when required. Canada does not require a solution to the TAV question at present, but will require such measures to avoid

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[55] Wirin, "Using Outer Space to Promote Peace," p. 8.

her polar region from becoming a gateway to low-earth orbit with out prior consent.

6.3.4 Divergence/Convergence of Air and Space Reconnaissance

Another threat to the security of Canada's system would be the convergence of the two separate regimes of air and space. Under present circumstances space is viewed as a legitimate arena for territorial surveillance, while surveillance from within another state's airspace is not.[56] The prohibition of airborne reconnaissance, under international law, was established as a result of the 1944 Chicago Air Convention.[57] The principle of state sovereignty was re-affirmed at this convention as being an *a priori* principle of international law. The 1960 U2 and 1983 Korean Airlines 007 incidents reflect this principle, although the latter is a questionable case depending upon whether the civilian aircraft involved was on a reconnaissance "spy" mission or whether it was legitimately and mistakenly off of its normal flight path.

Within the air-breathing reconnaissance regime two separate reconnaissance sub-regimes exist. The first, peripheral reconnaissance, being the surveillance of another's territo-

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[56] The legal status of a state's airspace will not be altered by any 'Open Skies' treaty as the governemnts involved will be signing treaties to allow for friendly reconnaissance flights through their airspace by consent only.

[57] Steinberg, p.27.

ry from beyond its territorial airspace, is considered legal. According to Carl Q. Christol,

> [w]here an aircraft carrying and using sensing equipment flies outside the territorial waters of the sensed state, and not in the sovereign airspace of a foreign state, it has generally been accepted that such activity, and the subsequent dissemination of what has been acquired, is lawful.[58]

The second sub-regime, penetrative reconnaissance, being the overflight of a foreign territory through or within its airspace, is illegal.[59] As mentioned, the principle of state sovereignty and prohibition of airborne reconnaissance has been upheld by international convention and treaty.[60] The direct violation of territorial sovereignty can only be a physical activity within a defined territory. As a result, outer space is considered as being within the domain of peripheral reconnaissance, even if its space activity penetrates from above. Christol explains further,

> [r]easoning that, if it is lawful for an aircraft occupying the sovereignty-free airspace beyond national territorial waters to engage in sensing of both security or military facilities and natural resources then it is also lawful to engage in remote sensing from the sovereignty free area of outer-space,.....[61]

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[58] Carl Q.Christol. The Modern International Law of Outer Space, p.731.

[59] A state may regulate or prohibit "the use of photographic apparatus in aircraft over its territory..." J.E.S. Fawcett, Outer Space: New Challenges to Law and Policy (Oxford: Clarendon Press, 1984), pp. 83-84.

[60] The Chicago convention of 1944 stated that "every state has complete and exclusive sovereignty over the airspace above its territory." Henkin et al, p. 842.

[61] Christol, p. 732.

Although no present case exists, a TAV which operates in a peripheral reconnaissance mode will undoubtedly, as treaty and customary international law suggests, be seen as legitimate. If operating in a penetrative mode, the same vehicle will be in violation of present international law and therefore subject to all recognized remedies. Within the air-breathing regime there is a clear separation of sovereign and sovereign-free territory given the current technological limitations upon aircraft. The inability of aircraft to fly to altitudes where they may be considered to be operating in outer space and outside a states' territory provides a functional understanding of the legal responsibilities concerning reconnaissance. This same divergence of air and space does not exist for TAVS, and will be of future concern to Canada, as it is likely to challenge the existing regimes. With TAVS there is a functional convergence of the two separate regimes, and they may affect our spatial understanding as well. It may be argued that the shuttle already brings the two regimes together, however, its flight characteristics clearly establish it as a spacecraft upon ascent, while its descent is unpowered, passive, well-planned, public and its flight in the air regime is unsustainable.

An important issue for Canada's consideration remains. Where does penetrative reconnaissance end and peripheral reconnaissance begin?

6.3.5 Delimitation/Delineation of Outer Space

The debate regarding the application of space law[62] and the legitimization of satellite reconnaissance is based upon the 1967 Treaty for the Peaceful Uses of Outer Space which prohibits any claim to state sovereignty in outer space.[63] There is however some opposition to this claim by the Bogota States.[64] The question of where space and the application of space law begins has centered around two separate school's of thought.[65] The first school is based upon the spatial argument which asserts the existence of a vertical limit of sovereignty, based upon scientific criteria. This school claims that space law is law "valid in outer space" and therefore a clearly defined boundary between air and space

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[62] According to Bin Cheng, "[s]pace law is merely a functional classification of those rules of international law and municipal law relating to outer space, natural and man-made objects in outer space, astronauts and man's activities in outer space or affecting outer space." Cheng, p. 328.

