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Antarctica:
An Inchoate Threat to New Zealand's Security

Implications for National Policy and the Armed Services

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Denis R. Gibbs

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Abstract

National interest has always exerted a significant influence over the geopolitical affairs of Antarctica. During the first half of the twentieth century national interest was fuelled by the inimical politics of whaling, which of itself created tension amongst those states that had a presence on the Antarctic continent. With the ratification of the Antarctic Treaty in 1961 international anxiety over the prospect of Antarctica becoming a superpower playground with nuclear overtones subsided and the world community accepted an obligation to forthwith protect the continent and its unique environment. However, the advent of the Treaty has not curbed the aspirations of state and non-state parties to exploit Antarctica for both its living and non-living resources. Commercial pressure to gain access to Antarctic resources is likely to intensify in the future once exploitable resources elsewhere in the world become increasingly scarce. Reserves of several strategic resources are projected to reach the point of commercial exhaustion within the first three decades of the 21st century. In the Arctic access to resources such as oil and fish continues to sour relations between otherwise friendly countries and was, in part, is responsible for the militarization of the Arctic Ocean region. If the Arctic represents Antarctica's prophetic twin then New Zealand will face an international relations dilemma unlike any it has previously confronted: should it defend its territorial claim over the Ross dependency or withdraw northwards to secure a Sub-Antarctic bastion? This is a rhetorical question for without being part of an amiable union of countries, securing the Ross dependency will be impossible for New Zealand to achieve. Given that such a union cannot be assured, it is in New Zealand's national interest to be militarily prepared to defend its Sub-Antarctic 'backyard'. Military preparedness in New Zealand is determined by national policy, an amalgam of foreign affairs and defence considerations, which in recent years have failed to recognise Antarctica as an inchoate security threat. Consequently, the New Zealand Defence Forces, despite recent capability upgrades, remain inappropriately equipped and ill-prepared to confront any challenge to the territorial integrity of New Zealand's Sub-Antarctic 'backyard' and the resources it may harbour.

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Although I have only recently commenced the study of Antarctic politics I have been aware for many years that both the Allies and Axis powers attached strategic importance to the continent during World War II. For the first two years of the war the tempestuous southern latitudes provided a hunting ground for German naval commerce raiders and an unforgiving battlespace for the allied navies sent to hunt and destroy them. Interest in this aspect of Antarctica's history became the motivation for me to embark upon a thesis that explores the past, present and future relevance of Antarctica to New Zealand's security. Pursuit of this personal goal would not have been possible without the encouragement and support of my supervisor, Dr. Ron Smith, to whom I owe a debt of gratitude. I willingly absolve Dr. Smith from all responsibility for any mistakes found in the thesis.

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Acronyms and Abbreviations

AAT	Australian Antarctic Territory
ACS	Aerial Common Sensor
ADF	Australian Defence Force
AEW	Airborne Early Warning
AEW&C	Airborne Early Warning and Control
ANWR	Arctic National Wildlife Refuge
ANZUS	Australia-New Zealand-United States Security Alliance
APWG	Antarctic Policy Working Group
ASCM	Anti-Ship Cruise Missile
AT	Antarctic Treaty
ATCM	Antarctic Treaty Consultative Meetings
ATCP	Antarctic Treaty Consultative Parties
ATP	Antarctic Treaty Parties
ATS	Antarctic Treaty System
BANZARE	British-Australian-New Zealand Antarctic Research Expedition
BAS	British Antarctic Survey
CBM	Confidence Building Measures
CCAMLR	Convention on the Conservation of Antarctic Marine Living Resources
CCAS	Convention for the Conservation of Antarctic Seals
CDR	Closer Defence Relations
CH_4	Methane
CHM	Common Heritage of Mankind
CITES	Convention on the Trade of Endangered Species

CO_2	Carbon dioxide
CP	Consultative Parties
CRAMRA	Convention on the Regulation of Antarctic Mineral Resource Activities
DSIR	Department of Scientific and Industrial Research
EAB	External Assessment Bureau
EEZ	Exclusive Economic Zone
ELINT	Electronic Intelligence
FAO	Food and Agriculture Organisation
FID	Falkland Islands Dependency
GCSB	Government Communications Security Bureau
GIUK	Greenland-Iceland-United Kingdom Gap
IASC	International Arctic Science Committee
IGY	International Geophysical Year
IPCC	Intergovernmental Panel on Climate Change (United Nations)
ISR	Intelligence, Surveillance and Reconnaissance
IUU	Illegal, Unreported and Unregulated (fishing)
MFAT	Ministry of Foreign Affairs &Trade
MIZ	Marginal Ice Zone
MMA	Multi-mission Maritime Aircraft
MRV	Multi-role Vessel
NCP	Non-consultative Parties
NF	Northern Fleet (Russian/Soviet)
NGO	Non-government Organisation
NSR	Northern Sea Route

NZAP	New Zealand Antarctic Programme
NZDF	New Zealand Defence Forces
ODP	Ocean Drilling Program
OPEC	Organization of Petroleum Exporting Countries
OSV	Offshore Patrol Vessel
PEPAT	Protocol on Environmental Protection to the Antarctic Treaty
SAR	Synthetic-aperture Radar
SCAR	Scientific Committee on Antarctic Research of the International Council of Scientific Unions
SLAM	Standoff Land Attack Missile
SLAM-ER	Stand-off Land Attack Missile – Expanded Response
SLBM	Submarine-launched Ballistic Missiles
SLOC	Sea Lines of Communication
SSBN	Nuclear-powered Ballistic Missile Submarine
SSN	Nuclear–powered Attack Submarine
TAC	Total Allowable Catch
TACC	Total Allowable Commercial Catch
UAV	Unmanned Aerial Vehicle
UN	United Nations
UNCLOS	United Nations Convention on the Law of the Sea
USN	United States Navy

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(Source: S.Z. El-Sayer in Glasby (ed.), 1990)

Chapter 1: Introduction

1. 1 Why Antarctica will become important

An age-old maxim states that *the best predictor of the future is the past.* Notwithstanding that international relations in Antarctica - see fig. 1 - today can be characterised as peaceful and co-operative, there have been periods when interstate disputes and conflicts have highlighted the imperious ideology of national interest.[1]

Whether the above maxim indicates a peaceful or antagonistic future for Antarctica depends on which period of Antarctica's past is chosen as being

[1] National Interest is **a** term of relative recent vintage in the lexicon of international relations and one used to describe the underlying rationale for the behaviour of states and statesmen in the anarchic international environment of realpolitik. As an instrument of political analysis it is particularly associated with the school of political realism and its chief advocate, especially during the 1950s and 1960s, was the American Hans Morgenthou. (See Sondermann, Fred A., 'The Concept of the National Interest', *Orbis,* Vol. 21, No. 1, 1977, p. 123.) However, the all-encapsulating nature of the term, defying as it does academic preciseness, has lead to it being ignored in more recent literature on international relations. Indeed, in much contemporary theory it is the 'sin that dare not speak its name.' (See Evans, Graham and Jeffrey Newnham, *The Penguin Dictionary of International Relations,* Penguin, London, 1998, P. 345.) It is however, within American political rhetoric that the term retains its value, (Sondermann, *op cit.,* p. 133.) for as Joseph Nye points out national interest was the rubric under which the President George Bush Snr. took the United States into the 1991 Gulf War. [See Nye, Joseph S., 'Why the Gulf War Served the National Interest', *Atlantic online,* 1991, http://www.theatlantic.com/issues/91jul/nye.htm (17 January, 2004)]. Even more recently, Condoleezza Rice, as President G. W. Bush's National Security Advisor, advocated that the United State foreign policy should be focused solely around the national interest, (Rice, Condoleezza, 'Promoting the National Interest', *Foreign Affairs,* Vol. 79, No. 1, 2000, p. 62.) a point taken up in the same issue of *Foreign Affairs* by Robert Zoellick. Zoellick claims that America should not be ashamed to use power in pursuit of national interest. (See Zoellick, Robert S., 'A Republican Foreign Policy', *Foreign Affairs,* Vol. 79, No. 1, 2000, p. 68.) On the Antarctic continent, America in particular has stressed its unwillingness to permanently subjugate its economic national interest to the provisions of the Antarctic Treaty (See Mitchell, Barbara and Lee Kimball, 'The U.S. Position', *New Zealand International Review,* Vol. VI, No. 6, 1979, p. 10.). And recently the United States in pursuit of its national interest has incorporated the circumpolar Antarctic seas into the calculus of its foreign policy. (See Joyner, Christopher C., 'United States legislation and the Polar Oceans', *Ocean Development & International Law,* No. 29, 1998, p. 266.).

indicative of its future. This is a choice of extreme importance when predicting events several decades into the future. If the period up to the middle of the twentieth century is the vanguard of choice then Antarctica's future is likely to return to the politics of imperialism and national interest. If, however, the period chosen is post 1961, the year the Antarctic Treaty[2] (AT) was ratified, then Antarctica's future should be characterised by peace and international co-operation. Nonetheless, even this latter period was never completely devoid of the politics of national interest, for during the decade preceding the signing of the Madrid Protocol in 1991[3] a number of countries stood poised to exploit Antarctica's mineral wealth. If Antarctica's past has never been completely free from the politics of national interest then it is conceivable that its future will yet again be shaped by this dynamic. Today there exist states that possess the economic, technical and military capabilities, plus the willingness, to force their hegemonic resource ambitions on Antarctica despite the prospect of incurring the wrath of conservation-minded countries and environmental non-government organisations (NGOs).

Up to the middle of the twentieth century it was the hankering for unfettered access to whales that drove countries to pursue their economic national interest in the inhospitable Antarctic Ocean. Although commercial whaling may yet be revived in Antarctic waters it will not be the cause of friction between states in Antarctica. That touchstone belongs to a looming worldwide scarcity of resources.

While the presence in Antarctica of minerals such as oil and hard minerals remains speculative, anecdotal evidence of their existence has been strong enough

[2] The Antarctic Treaty is cited in full in Appendix I.
[3] The Madrid Protocol is an alternative name for the Protocol on Environmental Protection to the Antarctic Treaty or PEPAT ratified in 1991.

to encourage preliminary exploration. Unfortunately, the need to supplement dwindling supplies of minerals and even fresh water within the next three decades is likely to force states to consider the unthinkable - the exploitation of Antarctica.

In a similar vein, the shrinking stocks of pelagic fish are now considered incapable of supplying the future needs of the agricultural and fish-farming industries, let alone satisfying a growing human appetite for fish. Given the world's voracious hunger for fish, it is inevitable that fishing nations will turn their attention and resources to harvesting the reserves of Antarctic Ocean krill. Krill is a small shrimp-like crustacean, some six centimetres in length, upon which the Antarctic Ocean marine food chain is based. Just as plundering krill stocks will have disastrous consequences for the entire Antarctic marine ecosystem; it could also prove disastrous for those pillaging the krill. History suggests that the over exploitation of a 'common' resource tends to give rise to disputes between countries as each country attempts to maximise its share of the diminishing resource.