[63] See Article II United Nations Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies. January 27, 1967. Christol, The Modern International Law of Outer Space. p. 552.

[64] The December 3rd, 1976 Bogota Declaration presented the view that state sovereignty extended to portions of the geo-stationary orbit above the national territories of Brazil, Columbia, Congo, Equador, Indonesia, Kenya, Uganda and Zaire who were the only signatories. See Ram S. Jakhu, "Legal Status of the Geostationary Orbit," Annals of Air and Space Law, Vol. III (1978), p. 333. See also Christol, The Modern International Law of outer Space, pp. 511-522 for his discussion on the geostationary orbit, as well as pp.891-896 for the complete text of the Bogota Declaration, December 3, 1976.

[65] For a complete discussion see Christol's assessment by

is essential. The second school is the functionalist approach which claims that space law is law which applies to "space activities," where no spatial demarcation is necessary, only the definition of space activities.[66] Initially the major space powers adopted the functionalist perspective to avoid any restrictions upon their access to space.[67]

Those who argue in favour of functionalism suggest that no clear scientific evidence for a spatial limit exists. A functional limit of 100km has been suggested, as the lowest point of a satellite perigee, Although such a limit would be arbitrary as satellite perigees may reach lower altitudes.[68] Gyula Gal has made the suggestion however, that the acceptance of the lowest perigee principle has in fact become international law, regardless of any possible fluctuations in the actual limit of lowest perigee.[69] In fact S. Mishra and T. Pavlasek have concluded that there is "[n]o physical basis which might be used as a sound and absolute reason for

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scholars concerning the issue of definition/delimitation which provides the basis for this section. Ibid, pp. 502-511.

[66] Gyula Gal, "The Question of Delimitation - After Twenty Years," Proceedings of the Twenty-Second Colloquium on the Law of Outer Space, (1980) pp. 125-128.

[67] Cheng, p. 324.

[68] See Christol, The Modern International Law of Outer Space, p. 510.

[69] Gal, p. 128. Christol also cites Gal and many others in his discussion and specifically notes that Gal is not prepared to alter his proposal even if aircraft could later be found to transit above the lowest possible perigee. Christol, The Modern International Law of Outer Space, p. 504.

defining a boundary between air space and outer space."[70]

Many spatialists have suggested that a clear spatial delineation exists as a law of nature. While others in this school claim that a single arbitrary line is necessary as a matter of convenience regardless of theory or science. Many others subscribe to the right of innocent passage[71] within two separate boundaries between the highest altitude of suborbital flight and the lowest satellite perigee. This so-called "meospace" would be "located above 50 km above sea level and below 130 km, plus or minus 10 km."[72] Others still subscribe to the Von Karman line of 83 km altitude where the loss of aerodynamic lift occurs.[73]

Functionalists on the other hand suggest that air law applies to air navigation and space law applies to space activity. They also may consider a state's security requirements, the altitude of operation and the nature of an air or spacecraft's activity. Under these conditions functionalists claim that a right of innocent passage exists for passive vehicles which attempt to reach or return from orbit.

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[70] S. Mishra and T. Pavlasek, "On the lack of Physical Basis for defining a Boundary Between Air Space and Outer Space," Annals of Air and Space Law, Vol. III (1978), p. 412.

[71] Under current legal structure, no right of innocent passage exists. According to the Chicago Convention, Sovereignty over air space was an absolute right. The convention did not apply to outer space however.

[72] Christol, The Modern International Law of Outer Space, p. 503.

[73] Ibid, p. 506.

Christol reports that noted space jurist N.M. Matte, who is at the "forefront" of the functionalist school, has proposed that "a single legal regime for air and space" should be created and called "aerospace," based upon a more feasible functional approach, defining the nature of activities rather than separate zones of air and space.[74] This single regime may or may not affect the legitimacy of satellite reconnaissance, depending upon the definition of the activity and its intent. Canadian satellites would best be protected in a clearly defined separation between peripheral and penetrative regimes. Convergence, if functional, would not effect this environment. On the other hand, convergence, if spatial, would remove the distinction between air and space without regard to the activities of the object in question. In essence, spatial convergence would be a repudiation of the 1967 U.N. Treaty, and would be detrimental to the security of all space objects, regardless of country of origin.

The Soviets have been leaning toward the spatial divergence argument recently, however they do not recognize as of yet, the right of innocent passage through defined corridors.[75] The United States, Canada, Japan, U.K. and Sweden, do not yet accept the spatialist proposal as it has maintained that it could not adequately monitor a physical legal

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[74] Ibid, p. 503.