Although there is dispute within the scientific community as to the cause of climate change, there is unanimity amongst climotologists that the earth is warming and has been doing so since the dawn of the industrial revolution. Global temperatures have risen by at least 0.6° Celsius since the nineteenth century[4] and as a consequence there exists a discernible rise in sea levels.[5] According to James Lovelock, recent climatic events, such as the unprecedented 2003 European heat wave and the melting of the Greenland ice sheet indicate that climate change is

[4] See Browne, John, 'Beyond Kyoto', *Foreign Affairs,* Vol. 83, No. 4, July/August 2004, p. 21.
[5] See Williams, Daniel, 'Sinking Feeling', *Time Magazine,* August 20-27, 2001, p. 18.

moving "much faster than anybody guesses."[6] Interestingly, and for reasons that are not completely understood, the polar regions are warming faster than the world as a whole. In Antarctica the collapse of the Larsen Ice Shelf during the summer of 2002 is attributed to the warming of the Antarctic peninsular.[7]

Climate change has many causes. Like the rest of the world climate change in Antarctica is being attributed to industry pollution. There appears little doubt that such pollution is acting as a catalyst in changing political attitudes towards preserving the continent and it's near pristine environment. The United States, for example, has made it clear that any significant disruption to or pollution of the continent or its girdling ocean will lead to it reconsidering its support for Antarctic science.[8] Any denegation of research by America, as the leader in Antarctic research, would bring into question the underlying altruistic values of the AT. Even minor changes to the AT could spell the collapse of the whole treaty system and in the absence of the Convention on the Regulation of Antarctic Mineral Resource Activities (CRAMRA) or an equivalent this would open the continent up to unregulated commercial exploitation.

Despite fifty years of international co-operation, the legal status of Antarctica remains undetermined and questions still swirl around the legitimacy of the seven sovereignty claims. These legal ambiguities have created a political climate in which numerous states appear willing to flaunt the AT in order to fill their marine resource needs. Given that exploitation of Antarctica undoubtedly represents a potentially less violent option for gaining access to resources than forcing another

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[6] See McCarthy, Michael, 'The power of one', *The New Zealand Herald*, May 29-30, 2004, p. B9.
[7] See Connor, Steve, 'Melting polar ice shelves linked to warmer seas', *The New Zealand Herald,* November 3, 2003, p. A14.
[8] See Joyner, Christopher C., *op cit.*, p. 267.

sovereign state to relinquish them, Antarctica's fate would appear sealed. Consequently, exploitation of Antarctica appears not to be a question of if, but of when.

Although the majority of predictive information published about Antarctica assumes the continuance of the AT, it is possible to conceive a future for the continent centered not on the Treaty but on the return to an anarchic scramble for resources reminiscent of the pre-treaty era. Under this scenario, Antarctica would in all probability be unmercifully exploited despite issues surrounding existing sovereignty claims remaining unresolved. Regrettably, today's total reliance on the Treaty has blinded many governments, including that of New Zealand – at least publicly - to the possibility that an 'alternate scenario' may indeed represent Antarctica's future.

Predicting what a country's future might hold for its citizens is an obligation shouldered by every government. It is an obligation that often brings into sharp relief the conflict between outcomes the government may want as against the uncertainty of being able to bring such outcomes to fruition. Major political crises are generally characterised by the sudden loss of many or most societal certainties. Since such crises are often born out of a reluctance or powerlessness by governments to liquidate worn out policies, it remains problematic as to whether many governments have the political fortitude to establish revisionist necessary policies, especially as paradigmatic change tends to cause disquiet amongst citizenry. Since the destiny of Antarctica and New Zealand are indivisible, any future adverse paradigmatic change imposed on Antarctica will inevitably have a negative impact upon New Zealand as a nation and an unsettling affect on its citizens.

Compounding the unsettling aspects of change is the brevity of the existing parliamentary tenure. Existing parliamentary terms serve to inhibit long-term forecasting for they mitigate against governments having to cast more than a cursory glance 30, 40 years or even several centuries into the future. Professor Allen Tough of the University of Toronto suggests that these are the optimum forecast periods a responsible government would adopt.[9] Within Tough's minimum forecast period there appears to be one paradigmatic change looming for Antarctica that hold unpropitious consequences for New Zealand. Within the next thirty years and certainly no later than the expiry of the Madrid protocol, the worldwide scarcity of natural resources will act as the catalyst in the demise of the AT. As more and more states become involved in Antarctica in anticipation of satiating their resource needs, the legitimacy of existing territorial claims will be increasingly questioned. Territorial claims, including that exercised by New Zealand over the Ross dependency, are unlikely to stand inviolate if they impinge upon free access to the continent's resource wealth.

While the above is no more than conjecture, it is the result of reviewing evidence provided by a multiplicity of independent sources and is therefore worthy of more than scholarly discussion; it warrants serious public debate. Such debate is politically inescapable since any change to New Zealand's sovereignty over the Ross Dependency is likely to herald an adverse change to the benign security environment New Zealand currently enjoys.

Many people could argue that conjecture about the future, especially in the absence of hard data, only serves to create a climate of uncertainty. However, for other people and in particular futurists such as Alvin Toffler, musing about the

[9] See Tough, Allen, *Crucial questions about the future,* University Press, London, 1991, p. 10.

future is a credible academic discipline for highlighting civilisation's uncertain destiny. Toffler, in his seminal book titled *Future Shock,*[10] acknowledged that no person can speak with any precision and certainty about future events. However, he makes a pertinent point when maintaining that lack of precision and certainty is no excuse for silence. Also of considerable import is Toffler's conclusion that "Where 'hard data' are available, of course, they ought to be taken into account. But where they are lacking, the responsible writer – even the scientist – has both a right and an obligation to rely on other kinds of evidence, including impressionistic or anecdotal data and the opinions of well-informed people."[11] When considering the future, Toffler is of the opinion that it is more important to be imaginative and insightful than to be 100 per cent 'right', and that speculation does not have to be 'right' to be enormously useful.[12]

Despite the lack of information pointing to an imminent collapse of the AT it remains the central hypothesis of this thesis that access to natural resources, in a resource depleted world, will inevitably cause states to abandon the AT. As natural resources are synonymous with wealth and power, particularly in an anarchic global environment, states are likely to consider securing unfettered access to Antarctica a prudent precaution in terms of their own national interest. This thesis further posits that Antarctic 'Gateway' states,[13] including New Zealand, should be seriously concerned about the spectre of national interest returning to Antarctic politics inasmuch as it would signal the reawakening of oft-neglected past tensions. In all likelihood the resuscitation of past tensions would

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[10] See Toffler, Alvin, *Future Shock,* Pan books, London, 1970, p. 15.
[11] *Ibid.*
[12] *Ibid.*
[13] Nomenclature used to describe those countries that provide facilities in support of scientific expeditions to Antarctica solely because of their close proximity to the

lead to interstate imbroglios that could seriously threaten the security of New Zealand due to its close proximity to Antarctica.

It is possible, indeed prudent, for states to reach a peaceful resolution to these imbroglios and thus avoid conflict over resources. However, human history is littered with a long succession of resource wars—stretching all the way back to the earliest agrarian civilisations. Today, the use of or the threat of war to resolve resource disputes is an ever present reality. It is a point well illustrated by an observation attributed to Boutros Boutros-Ghali, when as Egypt's minister of state for foreign affairs, he directed a veiled warning towards Ethiopia that "The next war in our region will be over the waters of the Nile, not politics."[14] The ease with which governments revert to military means to resolve resource disputes has been aptly demonstrated in Democratic Republic of Congo, where several internal factions along with foreign powers have forsaken diplomacy for war as the preferred method of gaining control over that country's lucrative gold and copper deposits.[15] More recently (2004), western powers have been implicated in a failed attempt by a multi-national mercenary force to change the political regime of Equatorial Guinea and thereby secure that country's oil reserves for selected commercial interests.[16]

Whether resource conflicts in Antarctica will be resolved by peaceful or by violent means is a luxury New Zealand can ill-afford to let history alone decide. It would be wise for New Zealand to pursue confidence-building measures (CBM) that encourage the peaceful resolution of resource disputes, while at the same time

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continent. Besides New Zealand other "Gateway" countries are Argentina, Australia, Chile and South Africa.

[14] See Klare, Michael T., *Resource Wars,* Metropolitan Books, New York, 2001, p. 12.

[15] *Ibid.,* p. 24.

developing defensive strategies to moderate the worst excesses arising out of interstate imbroglios that end in violent altercation. Such moderation strategies must acknowledge the high probability that the New Zealand Defence Forces (NZDF) could not stand aloof of any conflict occurring in western Antarctica. For New Zealand there exists a narrow window of opportunity – no more than thirty years - in which to develop polar military capabilities. However, any tarrying in the decision making process would preclude using that window of opportunity to develop its armed forces given that the development of new military capabilities can take 20 years or more to reach operational maturity.[17]

Although the Arctic is not Antarctica's identical twin it does serve to demonstrate the capricious nature of interstate relations in a political environment riven by competition over natural resources - a competition driven by national interests. This capriciousness is aptly illustrated by the relationship between Canada and the United States. Each country exhibits congeniality towards the other except in the Arctic where the presence of hydrocarbon reserves sours their relations. Access to natural resources also dogs relationships between America and Russia, Russia and Norway, Canada and France and Canada and Denmark. Despite being literally poles apart there is at least one lesson to be learned from the Arctic: development of natural resources brings with it a military liability. Thus, if the present day Arctic is considered to be a reliable guide to Antarctica's

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[16] See Observer, 'UK, US knew full coup plan', *The New Zealand Herald*, November 29, 2004, p. B1.
[17] See Australia, Commonwealth of, *Defence 2000: Our Future Defence Force,* Defence Publishing, Canberra, 2000, p. 7.

future, a future centered around the exploitation of natural resources, then Antarctica has the potential to become militarised; no doubt to the horror and consternation of the New Zealand government and its citizens.

Successive New Zealand governments have sought to defend New Zealand's strategic interests and objectives in Antarctica and the Southern Ocean. However, it remains questionable as to whether New Zealand has either the international political standing or military capability to enforce its authority over such an extensive region. In all reality New Zealand will be unable to enforce its hegemony beyond the perimeter of the Exclusive Economic Zone (EEZ) surrounding its Sub-Antarctic Island territory. But even under this restricted scenario this thesis concludes that unless New Zealand's security agencies develop a strategic doctrine in answer to the 'alternate scenario', then New Zealand remains vulnerable to aggressive acts emanating from Antarctica.

The thesis also advances the belief that in less than three decades the NZDF, in particular the air force and navy, will need to supplement their existing war-fighting capabilities with weapon platforms more suitable for undertaking operations in a harsh and potentially hostile Antarctic – Southern Ocean region. Inevitably these weapon platforms would need to be equipped with modern offensive as well as defensive weapons. The re-orientation of the armed forces will not come cheaply since it is unlikely that, with the exception of Australia, New Zealand could place much reliance on receiving military support from today's 'friends' and 'allies'. In a world facing a scarcity of natural resources today's Antarctic 'friends' and 'allies' are likely to be tomorrow's adversaries.