[75] Christol notes that this Soviet delineation would be located between 100-110km above sea level. Ibid, pp. 523-524.

boundary between air and space. It has also been suggested by these states that it is still premature to settle this issue as not all relevant information regarding legal, political, technical and scientific factors have been considered.[76] The U.S. does not wish to jeopardize any future space activities, such as TAV reconnaissance.

It has been argued however, that a spatial demarcation could be made with the right of innocent passage for all vehicles returning from space. Vehicles to be launched into orbit would have to provide prior notice of their flight path,[77] while all sub-orbital flights would qualify as aircraft and be bound by the air regime. Such a proposal may avoid possible confrontation over TAV flights, nevertheless, flight paths with reconnaissance characteristics, although avoidable, would still be subject to alarm as the exact nature of their overflight could be easily hidden. This could lead to confusion, controversy and a repeat of the KAL 007 disaster. As Mishra and Pavlasek suggest that no physical bases exists, the solution to this debate will come via "social, cultural, economic, historical and political grounds as an act of collective will, through negotiated agreement or regrettably the use of force."[78]

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[76] Ibid, p. 524.

[77] Currently vehicle registration may take place after a launch has occurred. See the Convention on Registration of Objects Launched into Outer Space, January 14, 1975. specifically Article II (p.875) in Ibid, pp. 874-879.

[78] Mishra and Pavlasek, p.413.

It is likely that a functional, not spatial convergence of the two regimes, as Matte has proposed, would be the best possible scenario for protecting the fragile satellite reconnaissance regime for the time being. Nevertheless, with the future possibility of TAV reconnaissance and the inability to distinguish between types of vehicles and their intent, some arbitrary spatial demarcation may best serve Canadian purposes.

6.4 CANADIAN SATELLITE LEGITIMACY

The question of whether or not Canada should pursue its own independent space-based surveillance systems and improvements in its own air and space defences depends upon the future relationships between NORAD, SDI, the evolution of continental defence policy and the maintenance of satellite reconnaissance legitimacy. An independent space-based surveillance system as a policy option for Canada should not encounter any difficult legal or political obstructions for the time being. The legitimacy of satellite reconnaissance has been a process influential on arms control agreements between the superpowers. Thus Canada's requirements for its own national surveillance system should not evoke a hostile reaction from non-space powers who disagree with having their territories sensed by foreign satellites, although this may change if these same powers ever acquire an ASAT capability. Canada's RADARSAT may encounter some difficul-

ties as a commercial operation, in reaching agreements with these parties over the dissemination of information. But a strictly military satellite used over Canada in a polar or sun-synchronous orbit, with the ability to revisit a specific site once every 24 hours[79] for Canadian purposes only or part of an international agency, should receive no undue opposition from these powers. The difficulties, with respect to their legitimacy, may come from nations which Canada or the West perceive as military adversaries.

The sharing of information which was vital to the security of the United States or Soviet Union could provoke a negative response similar to the French proposal to establish ISMA. In this instance both the Soviets and Americans (recall section 6.3.1) were fearful of the free access nations would have to strategically vital information capable of irreparable harm to their national security interests and strategic duopoly on reconnaissance satellite information. Thus Canada has a responsibility to maintain the stability of this regime.

Canadian satellites could be used to revive the ISMA concept and legitimize Canada's role as a means for independent verification of crises and arms control. This could be done

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[79] See Canada, RADARSAT. Some of these difficulties may have already been dealt with through LANDSAT and SPOT IMAGE precedents. Canada is set to launch RADARSAT in 1994 on the U.S. space shuttle for a cost of $20 million. RADARSAT is expected to generate $500 million in sales and over $1 billion in spinoff activity. See "Radar satellite project receives approval," Globe and Mail. (September 14, 1989.) p.B3.

similar to Canada's negotiation of the New LOS which legitimized Canadian legal claims to her Arctic ice covered areas by claiming custodianship of a fragile ecosystem. Canada, if successful in reviving the ISMA concept, may be able to offset the cost of monitoring her Arctic regions by participating with other nations in monitoring the entire globe or circumpolar region. The U.S. and Soviets may find ISMA to be in their best interests as more nations acquire their own independent capabilities, and arms control verification becomes more complex with the advent of new and sophisticated weapons systems. The U.S. may also find that information about conflicts vital to U.S. and international security is better made public through an international agency than through a single nation which may find itself drawn into the fray by providing strategically damaging information about a possible adversary. Canada would be wise to push for ISMA through its own efforts to build a space-based surveillance system and gain international acceptance for its own system, since protecting a system during an enlarged conflict is almost impossible.[80] An attack upon a Canadian satellite otherwise would be a violation of Canada's sovereign rights. Although the principle that no right to national appropriation exists in outer space, according to the 1967 Outer Space Treaty, it does not prohibit a state from exercising

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[80] According to a U.S. Department of Defence publication, the Soviets maintain "the world's only currently operational ASAT system, a ground based orbital interceptor." See United States, Department of Defence, The Soviet Space Challenge (November, 1987) p. 11

its "sovereign rights or prerogatives."[81] This principle is accepted by the United States in reference to its space assets and space systems.[82]

6.4.1 International Cooperation and Competition

Canada must also be cognizant of the dynamics of international cooperation and competition in its quest for satellite legitimacy. International cooperation and competition exists in all facets of international life whether it be in political, economic or military terms; government or private. International competition in space has increased due to the proliferation of space technology and increases in the number of countries with launch capabilities and access to space. In commercial terms, the United States, Western Europe, Japan and to some extent the Soviet union and China pose a serious challenge to Canada's commercial success in space ventures. As the Canadian government is responsible for advancing Canadian space technology domestically, she must also ensure that Canadian firms can compete effectively in a free international market.

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[81] Gorove, p.314.

[82] According to the Febuary 11, 1988 U.S. Presidential Directive on National Space policy, "[t]he United States considers the space systems of any nation to be national property with the right of passage through and operations in space without interference. Purposeful interference with space systems shall be viewed as an infringement on sovereign rights." United States, The White House Office of the Press Secretary. "Presidential Directive on National Space Policy" Fact Sheet. (Washington, D.C.: February 11, 1988), p. 2.

Cooperation on the other hand provides the advantages of realizing goals sooner and lowering the over-all cost of programmes. It creates stability in the international system and creates an environment in which to expand Canada's civilian and military space programmes. Through international cooperation and agreement Canada can instill Canadian values in space law thus providing the necessary climate to maintain Canadian commercial and military assets in space. This reflects Canada's foreign policy requisite of constructive internationalism.[83]

SDI for instance, may damage Canada's reputation internationally and threaten the cooperative environment if deployment involves Canadian participation, unduly affects other nations' commercial or military space endeavours or interests, is without the support of other allies, and has a negative effect upon deterrence and east-west relations.[84] Thus

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[83] A Canadian joint House and Senate report suggests that "in an interwoven world, international responsibility should be interwoven with Canada's basic national aims." See Canada, Interdependence and Internationalism. p. 137. Frank Oberle, Canada's Minister of Science and Technology further suggests that Canadian space activities "promote economic renewal at home and constructive internationalism abroad by encouraging research and development in cooperation ventures with other countries." Oberle, p. 23.

[84] The possible effects of SDI upon deterrence has been studied and determined that "deterrence will remain viable as long as Star Wars defences are so primitive that each side retains substantial second strike capabilities. As Star Wars becomes better and erodes these defences, however, the primary danger lurks in one side developing considerably stronger defensive capabilities than the other and thereby finding it rational to attack, secure that it can either deter retaliation completely or survive a ragged response and even be comparatively better

far the reaction of the European allies has been somewhat receptive to SDI research, while Canada does not participate officially. It does not appear that SDI has caused any major rifts, although relations with some European allies may be affected,[85] as would relations with the Soviets, if SDI were deployed outside of current cooperative efforts in arms control. Canada has taken a wait and see attitude which may in the long run, if the U.S. decides to go ahead with full deployment, be disadvantageous for Canada. Although an independent space-based surveillance system is a good contingency and necessary regardless of SDI, Canada should make more assertive statements about SDI regarding its participation or non-participation.

6.4.2 Launch Capability

Since Canada does not have its own launch capability, it is presumed that the Americans, or less likely the French, would have to provide launch services. There may also be the remote chance that the Chinese, Japanese or even the Soviets could do so in the future. The only other alternative is for Canada to develop its own polar launch site, presumably at

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off." Steven J. Brams and J. Marc Kilgour, "Deterrence Versus Defence: A Game - Theoretic Model of Star Wars," International Studies Quarterly, Vol. 32 No. 1 (March, 1988), p. 21.

[85] If SDI has no negative impacts upon deterrence or flexible response, Europe is likely to approve. Louis Deschamps, The SDI and European Security Interests (London: Croom Helm, 1987), p. 55.