1. 2 The Thesis

Chapter one, like all introductions, serves as a guide to the information contained in the chapters that follow. It also served to introduce the realist ideology of national interest and how, in a world of diminishing natural resources, national interest could become the prime determinant of Antarctica's future. The chapter questioned whether in the future Antarctica will remain peaceful or become a continent riven by interstate imbroglios as posited by the 'alternate scenario'. Should the 'alternate scenario' become the reality, then the resultant strategic consequences could imperil New Zealand's security.

Chapter two explores both the unique geophysical and geopolitical heritage of Antarctica. While geophysically Antarctica is the last true wilderness on Earth there is no certainty that the geopolitical régime established to protect the continent will indeed be successful over the long term. Thus, New Zealand would be ill-advised to place too much reliance on the treaty system as mechanism to provide for its own security.

The Arctic, which is discussed in chapter three, serves as an illustrative example of how a polar wilderness can be quickly transformed into a military bastion once its strategic importance and the presence of natural resources are confirmed. National interest played a pivotal role in this transformation. Since Antarctic shares many of the Arctic's geostrategic and geopolitical characteristics it is conceivable that both polar regions will share the same fate. For New Zealand Canada's polar experiences appear particularly poignant.

Chapter four discusses the lack of appreciation exhibited, at least publicly, by the New Zealand government and its various security and defence agencies of Antarctica's future importance to the country's security and strategic wellbeing.

While New Zealand's national interest in Antarctica continues to be viewed through an environmental lens, other states, of which four are discussed in this chapter, appear capable of sacrificing the environment through the commercialization of the continent.

Chapter five, details a number of disparate elements that could render the Antarctic Treaty System (ATS) inoperable within the first three decades of the current century. Three of these elements – fresh water, oil and marine fish - are natural resources that are predicted to become scarce by 2030, while the fourth – climate change - could not only exacerbate this scarcity but, could so alter the geophysical characteristics of Antarctica that its continued preservation, free from the exploitive activities of mankind, is questioned.

The penultimate chapter reviews some of the possible security options created by a New Zealand Antarctica nexus. The conclusion drawn from this review is that while a peaceful coexistence amongst states with an interest in Antarctica is possible, New Zealanders should steel themselves for a probable withdrawal from the continent and be prepared to militarily defend the Sub-Antarctic Islands and the increasingly important Southern Ocean EEZ.

Chapter seven draws together all of the salient information contained in the previous six chapters into a comprehensive conclusion.

Chapter 2: Sovereignty is a Mirage

2. 1 A continent like no other

The ancient Greeks presumed the existence of Antarctica for, having noted the existence of the Arctic they assumed that there must be a countervailing twin landmass to the south. The first recorded venture south to the Antarctic Circle was by sailors on board the British ships *Adventure* and *Resolution,* an expedition led by Captain James Cook in 1772-75. Although Cook circumnavigated Antarctica, his expedition was denied a glimpse of its landmass as pack ice prevented him from sailing within a 100 nautical miles of the continent.[1] Nevertheless, the bitter cold in combination with floating icebergs indicated the presence of a continent or at least a large tract of land near the South Pole. During the years 1819-21 Antarctica was 'discovered' both by the Briton Edward Bransfield and by the Russian explorer Thaddus von Bellingshausen. A subsequent dispute over priority of discovery was resolved in 1955 when the International Court of Justice ruled that Bransfield discovered Antarctica on 30th January 1820.[2]

Sealing and whaling provided the incentive for most 19th century voyages to Antarctic waters and as a consequence interest in Antarctica began to flourish. As interest grew in the science of geography the International Geographic Congress proclaimed the "Year of the Antarctic" in 1901. This was followed some eleven years later by two notable Antarctic expeditions, one led by the Englishman Robert Falcon Scott and the other by the Norwegian Roald Amundsen. The laurel of being the first person to reach the South Pole went to Amundsen. Scott, having

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[1] See Fogg, G.E., *A History of Antarctic Science,* Cambridge University Press, Cambridge, 1992, p. 23.
[2] See Buckley, Richard (ed.), *Antarctica: Protecting the last wilderness,* European Schoolbook Publishing, Cheltenham, 1995, p. 1.

lost the race to the Pole, lost his life in tragic circumstances on the return journey to the Ross Sea.

Science was not the only impulse to propel nations to renew their interest in Antarctica; the doctrine of economic imperialism played a part as well. The seemingly unlimited bounty of living resources led to a flurry of territorial claims during the first half of the 20th century, with Great Britain asserting the first sovereignty claim in 1908. Sovereignty claims were also made on behalf of the peoples of New Zealand (1923), France (1925), Australia (1933), Norway (1939), Chile (1940) and Argentina (1943). Two other countries with a long history of involvement in Antarctica, Russia and the United States, have asserted no rights to any Antarctic territory and nor do they recognise the claims of other countries.

In terms of the natural features which identify it, the Antarctic region stretches north of the Antarctic Circle (66° 30' South) to include an area bounded by the Antarctic Convergence. The Antarctic Convergence delineates a belt of sea where the waters of the southern and northern oceans mix at approximately 60° South.[3] The continental landmass of Antarctica is approximately 14 million km², an area exceeding the combined extent of China and India or the United States and Mexico.[4] Ice shelves amount to an additional 1.6 million km².[5] During the winter the newly formed pack ice around Antarctica's perimeter may extend the continent to twice its summer size. The Antarctic ice sheet accounts for

[3] *Ibid.*, p. 17. The Antarctic Convergence is band of sea where the cold dense nutrient rich waters of the polar region meet the warmer and more saline waters of the Atlantic, Pacific and Indian Oceans. This natural zone provides a convenient ecological boundary for Antarctica, its actual position varying marginally from ocean to ocean and year to year.
[4] See Beck, Peter J., 'Antarctica enters the 1990s: an overview', *Applied Geography,* Vol. 10. 1990, p. 248.
[5] Buckley, *op cit.,* p.2.

approximately 70 per cent of all the freshwater on Earth and produces about 1000 cubic kilometres of icebergs each year.[6]

The continent is commonly divided into two regions East Antarctica, essentially a chain of islands bonded together by ice, and West Antarctica, a great ice-covered plateau. These two regions are divided by the Transantarctic mountain range that runs for more than 9000 kilometres from the Filchner Ice Shelf to the eastern side of the Ross Sea. It includes many mountain peaks over 3000 metres in height, including Mount Erebus (3794m.) on the edge of the Ross Ice Shelf, where, in 1979, an Air New Zealand DC-10 airliner crashed with the loss of 257 lives.

The South Pole lies at an elevation of 2,800 metres. With an average height of 2,300 metres Antarctica is three times as high as any other continent. Moreover, its continental shelves are exceptionally deep, with water depths averaging between 500 metres and a kilometre, compared to a mean depth of 130 metres for the world's other continental shelves.[7] Ice up to 4.5 kilometres thick covers 98% of the continent,[8] and has an estimated volume of 29 million km^3. Antarctica also holds 90 per cent of all the Earth's glacial ice.[9]

The Antarctica plateau is effectively a desert that receives an annual precipitation of less than 0.05 metre of snow - although coastal regions can receive ten times as much. Gigantic ice shelves rise and fall with the tide. The Ross Ice Shelf, being the largest, measures 540,000 km^2 - about the size of France.[10] There is an understandable fear that climate change may collapse many coastal ice shelves resulting in a global sea-level rise of tens of metres. While

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[6] See Hill, John, *New Zealand and Antarctica,* Government Printer, Wellington, 1983, p. 49.
[7] Buckley, *loc cit.*
[8] *Ibid.,* p. 3.
[9] See Keys, J.R., Ice. In G.P. Glasby (ed.), *Antarctic Sector of the Pacific,* Elservier, New York, 1990, p. 97.

most computer models of future climate change give such a scenario an extremely low probability[11], it cannot be discounted altogether. In the year 2002, a major part of the Larsen B Ice Shelf, containing an estimated 720 billion tonnes of ice, collapsed in just thirty-five days. [12]

The strong westerly winds that rage unhindered around Antarctica are fed by the steep temperature and atmospheric pressure gradients of the southern latitudes. Gales blow for some 300 days a year.[13] On land the katabatic winds can reach velocities in excess of 300 kph, making Antarctica the stormiest continent on earth.[14] Wind drives the mean annual air temperature to a low of minus 22°C at the coast and minus 56°C in the interior, with an extremely low temperature of –89.2° being recorded at the Russian Vostock Station. In summer the mean temperature approaches 0° Celsius, although a high of +15°C has been recorded in a dry ice-free valley at Australia's Vanda Station.[15]

Despite its frigid climate there is a body of evidence showing that global warming is causing dramatic changes to the Antarctic environment. The Antarctic Peninsula has warmed almost 2ºC since 1940, which has precipitated an increase in flowering plants and mosses along the promontory. Soil invertebrates have also advanced along the peninsula with changes in vegetation.[16] Similarly, according

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[10] Buckley, *loc cit.*

[11] See McCarthy, James J. and Malcolm C. McKenna, 'How Earth's Ice is Changing', *Environment,* Vol. 42, No. 10, December 2000, p. 13.

[12] See Reuters, 'Giant ice shelf shatters', *The New Zealand Herald,* March 21, 2002, p. A10.

[13] See Suter, Keith, *Antarctica: Private property or Public Heritage?,* Zed Books, London, 1991, p. 15.

[14] Buckley, *op cit.*, p. 17. Complex patterns of air circulation and temperature change create 'katabatic' winds that gush down the mountains and coastal escarpments of Antarctica.

[15] Hill, *op cit.,* p.14.

[16] See Goklany, Indur M., 'Climate Change: the 21st century's most urgent environmental problem or proverbial last straw?' in Kendra Okonski (ed.), *Adapt or Die,* Profile Books, London, 2003, p.61.

to Sarah Gille,[17] the Southern Oceans are now warming twice as fast as global oceans a whole, leading to a decline in krill.

A chief characteristic of the Southern Ocean that girdles Antarctica is its tempestuousness. In this endless tract of ocean, waves often exceed twelve metres in height (Sea State 8) as they are driven eastward by the prevailing 60-knot westerly winds.[18] The intemperate nature of the Southern Ocean can give rise to freak and potentially dangerous waves exceeding thirty-five metres in height.[19] South of New Zealand the Southern Ocean reaches a maximum depth of approximately 5,000 metres before gradually shoaling upwards to a plateau marking the edge of the Antarctic Divergence.[20] From the Antarctic Divergence the seabed continues its upward incline until reaching the relative shallows of Antarctica's continental shelf.