Churchill, Manitoba, although the cost may be prohibitive.[86] The access to launch vehicles and facilities will be of major concern to Canada if she decides to go ahead with her own space-based surveillance system. The pace of development and the priorization of launch vehicles and customers will likely be effected by SDI. The enormous cost of SDI provides incentives to build effective and efficient launch vehicles in order to lower the cost of launches on a cost per pound basis. The U.S. wishes to diversify its launch capability by using expendable and non-expendable launch vehicles. The X-30 derivatives, as discussed in section 6.6, are expected to lower the cost per pound by one order of magnitude.[87] The space shuttle and its second generation cousin are to be used for current and future NASA programme launches such as the construction and servicing of the space station. An expendable heavy-lift launcher is also planned, as is the continuation and further development of the many U.S. expen-

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[86] Currently Canada only possesses a modest launch capability able to launch vehicles with only a small payload of about 400 lbs. like the Bristol-Aerospace BLACK BRANT or U.S. SCOUT rockets. The Churchill facility was closed in 1985 and recently re-opened. It is destined to be demolished in 1992, as the Canadian Space Agency has no future plans for its own launch programme. The facility should become part of the CSA, as it meets its research mandate. It could be used to attract other international partners to upgrade the facility to launch larger payloads and lower the associated costs. See Manitoba, Department of Industry, Trade and Tourism. Churchill Research Range Feasibility Study. Prepared by Spiece Associates Inc. (June 5, 1989)

[87] The goal of $200 per pound may seem unrealistic, nevertheless, even half of the current costs would justify the expenditure to develop the X-30. See National Commission on Space, Pioneering the Space Frontier (New York: Bantam Books, 1986), p. 115.

dable launchers such as the DELTA, TITAN and ATLAS-CENTUAR series.

Many foreign launch capabilities exist or are planned, which Canada may require, such as the ARIANE, LONG MARCH, PROTON, ENERGYIA, HOTOL, HOPE, HERMES and SANGER. The demands of SDI upon American launchers will place great strain upon already backlogged schedules. The demand for launch vehicles and facilities by SDI may cause the cancellation or delay of many scientific and commercial payloads. This may force both American and Canadian projects to seek foreign launch sources, attaining at least, Canadian launch policy objectives.[88] In converse to this argument however, is the possibility that the increased demand will require the further construction of effective, efficient and readily available launchers, thus stimulating the commercial launch and commercial space sector in the U.S., from which Canada will benefit with the increase in launch services.

Regardless of who launches the satellites for Canada, their replacement if removed or disabled by an ASAT during a conflict is almost impossible. Such a system would be extremely vulnerable during a crisis, thus as a means of force-enabler or multiplier during conflict such a system would be useless, since it could neither be replaced, nor could it provide Canada with the means to detect an attack

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[88] Launch diversification is Canada's goal. Dewitt and Kirton, p.349. Canada will however receive a free NASA launch for her initial RADARSAT remote sensing satellite. Dotto, p. 265.

or northern invasion. Such matters would therefore belong to the Americans and NATO. Nevertheless, the ability to receive an advanced warning of attack and defend against any small incursion sent to test or distract Canadian forces is a viable alternative to a warfighting capability for Canadian surveillance systems.

6.4.3 Policy Options

Canada should pursue an internationally accepted passive surveillance and detection space-based system linked to an ISMA-like organization in order to provide surveillance of the Arctic, arms control verification and crises monitoring, and adequate protection of the system through universal international acceptance and international stability, as its first option. The second option for Canada would be to establish a completely independent system separate from its NORAD commitment. The third option would be to establish a joint Canada/U.S. system within NORAD providing that the non-deployment of SDI was assured. If this assurance was made, the third option may take priority over the second if the cost was considered too great.

Other options for Canada include the development of a Circumpolar Satellite Surveillance Agency, to monitor the Arctic areas of all circumpolar states. These measures, as part of a greater Canadian circumpolar foreign policy, address the concerns of confidence building in the Arctic in

order to reduce military threats. According to James Macintosh and Michael Stack, 'Confidence Building Measures' provide a role in "reducing misperception, increasing predictability and avoiding over-reaction in conventional military relations."[89] As a further confidence building measure, Canada may wish to strengthen the 'Open Skies' proposal in the future by including the sharing of satellite reconnaissance data between Warsaw Pact and NATO countries.

The use of satellites by Canada whether independently or jointly with other circumpolar states should have a positive affect, since either system would have only passive capabilities of detection. This should avoid destabilizing current circumpolar and superpower relationships, as "more aggressive and offensive maritime policies and changes in nuclear strategy are very likely to have a negative impact on the security of individual circumpolar states,"[90] while cooperative or passive military policies are likely to reduce the need for Arctic militarization.

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[89] James Macintosh and Michael Stack, "A Circumpolar Confidence Building Regime," Canadian Defence Quarterly, Vol. 18 No. 2 (Autumn, 1988), p. 57. Confidence building measures on the other hand include providing information to a potential adversary about what might be considered threatening, like missile tests or the return of space objects. They have also proposed the use of circumpolar satellites in the same manner as I have described above.

[90] Ibid.