2. 2 Elusion of ownership

Antarctica is fashionably described as a global common. Without an indigenous human population of its own Antarctica is considered by many to be the property of all humankind. While this is an admirable notion, it is complicated by conceptual difficulties and political realities. There appears to be little agreement amongst political actors as to a common understanding of the concept global commons. The problem fundamental to the global commons concept is often

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[17] See Gille, Sarah, *Scripp Institute of Oceanography,* 14 February 2002, http://www.eces.org/archive/ec/globalwarming/Antarctica.shtml (5 March 2004)
[18] See New Zealand Ministry of Defence, 'Maritime Forces Review', 2002, http://www.defence.govt.nz/public_docs/mfr/contents-page.shtml (17 February 2004).
[19] See Lewis, David, *Ice Bird,* London, Collins, 1975, p. 22.
[20] See Houtman, Th. J., *Water Masses and Fronts in the Southern Ocean south of New Zealand,* New Zealand Oceanographic Institute, Wellington, 1967, p. 26.
The Antarctic Divergence occurs because coastal waters are driven in a westerly direction by a prevailing easterly wind and hence diverge from the Antarctic Circumpolar Waters that flow in an easterly direction north of latitude 63° South. The Antarctic Divergence should not be confused with the Antarctic Convergence which is described under footnote 3 of this chapter.

expressed as the "tragedy of the commons."[21] Irrespective of the original good intentions of stakeholders, in the absence of genuine cooperation and actual enforcement, users are inclined towards misuse and eventual abuse of common areas.

Garrett Hardin in his famous essay "The Tragedy of the Commons" explains the dynamics of the tragedy in the setting of an old-world English village commons green. The green, open to all villagers, is able to sustain cattle herds for many years providing it is a stable population. Unfortunately, the cattle population increases as each individual herdsman rationally seeks to maximise his own gain. A herdsman reasons that he will benefit from every additional cow that he grazes on the common space, with the cost of that use being dissipated amongst all of the herdsmen. But each additional cow actually contributes to the progressive deterioration of the commons. Other herdsmen following the same logic add cows, seeking to optimise their personal gain. In this way, rational individual action leads to irrational collective action by bringing about the inefficient use and eventual destruction of the commons."[22]

In broad terms, global commons have been described as those portions of the planet that lie beyond the limits of national jurisdiction and the legal prerogatives of individual states. Among the areas traditionally considered global commons are oceans, atmosphere, polar regions, and outer space. If global commons are to remain economically productive, they must remain environmentally healthy. To that end, régimes must be devised and effectively implemented that provide for the sustainable management of such areas. While the ATS has been successful in some areas, i.e. preservation of the Antarctica wilderness, the Treaty has been less

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[21] See Joyner, Christopher C., *Governing the Frozen Commons,* University of South Carolina Press, Columbia, 1998, p. 25.
[22] *Ibid.*, p.29.

than successful in preventing the pirating of Southern Ocean fish stocks. The latter is a classic example of Hardin's "tragedy of the commons."

Political realities in Antarctica continue to be shaped by the lack of clarity as to legal ownership of the continent. What still remains unclear is whether Antarctica is owned by no one or owned by everyone. Four principal approaches in modern international law pertain to the status and "ownership" of international spaces such as Antarctica.[23] The first is the concept of *res nullius* "the property of nobody." In the absence of an owner, sovereignty accrues to the first lawful taker able to demonstrate sufficient legal authority and control over that territory. This is the basis of all existing claims to Antarctica. For the international community, other than the seven claimant countries, the consequence of applying *res nullius* to Antarctica is to admit that these claims might merit legal credibility. To date, that admission has not been forthcoming.

The second concept is that of *res communis;* the property is available for use by everyone. Generally this classification is applied to common areas that do not have definitive boundaries, i.e. oceans or atmosphere. While sovereignty claims do not legally occur under *res communis,* the clear implication is that of an open access régime. Thus any country with the available technology and resources may exploit a common area, provided that any specified obligations of resource conservation and environmental protection are observed.

Common heritage of mankind (CHM), though often confused with *res communis,* is more far-reaching in its intended scope. Firstly, no person, group, or sovereign owns the commons. Secondly, access to the commons is not restricted. But most importantly, the distribution of benefits shifts from state(s) to humankind as a whole. In 1982, the Malaysian Prime Minister Mahathir

[23] *Ibid.*, p. 30.

Mohamad proposed that Antarctica be declared CHM. In advocating this proposal before the United Nations General Assembly, Mahathir, with characteristic directness said, "The days when rich nations can grab whatever territory and resources that they have access to are over. Henceforth, all the unclaimed wealth of this earth must be regarded as the common heritage of all nations."[24] While the Malaysian initiative remains a thorny issue for the Antarctic Treaty Parties (ATP), it has not changed the management régime for Antarctica nor given smaller nations access to the continent's mineral wealth.

Res publica or "public heritage of humankind" is yet another concept that could be applied to Antarctica, as it would give free access to the continent while at the same time preventing abuses through enforcement action of a state. This begs the question as to which state? As no single country has a sovereign right to Antarctica, administration under *res publica* would in all probability devolve to the United Nations. This alone would make *res publica* as unacceptable as CHM to the ATP.

As none of the above concepts have found universal acceptance, the legal status of Antarctica remains unresolved. Even if an acceptable legal framework were agreed there is no guarantee that New Zealand's sovereignty over the Ross Dependency would stand. Today, it is the doctrine of *occupatio*[25] that determines the legitimacy of any acquired territory. This doctrine is comprised of two elements, possession and administration. To meet the test of possession, the territory must really be taken into possession by the occupying state. As for

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[24] See Clad, James, 'Breaking the ice', *Far Eastern Economic Review,* December 1, 1983, p. 25.

[25] See Bernhardt, J. Peter A., 'Sovereignty in Antarctica', *California Western International Law Journal,* Vol. 5, 1975, p. 325. Additionally, in 2002 the World Court ruled that claims to territorial sovereignty require claimant countries to demonstrate to the international community that it has had continuous occupation, administration and control over the territory being claimed.(See Wain, Barry, 'More Claims', *Far Eastern Economic Review,* April 15, 2004, p. 20.)

administration, this test is met only once the occupying state, having taken possession, establishes some kind of institutional administration that shows that the territory is being effectively governed by the occupying state. If, however, within a reasonable time after the act of taking possession, the occupying state does not establish some institutional authority to exercise governing functions, then there is no effective occupation. New Zealand was 'gifted' the Ross Dependency in 1923, but has never established effective institutional governance over the territory. Therefore, it is highly doubtful as to whether New Zealand could use the doctrine of *occupatio* to legally prosecute its claim to the Ross Dependency. The origins of New Zealand's legal dilemma are rooted in the unfulfilled geopolitical ambitions of a waning imperialistic world power - Great Britain.

2. 3 Geopolitics of Antarctic imperialism

At the turn of the twentieth century Great Britain began to appreciate the strategic significance of Antarctica in the domination of the southern maritime trade routes via the Cape of Good Hope and Cape Horn. Such sea lines of communication (SLOC) would become vital to Britain's commercial well-being should shipping routes through either the Suez or Panama canals be severed by political or military interference.[26] However, it was not only the threat of political instability in North Africa and Latin America that brought Antarctica to the fore in British strategic thinking. In the early stages of both world wars the British fought major naval engagements in the region[27] and were forced to commit considerable sea power to

[26] See Johnson, J.V. 'An Examination of the Military Implications of Australia's Continued Claims to a Large Part of Antarctica', *Australian Defence Force Journal*, No. 99, 1993, p. 19.

[27] On the 8th December 1914, a British naval force under command of Vice-Admiral Sir Doveton Sturdee successfully and without the loss of a single man-of-war, defended the

search out German armed commerce raiders (disguised as harmless merchantman) as they hid amongst the icebergs of the Antarctic Ocean.[28]

The strategic position of the Falkland Islands, lying at the eastern entrance to Drakes Passage, was also not lost on the British Admiralty. With France and Spain showing interest in colonising these islands, Britain was forced to react promptly, and took possession of the Falklands in 1766. Thus any ambiguity about the status of the Falkland Islands was settled once and for all.[29] However, early sovereignty claims to Antarctica were more difficult to prosecute for, as recorded in Hansard, the 'continent was constantly under snow and ice, is only partly explored, and it is difficult to say with any exactitude where the land

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Falkland Islands against attack by the German East Asiatic Naval Squadron under the command of Vice-Admiral Maximilian Graf von Spee. By dint of good fortune, Sturdee turned what should have been a repeat of the British defeat at the Battle of Coronel into a stunning victory. By day's end the German squadron had all but been annihilated with the loss of the armoured cruisers *Scharnhorst* and *Gneisenau* and the light cruisers *Leipzig* and *Nurnberg.* Only the light cruiser *Dresden* escaped the destruction, but as the result of being hunted by the Royal Navy, the Germans opted to scuttle her on the 14 March 1915, while she lay at anchor in a Chilean fjord. (See Bennett, Geoffrey, *Coronel and the Falkands,* Batsford, London, 1962.) At the dawn of the Second World War (1939-1945), the German Admiralty dispatched two 10,000-ton displacement pocket-battleships into the Atlantic Ocean to serve as commerce raiders. The *Deutschland* was to interdict shipping on the North Atlantic trade route while the *Admiral Graf Spee* sailed into the South Atlantic in search of allied merchant shipping. While the *Deutschland* achieved little success and returned safely to Germany, the *Admiral Graf Spee* was eventually trapped off the coast of South America by a naval flotilla comprised of British and New Zealand cruisers, namely the *Cumberland*, *Exeter*, *Ajax* and *Achilles.* In the ensuing battle, the *Exeter* was severely damaged and was replaced by the *Cumberland,* which was under urgent refit at the Falkland Islands. Despite a lack of damage, the *Admiral Graf Spee* fled the engagement for the sanctuary of the Uruguayan City of Montevideo, which is located on the River Plate. After 72 hours at anchor and with no desire to face the gathering British naval force, the Germans scuttled the *Admiral Graf Spee* on the evening of December 17, 1939. (See Churchill, Winston S, *The Gathering Storm,* Reprint Society, London, 1948, pp.410- 426.)