Chapter VII

CONCLUSION

7.1 INTRODUCTION

In the opening Chapter it was determined that political science has a role to play in determining the extent that 'orbiting satellites have altered and expanded the concept of sovereignty.' It has been demonstrated throughout this work that the concept of sovereignty affects and is affected by change. No where has sovereignty been completely disavowed, as even in outer space the functions of sovereignty remain. Canada has attempted to use, or will use, the sovereign-free area of outer space to affirm her terrestrial sovereignty through the use of earth-monitoring satellites. The ability to do so and its effects are summarized in this final chapter as are conclusions from which Canada may develop a coherent policy for surveillance satellite use over the Arctic.

7.2 SUMMARY

7.2.1 Sovereignty

In chapter two it was demonstrated that sovereignty, as a concept, is an assumption or justification for man assuming or exercising power within a political unit, excluding any higher authority. The concept of sovereignty has changed throughout time. Initially, it had limited meaning and could be applied to any person or body which was believed to be superior over any other. In classical literature, the sovereign had become absolute with illimitable power. The modern concept maintains many of its classical characteristics, but nevertheless, has adapted to the changes with modern political units and the international system. For instance, the locus or bearer of sovereignty has changed within modern democracies, yet sovereignty still remains as a whole when viewed externally. It exists without a single sovereign, being altered by constitutionalism or law. Sovereignty implies the ultimate responsibility for final decision making, rather than absolute authority. Sovereignty remains within federated states, like Canada, since the federal government still retains direct control over individual citizens, although the locus of this authority may be uncertain.

Territorial sovereignty was shown to be the exercise of sovereignty within defined territorial limits and the exclusion of sovereignty from without. Territorial sovereignty requires international obligations and duties which are vol-

untary, yet for practical purposes, necessary. These suppose that the sovereign of one state recognizes and protects the rights of other sovereigns, based upon equality and mutual respect. The exercise of sovereignty within a defined territory requires only a minimum degree of treatment, as sovereignty, for all practical purposes, cannot be exercised on every point at every moment.

The relationship between sovereignty and the state is based upon the provision of security for persons within the defined territory. Sovereignty maintains internal and external order, yet ambiguities remain, such as the principles of international law, which some may claim supercedes the concept of sovereignty. These divsions between internal and external sovereignty, and the ambiguities of the concept concerning international law are neither as pronounced nor sufficient to replace, as Raymond Aron states, the national realities and authorities. This is true of the realist perspective which maintains that 'each political unit legislates for itself and does not yield to an external authority.'

The acquisition of territorial sovereignty is made through various internationally recognized means, ranging from discovery of a territory to conquest over a territory. The process of consolidation which accounts for a variety of means of acquiring sovereignty, is itself not a recognized legal principle, rather it is based upon political relation-

ships. In this regard territorial sovereignty can be symbolic or developmental. Both are equally recognized, however developmental sovereignty refers to a continual process rather than a single, specific act or series of acts.

Territorial sovereignty can only refer to land, airspace and water. No territorial sovereignty exists in outer space. Nevertheless, other traditional functions of sovereignty can be exercised beyond earth's atmosphere.

7.2.2 Canadian Sovereignty

Chapter three determined that Canada's claims of sovereignty over the Arctic are based upon conditions of statehood, as well as legal and historic grounds. Canada's claim to sovereignty is based upon the transfer of Title from Britain in 1880 and subsequent expeditions and actions taken to affirm sovereignty. Disputed claims to the lands of the Arctic Archipelago have been settled for over fifty years. Current disputes arise over the status of the waterways between Canada's Arctic Islands, particularly the Northwest Passage. Canada claims that all waters of the Archipelago are internal, while the United States maintains the passage way is an international strait, regardless of the recent agreement which recognizes Canadian control. Inuit land claims, Canadian legislation (particularly environmental), Article 234 of the New Law Of The Sea and further bilateral and multilateral negotiations are the best alternatives in

order to seek a peaceful settlement and strengthen Canada's claim. It does not appear that for the time being Canada should force the issue of sovereignty over the Northwest Passage with the United States, in order to avoid possible I.C.J. adjudication or conflict.

7.2.3 Canadian Arctic Defence

Chapter four emphasized that physical capabilities to enforce Canadian law are a requisite of her sovereignty. Canada has relied upon great powers, such as the U.S., to provide a large share of her defence needs, due to a lack of resources to meet the challenges of her own geography. This does not diminish her claims of sovereignty in itself, only the lack of minimum independent capabilities to assert and affirm sovereignty where Canadian interests diverge from U.S. interests, especially over the Northwest Passage.

Canada's ability to control the Arctic is in doubt. Threats, such as Soviet submarines capable of SLBM and SLCM attacks upon North America, as well as general violation of Canadian laws, diminish Canada's claim to sovereignty, if she cannot adequately assess these concerns and respond. Canada must therefore rely upon American under-ice submarine patrols to assess the Soviet threat, which in itself is another challenge to her sovereignty.