[28] On the 19th January 1941, the German commerce raider, "33" entered the Weddell Sea, and there affected the surprise capture of three Norwegian whaling factory ships and eleven whale chasers. While the capture of the three factory ships represented a war prize of some 35,000 gross registered tons of shipping space and some twenty-two thousand tons of much needed whale oil. (See Brennkecke, H. J., *Ghost Cruiser H.K. 33*, William Kimber, London, 1954, p. 175.) Three German raiders are known to have used Gazelle Basin in the Sub-Antarctic Kerguelen Islands for crew rest and recreation. Also there existed a German proposal to establish a meteorological and radio station on the Kerguelen Islands. (See 'German Raiders in the Antarctic during the War', *Polar Record*, Vol. 4, No. 32, July 1946, p. 403.) Besides forcing the British Royal Naval to commit scare resources to their pursuit, principally through the southern oceans, the German commerce raiders sank in total, 134 ships equalling 837,278 gross tons. (See Churchill, Winston S., *The Grand Alliance,* Reprint Society, London, 1952, p. 409.)

finishes and the ice begins.'[30] Such doubts did not completely inhibit British political interest in the control of Antarctica, for a sector (20°W-80°W) was claimed in 1908 and in 1917 amalgamated into the Falkland Islands Dependency (FID). In 1919-20 with the memory of the Falkland War acting as a driver, the British government decided to acquire control over the entire continent through the pursuit of a gradualist strategy.[31] To this end, a secret committee was convened, comprising mainly civil servants, with representatives from Australia and New Zealand. By 1923 this committee galvanized the British parliament to pass by Order in Council a claim for sovereignty over another sector of Antarctica. This new claim henceforth called the Ross Dependency was in West Antarctica, below latitude 60° South and between longitudes 160° East and 150° West. An enthusiastic New Zealand government accepted sovereignty over this latest addition to the British Empire.[32]

Anticipating that Britain's imperialist desires would not be sated with sovereignty over the Ross Dependency alone, France formally annexed, by Presidential decree in November 1925 the islands of Saint Paul and Amsterdam, the Kerguelen and Crozet archipelagos, along with Adélie Land on the continent proper.[33] Even though the French Antarctic enclave comprised a relatively small wedge sandwiched between the two large slices of territory ultimately claimed by Australia, the French presence caused consternation amongst British Empire claimants, however no counter-claim was made.

By the late 1920s international interest in Antarctica had reached a new height with the continent presenting a unique challenge to adventurers. In 1928 an

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[29] See Chaturvedi, Sanjay, *The Polar Regions: A Political Geography,* John Wiley, Chichester, 1996, p. 60.
[30] See Beck, Peter, *The International Politics of Antarctica,* Croom Helm, London, 1986, p. 28.
[31] Fogg, *op cit.,* p. 158.
[32] *Ibid.*

American, Commander Richard Evelyn Byrd, with the support of commercial sponsors [34] established a base called *Little America* at the Bay of Whales on the Ross Ice Shelf. The following summer Byrd became the first person to successfully fly to the South Pole and back thus ensuring his name became synonymous with Antarctica in the minds of most Americans.[35] While Byrd's personal exploits were considered by many as no more than self-promotion, during his expeditions some important geological work was carried out.

The British acknowledged American involvement in Antarctica with little warmth. As a result of such 'interloper' activity the British became even more focused on implementing a policy 'to paint the whole of Antarctica red' and add a further 5.5 million square miles to its Empire.[36] This policy provided the impetus for the 1929-31 British-Australian-New Zealand Antarctic Research Expedition (BANZARE) led by Sir Douglas Mawson. While this expedition carried out some excellent science its principal purpose was political,[37] paving the way for Australia to claim 42 per cent of Antarctica. In 1933 the British parliament passed an Order in Council affirming sovereignty over a sector south of latitude 60° S and between 45° and 160° East. Sovereignty was transferred to a reluctant Australian government in 1933 but a further three years lapsed before any formal Australian proclamation was publicised.[38] By 1933, when the British Empire laid claim to two-thirds of Antarctica it had also reached the zenith of its territorial ambitions.

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[33] Chaturvedi, *op cit.,* p. 68.
[34] **Note:** The private sponsorship came from the industrial titans J. D. Rockefeller, Jr. and Edsel Ford. (Fogg. *loc cit.*)
[35] *Ibid.*, p. 159.
[36] See Beck, Peter J. 'A Cold War; Britain, Argentina and Antarctica', *History Today,* June 1987, p. 18.
[37] Fogg, *op cit.*, p. 164.
[38] *Ibid.*, p. 161.

Norway was the next country to stake a claim. On 14 January 1939, Norway claimed all of the territory that stretches from the FID boundary to the Australian Antarctic Territory (AAT) in the east. The territory became a Norwegian dependency in 1957 and was called Dronning Maud Land.[39] Norway's claim was spawned by the need to protect its whaling industry from British interference especially once Britain became concerned that exploitation of southern whale stocks by American and European whalers was seriously jeopardizing its own whaling industry. [40]

The advent of the Second World War once again sharpened perceptions of strategic and political possibilities in the Antarctic. Even before hostilities began, a possible German claim to territory resulting from a 1938 *Deutsche Antarktische Expedition* raised concerns in both London and Washington. Such was the strength of this concern that further American Antarctic expeditions were approved for the summer seasons of 1939 through to 1941. This time these expeditions were sponsored by the U.S. Antarctic Service organised under the auspices of the Departments of State, Treasury, Navy and Interior. Rear Admiral Byrd[41], with two ships and four aircraft was dispatched to set up an East Base on Stonington Island off the west coast of the Antarctic Peninsula and a West Base called, *Little America III,* on the Ross Ice Shelf. While this expedition was purported to be scientific in orientation, President Franklin D. Roosevelt advised Byrd that permanent bases on Antarctica were necessary "…because of their growing valve for four purposes – national defense of the Western Hemisphere, radio, meteorology and minerals." [42] As for the German territorial claim, nothing

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[39] Chaturvedi, *loc cit.*
[40] Beck (1986), *op cit.*, p. 27.
[41] Having become the first person to fly over the South Pole Commander Byrd upon his return to the United States was immediately promoted to Rear Admiral. (Fogg, *op cit.*, p. 159.)
[42] Fogg, *ibid.*, p. 162.

eventuated, although it was rumored somewhat improbably, that Hitler and his mistress Eva Braun had landed by U-boat at a "New Berchtesgarden" built in Antarctica by the 1938 expedition! [43]

Argentina and Chile began to assert their rights in the Antarctic during the Second World War. Once again such interest only served to heighten British disquiet. This time, however, anxiety reached fever pitch and a secret British naval expedition entitled *Operation Tabarin*[44] was dispatched in 1943 to establish a permanent presence on the Antarctic Peninsula. The British also dispatched a warship *HMS Carnarvon Castle* to the Falkland Islands in response to numerous acts of trespass committed by the Argentineans as they tested Britain's resolve to defend its strategic South Atlantic possessions.[45] At the conclusion of the war *Operation Tabarin* as a military expedition was terminated and the facilities constructed on the Antarctic continent were transferred to a nascent civilian organisation known as the British Antarctic Survey (BAS).

Chile was the first South American country to stake a claim to territory in Antarctica. On the 6 November 1940, Chile sought sovereignty over all lands and territorial waters of the "Southern Territories", a sector that lies between longitudes 53° and 90° West. This claim had an immediate international impact. The British government protested on the grounds that the sector defined incorporated a part of its FID, while the reaction of the United States was in keeping with its previous stance of recognising no territorial claims. Even the Argentine held reservations about the validity of the decree since it cut across a

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[43] Chaturvedi, *op cit.*, p. 70.
[44] See Dodds, Klaus, *Pink Ice,* Tauris, London, 2002, p. 14.
[45] These acts of trespass by Argentina ultimately worked to its disadvantage for they propelled the oft-neglected Antarctica onto the agenda of the British War Cabinet as a region of significance worthy of a fresh policy initiative covering a range of political, strategic, legal and economic issues. In January 1943 the British War Cabinet decided that 'all possible steps should be taken to strengthen our title to the Antarctic

sector of the continent that Argentina would soon claim as its own.[46] Argentina laid claim to a section of Antarctica south of latitude 60° South and between the meridians 25° and 68° West in February 1943.[47]

The Anglo-Argentine imbroglio of the war years continued to dog the relationship between the two nations well after war's end. On several occasions this acrimony almost resulted in naval conflict, the most serious of which occurred in 1948 when a large Argentine naval flotilla was encountered off the South Shetland Islands by a British cruiser and frigate.[48] This incident encouraged these two protagonists along with Chile to formally agree that none of their warships would henceforth venture south of 60°S. The nebulous nature of its claim[49] convinced the British government that the best course of action to resolve the simmering dispute in the South Atlantic was to refer the whole issue to the International Court. This Britain attempted to do on two occasions. However, neither South American country saw any value in this approach since in all likelihood the Court would confirm Britain's hegemony over Antarctica. Instead they set aside their differences in a vain attempt to prevent Britain from holding

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Dependencies of the Falkland Islands, against which Argentines were encroaching'. (Beck, *op cit.,* p. 32.)

[46] In 1907 Argentina and Chile attempted to conclude a treaty that would divide 'American Antarctica' between the two nations as an attempt to forestall British claims in the region and deprive London its hegemonic ambitions.(Chaturvedi, *op cit.,* p. 78.)

[47] Dodd, *op cit.,* p. 18

[48] In this incident Argentina dispatched a naval force capable of forcing an opposed landing on the South Shetland Islands. The flotilla comprised the cruises *Veinticinco de Mayo* and *Admirante Brown,* six destroyers, two transports and various support vessels. The British warships involved were the cruiser *HMS Nigeria* and the frigate *HMS Snipe.* (Beck, *op cit.,* p.34.)

[49] The territorial claim of Britain, as well as Australia and New Zealand, rest on the legal arguments related to prior discovery, the taking of possession and the exercise of a vague form of British 'administration' represented by the issuing of whaling licences and the occasional visit of explorers. According to the British government such activities constituted a form of 'effective occupation' for polar conditions, which render permanent settlement impossible. Nevertheless the situation remains cloudy especially since America insists that the absence of permanent settlement ruled out the acquisition of sovereignty in polar regions. (Beck, *ibid.*, p. 30.)

on to its sovereign right to the slice of Antarctica they both claimed.[50] Both countries have been unsuccessful in prosecuting this ambition.

Argentine and Chilean ambitions in the Antarctic were both reinforced and challenged by other South American states, with a novel challenge being mounted by Brazil, with the support of Ecuador, Peru and Uruguay. Their support for the Argentine/Chilean right to a slice of Antarctica was qualified by alternate legal approaches – for example, the Brazilian-influenced 'frontage' concept [51] would divide " Latin American Antarctica" in accordance to the length of each Latin-American country's own maritime boundary – see Appendix IV. Therezinha de Castro, a Brazilian political commentator, suggested that the 'frontage' theory arose from an acknowledgement that "Antarctica is fated to be constituted as a cornerstone of our [Brazil's] destiny, thanks to its importance as a base of warning, interception and departure in whatever emergency might occur to affect the defence of the South Atlantic."[52] The frequent and unqualified reference to "defence" and "security" of the South Atlantic has continued to provide Brazil with the pretext for an involvement in Antarctic affairs.[53] Obviously the 'frontage' concept does not favour either Argentina or Chile retaining in totality, their respective claims and it completely precludes Britain from Antarctica.

The Cold War brought a change in American attitudes towards Antarctica. The United States needed to resolve the Argentine-British-Chilean imbroglio as the continuing impasse was diverting British military interest away from the more

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[50] On several occasions conflict did erupt between Britain and Argentina over the siting of bases on the Antarctic Peninsula. The most serious occurred in 1952 when British marines were landed at Hope Bay to protect FID workers from ongoing Argentine military interference as they set about reconstructing a base destroyed by fire in 1948. (Beck, *ibid.*, p. 35.)