As a result, Canada recognizes the growing strategic importance of the Arctic, both militarily and economically. Thus the need for an effective three ocean navy has been stated by many government and non-government sources. The purchase of ten to twelve nuclear-powered submarines was considered to be an essential component of a Canadian three ocean navy, whose capabilities were necessitated by Arctic conditions. However, plans for the submarines, which have been scrapped, could have been used to maintain Canada's current security commitments (ie North Atlantic) while providing a minimum capability under Canada's Arctic ice for sovereignty patrol. A new Naval programme is now an essential priority for Arctic sovereignty and Canadian defence in general.

Aerial surveillance and surface icebreakers can accomplish the other requirements of sovereignty. Since recognition of full Canadian sovereignty over the waters of the archipelago is not likely to be won by force, no overwhelming capability is required, only a minimum to assert, affirm and strengthen Canada's legal claim. The ability to use force is necessary to uphold Canadian law and claims to sovereign in the Arctic, both above and under the ice, is part of the required minimum.

Canada's current surveillance capabilities are inadequate to sufficiently monitor her northern territories, yet Canada claims that surveillance is an affirmation of her sovereign-

ty. The use of Inuit Rangers, CP-140 patrols, the RCMP and Coast Guard are inadequate patrol and surveillance methods. The capability to enforce Canadian law and assert sovereignty also requires the ability to know where Canadian laws and sovereignty are being violated or challenged, in order to send the necessary available forces or authorities for interception and interdiction. Canada appears currently to lack sufficient resources for both surveillance and physical enforcement. However what is known of current Arctic activities, such a capability may not be required at this time. Nevertheless, the projections alone for future Arctic activity will require an increase or improvment in both surveillance and enforcement capabilities. It should be repeated nevertheless, that direct physical capabilities of enforcement, require surveillance in order to adequately affirm sovereignty. This surveillance capability does not require a full 24 hour monitoring of every metre of Canadian territory.

7.2.4 Canadian Remote Sensing Capabilities

Chapter five revealed that the most logical selling point of a Canadian space-based surveillance system is the ability to monitor any point of Canadian territory through any climatic conditions at any given time. This however should not be seen as a necessary requisite for sovereignty, as no state or legal principle supports such a requirement. There-

fore, the rationale behind Canada acquiring space-based surveillance is that surveillance of a state's own territory is an affirmation of its sovereignty, but more importantly it contributes to Canadian, continental and western security. Canada cannot adequately cover its entire territory to the degree it feels is sufficient for affirming its sovereignty in the most northern reaches of the Arctic. Any improvements to Canadian surveillance systems will undoubtedly enhance deterrence, Canadian and global security, while the sovereignty function is an adjunct blessing. Current Canadian systems are inadequate, as are continental systems, for complete coverage of Canadian territory. In many ways, a conflict of interest exists between continental defence partners sharing defence systems one partner considers to affirm sovereignty over a territory the other partner disputes. It was also disclosed that improving upon current systems to meet all of Canada's needs would be too expensive for Canada to fulfill.

The relationship between NORAD and SDI, and Canada's opposition makes an independent space-based system a strong alternative to continuing a relationship which may infringe upon Canadian interests. A space-based system will also allow Canada to continue its current security and arms control policies as well as make use of Canadian technology, providing economic benefits to Canadians. The use of such a system may provide foreign policy alternatives to Canada's

surveillance requirements, by pursuing an international organization or agency to regulate satellite surveillance. This international option may lower the cost of Canada's system and provide guaranteed acceptance.

7.2.5 Policy Considerations

Chapter six provided the necessary policy considerations for Canada, if she is to pursue her own independent, bilateral or multilateral space-based surveillance system, as well as the international obligations Canada, would assume upon entering the space-based surveillance regime. Reciprocal U.S. and Soviet space activities led to the establishment of the satellite reconnaissance regime. The slow development of ASATs allowed both sides time to accept satellite use. Canada must be aware of the current and future challenges to this regime and the impact of her own activities in order to prevent a change in attitude toward satellite reconnaissance. Third party satellites, such as Canada's, both civilian or military, ASATs, orbital debris and nuclear-power sources, SDI and Trans-Atmospheric Vehicles (TAVs) threaten or will threaten the current regime. This may result in changes to current dissemination policies or attitudes toward satellite reconnaissance. Canada must therefore decide between open dissemination or controlled dissemination, the creation of an international organization or multilateral treaty to control satellite use and seek a formal

agreement to the regime. In such negotiations, Canada should be cognizant of the incentives to build ASAT weapons, such as the asymmetries involved. A ban upon space-based weapons should therefore be pursued. ASATS inherently threaten all satellites as well as arms control verification. Orbital debris and NPS in orbit can be just as destructive to satellites as ASATS. TAVS will undoubtedly challenge the current regime and should be considered in any future negotiations. Canada may also pursue an ISMA, WSO, PAXSAT or expanded 'Open Skies' concept if such an agency can contribute to Canadian dissemination policy, the stability of the satellite regime and constructive internationalism.