[51] See Beck, Peter J., 'International Relations in Antarctica: Argentina, Chile and the Great Powers', in *Great Power Relations in Argentina, Chile and Antarctica,* edited by Michael A. Morris, MacMillan, London, 1990, p. 103.

[52] Chaturvedi, *op cit.*, p. 81.

[53] *Ibid.*

important European theatre. At the same time the impasse brought an 'expansionist' European power into the Western Hemisphere which was contrary to America's own Monroe Doctrine.[54] To assert its dominance over Antarctica, America mounted the largest individual expedition ever sent to the region. This was Operation *Highjump* (1946-47) to which America committed some 4,700 personnel plus a dozen naval ships, including an aircraft carrier and a submarine, which left no room to doubt America's capability to transport a sizeable military force to Antarctica.[55] Its objectives were more military than scientific for it was used to prepare men and equipment for possible deployment to the Arctic – the Arctic being too sensitive to allow for training activities.[56] *Operation Highjump* was followed a year later by *Operation Windmill,* which again had the military objective of testing equipment developed out of experiences gained through *Operation Highjump.*[57]

2. 4 The tortuous road to a treaty

American activity was viewed with misgivings by other nations with interests in Antarctica. On Stonington Island the British viewed the Americans with suspicion, while Argentina and Chile saw *Operation Highjump* as a direct threat to their territorial claims. Australia and New Zealand were also fearful that some malevolent military intent lay behind the renewed attention America was showing Antarctica. International concerns forced America to adopt a new strategy. In order to calm these fears America proposed that Antarctica become a territory

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[54] United States President James Monroe originally promulgated the Monroe Doctrine in 1823 to warn European powers that any expansionist activity anywhere in the Americas would be construed as a threat to the United States. The doctrine was extended by Theodore Roosevelt and repeatedly used to justify American intervention in the affairs of Latin American countries. (See McLean, Iain, *Oxford Concise Dictionary of Politics,* Oxford, Oxford University Press, 1996, p. 327.)
[55] Chaturvedi, *op cit* , p. 108.
[56] Beck (1986), *op cit.,* p. 37.

under international trusteeship or under an eight-power condominium – the seven claimant states plus America. Only New Zealand, among the seven claimant nations, was willing to surrender sovereignty to such a cause.[58] This was no gesture of high-minded altruism by New Zealand, but recognition that its claim to the Ross Dependency was weak not only because of a lack of serious exploration but also by an active United States presence.[59] There was a suggestion that New Zealand could better assert its right to a slice of Antarctic territory by partnering the United States in a joint claim. While this suggestion might have lead to improved co-operation between the two countries, New Zealand's adamant stance over the rightfulness of its claim to the Ross Dependency scuttled the proposal.[60]

Despite Russian involvement in Antarctica since the Thaddeus Bellinghausen expedition of 1819-21, the Soviet Union did not receive a copy of the American proposal. This caused Moscow to proclaim that it would not recognise any change to the governance of Antarctica to which it was not a party.[61] The Soviet response only served to ensure that future American policies were designed to guarantee that the Soviet Union was given no opportunity to participate in an Antarctic settlement and administration or present it with an excuse to become a claimant nation. Such was the nature of Cold War politics.

Undeterred by American attitudes, the Soviet Union, in 1955, advised all claimant states that it would mount a significant Antarctic expedition and establish several bases primarily in the sector claimed by Australia. In February 1956, to the booming of guns, the Soviet Union hoisted its flag over *Mirny*, a station on the edge of the Antarctic continent. While the Australians did not

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[57] Fogg, *op cit.*, p. 167.
[58] *Ibid.*, p.168.
[59] Dodds, op cit., p. 79.
[60] See Sullivan, Walter, 'Antarctica in a Two Power World', *Foreign Affairs,* Vol. 36, No. 1, 1957, p.164.
[61] *Ibid.*, p. 160.

protest such ceremony, [62] they became hysterical at the thought of the Red Flag flying so close to the South Pole. Many Australians believed that the Soviets would use science as a pretext to establish numerous missile bases on Antarctica.[63] Thus, American attempts to internationalise the politics of Antarctica achieved little other than to make more complicated an already complex issue. The final impetus, which ultimately resulted in the Antarctic Treaty, was the growing interest in Antarctica by newly independent states such as India. The claimant states and America successfully resisted Indian pressure to have Antarctica placed under United Nations (UN) stewardship.

Scientifically, the International Geophysical Year (IGY) was considered a success but this success could hardly hide the fractiousness of the politics that gave it birth. The claimant countries only agreed to unfettered passage of scientists and the establishment of scientific bases on the clear understanding that such access would not lay void their sovereignty claims. And when the Soviet Union was invited to participate in IGY, paranoia in Australia reached new heights with fears that any Soviet Antarctica installation could easily be used to launch missiles on Melbourne or Sydney.[64] Britain was finally forced to accept that its dominance over the affairs of Antarctica had now passed to the United States – the new hegemonic power. The IGY clearly demonstrated that a gulf now existed between old and new Antarctic powers. While the United States produced thirteen tons of information at the end of its Antarctic programme, Britain could fund less research than either Argentina or Chile.[65]

The IGY did highlight the value of Antarctica as an open-air laboratory for the natural sciences and gave the politicisation of the continent a totally new

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[62] Dodd, *op cit.,* p. 82.
[63] *Ibid.*
[64] *Ibid..,* p. 84.

direction. The political need to preserve a pristine Antarctica away from the tensions of Cold War politics became clearly apparent to the two post-war superpowers. This was especially so since a parallel effort in the Arctic had failed. Strategic considerations forced the Soviet Union, which controls nearly half the Arctic land and coastal areas, to consistently oppose multilateral co-operation in the Arctic.[66] It was against this background that the United States, in May 1958, invited eleven other countries – this time including the Soviet Union – to a conference on Antarctica.

American interest in the continued protection of the Antarctic environment was not strictly altruistic for any treaty negotiated would allow America to protect any potential territorial claim from deterioration, while providing sufficient time to formulate strategies to protect its national interest. Moreover, a treaty would help avoid further conflict between the Latin-American claimants and Britain and prevent its own direct conflict with the Soviet Union. In the prevailing Cold War climate the Soviet Union, for economic, technological and military reasons, was content to endorse the American initiative provided that any treaty negotiated recognised its stake in Antarctica.[67] Obviously the interests of the United States and the Soviet Union had converged, forestalling any immediate confrontation between the hemispheric powers over Antarctica.

The Antarctic Treaty with a preamble and 14 articles was signed in Washington DC on 1st December 1959 by the representatives of the twelve countries[68] that had participated in the IGY. The Treaty took affect on 23rd June 1961. Fortunately the Treaty was negotiated in a brief period of reduced East–

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[65] *Ibid.*, p.85.
[66] Chaturvedi, *op cit.*, p. 110.
[67] *Ibid.*
[68] The twelve original signatory nations are: Argentina, Australia, Belgium, Chile, the French Republic, Japan, New Zealand, Norway, the Union of South Africa, the Union of

West tension [69] and signed some five months before the rift consequent upon the U-2 spy plane affair. According to Beck, if the Treaty had not become a reality before the U-2 affair then Antarctica in all likelihood would have been turned into a testing ground for nuclear weapons. [70]

In terms of geopolitics there are four clauses salient to the continued success of the Treaty. Article I of the Treaty declares that "Antarctica shall be used for peaceful purposes only". All activities of military orientation, such as the establishment of military bases and fortifications, the pursuance of military maneuvers, as well as the testing of any weapons, are strictly prohibited. This Article won strong support at the Treaty Conference from the superpowers for both were keen to keep Antarctic away from the influence of Cold War politics. However, the use of military personnel and equipment is permitted (in recognition of the inhospitable environment of the region) so long as military endeavors are in support of scientific research or other peaceful purposes. The geographical realities have forced the militaries of many nations to co-operate with each other for the sake of science. This is well illustrated by the close working relationship established between the armed services of Australia, New Zealand and the United States.

Article I is complemented by Article V, which prohibits any nation from conducting nuclear explosions in Antarctica and the disposal there of radioactive waste material. This initiative came principally from the Southern Hemisphere countries for the nuclear powers of the late 1950s being located far away from the continent were less than enthusiastic about incorporating such a provision.[71]

Soviet Socialist Republics, the United Kingdom of Great Britain and Northern Ireland, and the United States of America. For a list of Treaty member states see Appendix II.

[69] Fogg. *op cit.*, p. 177.

[70] Beck, *op cit.*, p. 64.

[71] Chaturvedi, *op cit.*, p. 112.

Article VII provides for wide rights of inspection of all areas of Antarctica by the Antarctic Treaty consultative Parties (ATCP); being the countries that are signatories to the Treaty and actively undertake research activities on the ice. The right of inspection was included primarily to monitor non-militarisation and to engender mutual trust amongst participant nations. Britain proposed the inclusion of this article as means of mitigation against suspicion that nations are not complying with the intent of the Treaty. The United States also insisted upon its inclusion and made it clear that without the unfettered right of inspection there would be no treaty.[72] The lack of trust between nations during the Cold War made it inevitable that such a provision would have to be incorporated in an international agreement that sought to link both sides of a deepening ideological schism.

Under Article III, the contracting parties agreed that, to the greatest extent practicable there should be an exchange of information about scientific programmes, an exchange of scientific personnel between expeditions and bases, and a free exchange of scientific observations and results between nations.

The remaining articles concern the ways and means of making the treaty system function in the desired manner. In operation, the Treaty is administered on behalf of the international community by the ATCP. There are periodic Antarctic Treaty Consultative Meetings (ATCM) held among the ATCP to recommend measures that would further the objectives of the Treaty. Since 1984, Non-consultative Parties (NCP), nations that do not undertake Antarctic research but are signatories to the Treaty, along with environment-orientated NGOs, have been invited to attend all meetings of the ATCP.

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[72] *Ibid.*

For the seven claimant countries the Treaty neither endorsed nor extinguished their territorial claims. These were simply frozen with the possibility of being resurrected at some future date. As for the Soviet Union (now Russia) and the United States, neither sought to obtain or extinguish their individual right to claim a sector of Antarctica, preferring instead unfettered access to the whole continent.

2. 5 Conventions and protocols

Since the Treaty was principally a device to keep Cold War adversaries apart, scant attention was paid to the protection of the Continent's fauna and flora, a deficiency made obvious when several European states renewed their interest in harvesting Antarctica's burgeoning populations of fur and elephant seals.[73] International dismay at this prospect was such that precautionary measures were negotiated before any large-scale commercial harvesting could commence. In 1972, the Consultative Parties (CP) formally adopted a Convention for the Conservation of Antarctic Seals (CCAS). Although feared at the time of negotiations commercial sealing has not resumed in Antarctica.[74] This is in large part because of the seemingly stringent requirements set by the Scientific Committee on Antarctic Research of the International Council of Scientific Unions (SCAR).[75]

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[73] See Hansom, James D. and John E. Gordon, *Antarctic Environments and Resources,* Longman, Harlow, 1998, p. 278. Norway was the first nation to raise the possibility of commercial sealing in Antarctica. A Norwegian exploratory expedition was mounted in the summer of 1964 to determine the economic viability of commercial sealing in Antarctic waters.