The possibility of the convergence of air and space reconnaissance brought on by TAV flight will certainly force the delimitation/delineation debate between air and space. It is noted that a functional convergence would provide security for current spacecraft capabilities, however the emergence of TAV reconnaissance will make this impossible as its function and intent is difficult if not impossible to police. Therefore, spatial divergence of the two regimes, namely, some arbitrary or natural physical division between air and space is most likely the best possible answer for Canada's protection of her satellites and maintenance of the current satellite regime.

The most immediate challenge to Canada is the SDI/NORAD debate, their relationship to continental defence, and Cana-

da's international obligations. If the United States is determined to pursue SDI deployment, it is certain that NORAD will become an intricate component of the U.S. Space-Command, as it will be impossible for many reasons, both political and practical, to separate space defence from current air defence. A strategic defence system will require full Canadian cooperation, as Canadian territory and participation are a likely requirement. Canada, if she determines SDI is not in her interests will be hard-pressed to accept the system. If the U.S. can deploy a system without Canadian participation, Canada will still contribute through NORAD. It is not likely that the U.S. will require the NWS for SDI as space-based systems are superior, nevertheless, it may retain the NWS as a possible back-up for air defence. Canada, must therefore make a decision either to remain in NORAD, but not SDI, acquire less information about space surveillance, and be regarded as a full partner by the Soviets anyway; or be a full member of a new continental aerospace defence incorporating SDI with NORAD; or leave NORAD and pursue other surveillance options. These other options will depend upon the satellite technology and launch capabilities available to Canada. The technology is available to Canada through her RADARSAT programme. The major difficulties could come in the form of initial launch, maintenance and/or replacement during a crisis.

Canada' must be cognizant of the economic benefits and political downside of SDI research in the United States. It is likely that SDI research will provide ample stimulus to new technology and launch vehicles, from which Canada should benefit. During this phase SDI will not encounter significant political opposition within the NATO alliance. If however, the programme were to survive American domestic opposition and reach deployment stage, alliance opposition would presumably grow. As well, SDI would cause further opposition and threaten deterrence if deployed outside current arms control treaties and negotiations. Canada should be aware of the consequences of siding with the U.S. programme on one hand, or opting out on the other. By excluding itself from SDI research and U.S. deployment, Canada is likely to suffer in its relationship with the U.S. space programme. By accepting the programme, Canada, may upset its international cooperative efforts in space if SDI deployment is adverse. Canada should therefore continue to oppose SDI deployment and further Canadian involvement in the programme.

Regardless of SDI deployment, Canada should pursue a space-based surveillance system to affirm her sovereignty. This system may be independent, bilateral or multilateral depending upon certain scenarios. However, a bilateral system with the U.S. without settling the Northwest Passage dispute will not likely affirm sovereignty over that partic-

ular region. It will however extend coverage throughout the archipelago. A multilateral system is the best alternative for Canada if she wishes to affirm sovereignty, protect her satellites and establish formal rules for satellite use and information dissemination. An independent system would be useful for affirming sovereignty, however measures to protect the satellites and regulate dissemination, should also be undertaken to legitimize their use. Formal negotiations are considered superior for these purposes, nevertheless, informal bargaining may also provide satisfactory results. Canada should avoid a bilateral system without assurances from the U.S. that SDI will not be separable. For similar reasons, Canada could not remain in NORAD as it now stands if SDI is deployed. If Canada accepts SDI deployment and participates fully, then these conditions become moot. If NORAD continues to evolve as it is toward space-based systems and the U.S. rejects SDI deployment, then a bilateral system is workable, but will not be sufficient to alter Canada's claim over the Northwest Passage.

7.3 FINAL SUMMATION

Outer space has become a significant arena for the conduct of state activities. Canada should use the space resource to the fullest extent possible, as it is likely that space-based systems provide cheaper alternatives to many terrestrial systems offering significant advantages

over them. Although space has altered the concept of sovereignty to a degree, in terms of eliminating territorial acquisition, extraterritorial state sovereignty can still be exercised in space. Canada may do so to affirm its sovereignty over its Arctic region, as long as it does not violate the rights of other states. Therefore, space-based surveillance systems can affirm sovereignty in the same manner as terrestrial-based systems, however, space-based systems cannot be used to affirm sovereignty over a territory which could not be first legally affirmed by terrestrial systems.

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