[74] See Templeton, Malcolm, *Protecting Antarctica,* New Zealand Institute of International Affairs, Wellington, 2002, p. 14. While commercial sealing has not resumed, the Soviet Union, much to the New Zealand government's consternation, undertook in 1986, an experimental seal expedition in Antarctica. Although the Soviets maintained that the expedition was for scientific purposes only and a few hundred seals taken, it transpired that some 4,000 seals were killed and their carcasses minced for subsequent sale to mink farms. This incident alone persuaded the New Zealand government not to ratify the CCAS.

[75] For those countries, such as Russia and Norway, that have no cultural barriers to the killing of marine mammals there are no mandatory provisions within the ATS that would prevent

Following a reduction in Antarctic whaling, commercial fishing emerged as an important new activity in Antarctic waters. By the early 1970s there were fears that over fishing, particularly of krill, might herald the collapse of the entire marine ecosystem if not properly regulated. In addition, both the United Nations Food and Agriculture Organisation (FAO) and the United Nations Development Program had proposed a food development programme for Third World nations based upon the utilisation of Antarctic marine resources. Although not specifically mentioned in the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) agreed in 1980, regulation of the krill fishery was central to the development and adoption of an ecosystem approach to resource management. However, the ATCP had additional political motives for seeking an agreement on Antarctic living resources. Such an agreement would avoid sovereignty claims driven by national desire to gain exclusive control of marine living resources, while allowing consultative countries to retain control over Antarctica in the face of external interest by Third World countries or the FAO.[76]

The objectives of CCAMLR are to ensure the conservation and rational use of Antarctic marine living resources based upon sound scientific research. To satisfy Australia's political interests, the Commission responsible for administering the convention was located at Hobart, Tasmania. The same consensus decision-making processes that have plagued the ATS since its inception in 1959 now afflict the Commission. This is illustrated by a lack of will on the part of the signatory parties to agree to measures that would afford protection to the Patagonian toothfish from pirate fishing, especially in waters around the islands of South Georgia and Kerguelen Islands. Russia stands accused that while being a

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them from undertaking large-scale sealing operations in Antarctic waters, including the waters of the Ross Dependency.

[76] Hansom, *op cit.*, p.280.

signatory party it sponsors pirate-fishing vessels that are plundering the dwindling stock of toothfish.[77] Obviously, the convention is only as strong as the least committed member.

Neither did the AT address the question of mineral resources and their possible exploitation. As the economic potential of Antarctica became subject to increasing speculation during the 1970s, the ATCP appeared less willing to address the mineral rights issue than gaining agreed measures to protect marine living resources. Although commercial mining activities were not imminent the ATCP eventually decided to adopt a precautionary approach in preference to trying to negotiate a mineral regime once exploitable deposits had been discovered. This was made necessary once oil companies began exploratory drilling off the Ross Ice Shelf in 1973.[78] Any discovery of mineral resources would have raised legal and sovereignty issues and carried the risk of destablising the treaty system: for example the Dufek intrustion, which may contain significant deposits of strategic ores, lies within an area claimed by Argentina, Britain and Chile.[79] In addition, non-treaty parties and developing states perceived that Antarctica held vast mineral riches and were keen to acquire common heritage access by drawing a parallel to the Law of the Sea Convention. These political concerns underlined the urgency to develop a mineral regime.[80]

The Convention on the Regulation of Antarctic Mineral Activities was signed ın 1988 but in 1989 both Australia and France backtracked on ratifying the convention. Instead both countries advocating that no mining should take place in

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[77] See Johnston, Nicole, 'Allegations over protection of toothfish pirates', 2002, http://www.abc.net.au?pm/s713097.htm (19 February 2004).
[78] See Wallace, Catherine, *The Antarctic Minerals Convention: Negotiating the rules of the game for future development,* Victoria University, Wellington, 1988, p. 6.
[79] See Wells, John, *Antarctic Resources: A dichotomy of interest,* Australian National University, Canberra, 1991, p. 11.
[80] Hansom, *op cit.*, p.283.

Antarctica and that the continent should be a 'natural reserve land of science'.[81] Although environmental concerns were cited as the basis of both the Australian and French rejection of CRAMRA, other factors came to dominate their attitudes. In Australia it was a fear about loss of sovereignty, public opposition to mining on environmental grounds, pressure from NGOs, and the rise in popularity of the Green Party in the crucial Tasmanian State electorate.[82] For the French, the pivotal political issue was the rise in the 'green' vote. As a consequence of joint Australian-French lobbying the countries became divided over the suitability of CRAMRA as a mechanism to govern mineral exploitation in Antarctica. Countries including Belgium, Italy and New Zealand eventually supported the Australian-French initiative while America, Britain and Japan argued against any permanent ban on mining. Although New Zealand had assiduously sponsored the convention, in the past, its announcement in 1990 that it would not ratify the convention effectively shelved CRAMRA.

Having scuttled CRAMRA Australia and France submitted an alternative environmental protection régime for Antarctica. However, this initiative was dismissed, as was an initiative developed by Chile. The quest for an acceptable replacement instrument for CRAMRA was concluded at Madrid in 1990, with the approval PEPAT which embraces many of the features of CRAMRA but, unlike CRAMRA, applied them to most human activities in Antarctica rather than only to mineral resource activities. Also, unlike CRAMRA, one of the central elements of the Protocol was that it unconditionally prohibited any mining-related activity in Antarctica but only for a fifty-year period.[83] After this period has expired countries may request a revision of this prohibition. The lack of a permanent ban

[81] *Ibid.*, p. 184.
[82] *Ibid.*

on mineral activities angered numerous ATCP along with many environmental NGO but an 'implied' moratorium on mining was all that the United States would agree too. When signing the Protocol in 1991, President George Bush Snr. was given to comment that the Protocol "addresses our concerns and provides effective protection for Antarctica without foreclosing the options for future generations".[84] Others, however, consider the Protocol an irresponsible document agreed only after the United States had used bully-boy tactics.[85]

In comparison with CRAMRA the Protocol leaves one vital question unanswered - it does not address who is responsible for planning human activities in Antarctica. It does place an obligation upon each state that is a signatory to the Protocol to ensure that agreed environmental assessment procedures are applied during any planning process leading to decisions about an activity contemplated in Antarctica.[86] After thirteen years of indecision the lack of agreement on how to manage human activity in Antarctica is tearing at the very fabric of the ATS. While countries such as Russia have for decades subverted the processes regulating fishing in the Southern Ocean, regulation of new activities on the continent itself, initially tourism, but more latterly bio-prospecting, are defying resolution by the consensus process.

If these twentieth century issues continue to remain unresolved simply because they are too contentious or run counter to the national interest of one or more of the ATCP, then how are the disputatious issues of the twenty-first century to be resolved? Once the global community seeks access to both the living and non-living resources of Antarctica (as inevitably they must) the lack of consensus

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[83] See Wolfrum, Rüdiger, *The Convention on the Regulation of Antarctic Mineral Resource Activities,* Springer-Verlag, Berlin, 1991, p. 88.
[84] Templeton, *op cit.,* p. 47.
[85] *Ibid.*
[86] Wolfrum, *op cit.,* p. 91.

amongst a few privileged countries on how best to deal with such requests will breed frustration that could easily turn to unilateral action and to conflict. The Arctic, as Antarctica's twin, offers no easy solutions to similar, although not entirely comparable issues that continue to bedevil relations amongst the Arctic rim states. The unresolved tensions between the Arctic states clearly illustrate the problems that may await Antarctica should a confluence of national interest and resource exploitation expectations arise on the continent.

Chapter 3: Antarctica's Polar Twin

3. 1 An Arctic wilderness.

If, as has been suggested in Chapter 1, the past is a sound predictor of the future, then the Arctic could fulfil a similar role by predicting the future that awaits Antarctica as the 21st century unfolds. This would be a reversal, for during the first half of the twentieth century Antarctica was accorded greater strategic importance than its northern sibling. Up to the Second World War, the Arctic region was, from a military point of view, one of the few remaining unexploited regions of the world. Militarily the region was considered benign because nature single-handedly took care of security for all Arctic Ocean littoral states.[1]

Unlike the Antarctic, where latitude 60° South determines the northern geopolitical border of the southern polar region, there is no fixed geographical delineator for the Arctic - see fig. 2. Principally this confusion arises because unlike Antarctica the Arctic *per se* is not a single landmass but a sheet of ice floating on a shallow ocean. Clearly the Arctic Ocean does not represent in totality the entire polar region hence the Arctic can be delineated in a number of ways. If the Arctic Circle represents the perimeter of the Arctic polar region then only six countries– Alaska (United States), Canada, Greenland (Denmark), Iceland, Norway and Russia are Arctic states.[2] However, if less precise markers are used to delineate the southern limit of the Arctic region, for example the northern extremity of boreal forests or the natural southern limit of the indigenous

[1] See Brubaker, R. Douglas and Willy Østreng, 'The Northern Sea Route Regime: Exquisite Superpower Subterfuge?' *Ocean Development and International Law,* No. 30, 1999, p. 301.
[2] See Bloomfield, Lincoln P., 'The Arctic: Last Unmanaged Frontier', *Foreign Affairs,* Vol. 60, No. 1, 1981, p. 89.

human population, the Inuit, then two additional countries qualify as Arctic states - Finland and Sweden.[3]

After returning from the Russian North in 1937, the British journalist, H. P. Smolka was convinced that the Soviet Union was systematically undertaking the militarisation of the Arctic Ocean. Based on what he saw, Smolka correctly predicted that the Soviet Union would make Murmansk its primary naval base in Europe, the Northern Sea Route (NSR)[4] an artery for naval transfers between the Atlantic and Pacific, and the ocean column beneath the Arctic sea ice an area for submarine operations.[5] Indeed, the usefulness of the NSR to provide a safe shipping passage in the time of war is aptly illustrated by the voyage of the German commerce raider *Komet.* In the summer of 1940, the *Komet* traveled undetected from the Barents Sea to the Bering Strait in order to harass allied merchant shipping throughout the Pacific Ocean.[6]

Earlier in the twentieth century, Halford MacKinder, a British Geographer, identified a large sweep of Eurasia including all of the Soviet Union south of the Arctic Ocean, minus the land east of the Yenisei River, as the pivotal heartland from which world domination could spring.[7] Unfortunately, during the 1920s and early 1930s contemporary Britain and American strategic thinkers ignored MacKinder's ideas. However, in Germany, MacKinder's views attracted the

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[3] See Chaturvedi, Sanjay, *The Polar Regions: A Political Geography,* John Wiley, Chichester, 1996, p. 15.

[4] Currently, warships, along with all other classes of ships, can only navigate the NSR without icebreaker assistance during the peak of the Arctic summer; thus unaccompanied travel is restricted to no more than 15 to 20 days. (Brubaker, *op cit.*, p. 305.)

[5] See Smolka, H. P. 'Soviet Strategy in the Arctic', *Foreign Affairs,* Vol. 16, No. 2, 1938, pp. 272-278.

[6] See Armstrong, Terence, 'The Voyage of the *Komet* along the Northern Sea Route', *Polar Record,* Vol. 35, 1949, pp. 291-295.

[7] Sir Halford John MacKinder was a British Geographer who wrote a paper in 1904 titled "The Geographical Pivot of History" in which he suggests that the country that controls Eastern Europe controls the world. MacKinder formulated the following hypothesis: "Who rules East Europe commands the Heartland. Who rules the Heartland commands the World-Island. Who rules the World-Island commands the world." [See 'Democratic Ideals and Reality', 2004,

attention of many German geopoliticians. While MacKinder's theories and concepts were used by some prominent German strategists, notably Karl Haushofer,[8] as justification for a military adventure into the Russian heartland, it remains unclear as to what extent MacKinder's theories influenced Hitler's global strategy.[9] Suffice to say that in June 1941 the Nazi war machine unleashed *Operation Barbarossa* against the Russian heartland.

The strategic importance of the Atlantic Ocean's polar perimeter was not lost on either the Germans or the British at the outset of the Second World War. Although Germany's seizure of Norway in 1940 was not accomplished without naval casualties,[10] the invasion secured for the Germans access to vitally important sea lines of communications. The captured Atlantic sea ports provided sheltered bases from which the German Navy could interdict allied convoys that shuttled supplies from Britain to the Soviet military complexes on the Kola Peninsula. Just the mere presence of two German capital ships – *Tirpitz* and *Scharnhorst* [11]– in northern waters caused Britain in the early stages of the war to over reach its ability to prosecute its naval war worldwide.[12] As the Cold War emerged from the fading ghost of the Second World War the two remaining

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http://geogrphy,about.com/library/misc/mackinder.htm?terms=political+theory (10 February 2004)].

[8] See Sempa, Francis P. 'MacKinder's World', http://www.geocities.com/eurasia_uk/macworld.html (10 February 2004).

[9] *Ibid.*

[10] Most notable amongst the German naval casualties was the loss of the heavy cruiser *Bluecher,* sunk by a torpedo strike in Oslo Fjord, the crippling of the cruiser *Hipper* rammed by *HMS Gloworm* at the entrance to Trondheim, and the sinking of five destroyers moored at Narvik. See Churchill, Winston S. *The Gathering Storm,* Reprint Society, London, 1948, pp.472-479.

[11] The *Scharnhorst* was sunk in December 1943, in the Battle of North Cape, by a British naval flotilla centred on the battleship *HMS Duke of York.* Having defied many previous attempts to sink her, the *Tirpitz* was sunk in 1944 by aircraft from the RAF as she lay at her mooring in Altenfiord. See Woodward, David, *The Tirpitz,* William Kimber, London, 1953, pp133-180.

[12] The need to guard against possible forays by the *Tirpitz* into the North Atlantic prevented the Royal Navy from sending the aircraft carrier *Victorious* to Singapore to accompany the battleships *Prince of Wales* and *Repulse.* As a consequence of a lack of air cover Japanese planes sank both battleships a few hours after World War II began. (Ibid., p.52).

superpowers began to view the Arctic through a new strategic lens; a lens created by two nuclear explosions half a world away in Japan.

3. 2 A Cold War in a cold place

The causes, nature and consequences of Arctic involvement in the Cold War need to be examined in light of the prevailing regional/global context of one of the greatest power struggles of the twentieth century. While the Cold War meant many things to many people, geopolitically speaking it meant that the United States along with its Western allies were in a crusade against an "evil" communist heartland intent on territorial and ideological expansion into Eurasia including all of the Arctic rim-lands.[13] Naturally, given the rhetoric used against it, the Soviet Union sought additional territory to buffer itself against the winds of America's militarised capitalism. Under such tensions the Cold War became a zero-sum game marked by fear and suspicion with both superpowers gripped by a totalitarian image of the other.[14] National interest on both sides of this ideological schism was intertwined with security, where security was defined as the ability to keep the potential adversary from making either territorial gains or ideological converts at the expense of one's own interest. For the United States this became synonymous with the foreign policy advocated by George Kennan which involved the 'long term, patient but firm and vigilant containment of Russian expansionist tendencies.'[15]

The containment era of the Cold War coincided with the beginning of a period when political interest in the Arctic took a dramatic turn, ultimately foreclosing all options for co-operation in non-military realms. As if to defy the

[13] Chaturvedi, *op cit.,* p. 84.
[14] *Ibid.*, p.86.

past, when most strategists considered the polar regions to be the wrong place for large military operations,[16] the policy of containment forced both superpowers to consider the Arctic a key geostrategic deployment area in any future global conflict. Geography determined the strategic importance of the Arctic. Being at the 'top-of-the-world' the Arctic provides the shortest route between three continents – Asia, Europe and North America. With core industrial regions in Europe, Russia, North America and Japan lying within 7000 kilometres of the North Pole, the Arctic's strategic importance remains undiminished.[17] As well, it is hard to escape the fact that the United States and Russia are immediate neighbours in the Arctic being just 91 kilometres apart at the Bering Strait.

The dramatic transformation of the Arctic from nature's kingdom to the military frontline gained impetus following the Cuban missile crisis of 1962 when the Soviet Union launched an ambitious development programme to strengthen its navy. The goal of this programme was to enable the Soviet navy to match forces with the U.S. navy wherever and whenever necessary. The North Fleet (NF) based on the Kola Peninsula benefited greatly from this naval construction programme which continued with undiminished speed throughout the 1970s and 1980s. By the mid-1980s no ocean in the world had a higher concentration of naval vessels that the Barents Sea where the NF had at its disposal a total of 203 submarines and 220 surface vessels.[18] While vessel numbers have declined dramatically since the late 1980s, the NF still remains a potent naval force.[19]

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[15] See Evans, Graham, *The Penguin Dictionary of International Relations,* Penguin, London, 1998, p. 96.
[16] Chaturvedi, *op cit.,* p. 88.
[17] *Ibid.*
[18] Brubaker, *op cit.,* p. 302.
[19] The steady decline in Russian naval power is well illustrated by the reduction in the number of nuclear-powered ballistic missile submarines (SSBN) in operational service. The number of SSBNs has fallen sharply from 62 in 1990 to 25-30 vessels in 2000, with this number currently reduced to 18. See 'Russian Navy's Needs: Hard to Justify', http://www.wonderland.org.nz/Staus_russian_navy.htm (10 February 2004).

As the enmity between the two Cold War superpowers deepened, new means of launching nuclear weapons were developed with missile launching submarines quickly replacing the aircraft as the preferred weapon platform. Initially, the Soviet Union could not match the technological sophistication and range of the American submarine-launched ballistic missiles (SLBM) and was forced to dispatch, at great risk, its own nuclear-powered ballistic missile submarines (SSBN) into the mid-Atlantic through a 'choke-point' formed at the Greenland-Iceland-United Kingdom (GIUK) gap. However, with improvements in missile technology the Soviets gained a strategic advantage *vis-à-vis* its Western adversaries by being able to retain their high valued SSBNs within the protected environment afforded by the ice covered Arctic Ocean. In a reversal of fortune, the Soviet navy from the mid-1970s was able to operate its principal SSBNs – Typhoon and Delta class submarines[20] – anywhere within the Arctic Ocean[21] while the United States was forced to commit its nuclear–powered attack submarines (SSNs) to missions deep within a secure Soviet submarine bastion.

In February 2004 there was considerable speculation that a planned submarine launch of two ballistic missiles in the Arctic had failed.[22] In discounting this speculation, President Vladimir Putin assured the Russia public that one day their military would field missiles "capable of striking targets at an international range with supersonic speed and high accuracy".[23] Putin's move could be seen as a placatory gesture to the growing nationalist lobby in Russia,

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[20] As of the year 2000 the Soviet navy operated 5 Typhoon, 7 Delta IV and 13 Delta III. The Typhoon have been recently modified to carry twenty SS-N-28 missiles each tipped with 10 nuclear warheads, while the remaining Delta-class submarines are likely to be replaced with the more capable Borey-class SSBN. [See *Federation of American Scientists,* August 2003, http://www.fas.org/nuke/guide/russia/slbm/946.htm (10 March 2004)].

[21] Ries, Thomas, 'Soviet Military Strategy and Northern Waters', in Clive Archer (ed.) *The Soviet Union and Northern Waters,* Routledge, London, 1988, p. 98.

[22] See Reuters, 'Russian Navy Denies Missile Failure', 2004, http://xtramsn.co.nz/news/O,,3772-30980134,00.html (10 March 2004).

[23] See 'Big Rocket Promise', *The New Zealand Herald*, February 20, 2004, p. B3.

which continues to argue for military parity with the United States. Irrespective of Putin's motives, the NF, as Russia's principal submarine force, will warrant being the first naval squadron to receive any new missiles when they become available.

When it comes to submerged surveillance activities, using either passive or active sonar in shallow icy waters provides a definite challenge to detection. In such an environment, sonar range is reduced to only a few nautical miles, since the ambient noise produced at the Marginal Ice Zone (MIZ)[24] along with the cracking of moving ice, overshadows the noise generated by a submarine and thus masks it from passive sonar detection. In the Arctic Ocean the most suitable year-round deployment areas for a SSBN is either in the deep MIZ or in the Central Arctic Basin[25] where the sea column is several thousand metres deep and the ice provides protection against aircraft and satellite surveillance. Unfortunately for the Russians climate change will force a rethink of this strategy, for not only is the area of sea ice covering the Arctic Ocean continuing to decrease year-by-year,[26] it is also declining in thickness. Arctic sea ice has decreased in thickness by more than 40 per cent since the late 1950s[27] and is predicted to disappear entirely during the polar summer by 2080.[28]

Knowledge of Arctic naval warfare techniques should not be lost on Southern Hemisphere countries, including New Zealand. In Latin America, for example, submarines cannot traverse the Panama Canal undetected nor easily navigate the Straits of Magellan submerged. Although Drake Passage does permit clandestine

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[24] The interface between ice and open water is called the 'Marginal Ice Zone' (MIZ). Brubaker, *op cit.,* p. 304.
[25] *Ibid.*, p.310.
[26] The coverage of sea ice in the Arctic has decreased in area by an average of 2.8 per cent per decade. Among the adjacent sea the highest rates of decline are in the Barents and Kara Seas were the decrease averages 10 per cent per decade. (See McCarthy James J. and Malcolm C. McKenna, 'How Earth's Ice is Changing', *Environment,* December 2000, p. 13.)
[27] *Ibid.,* p. 14.
[28] See Connor, Steve, 'Arctic mission to explore secrets beneath the ice', *The New Zealand Herald,* June 28, 2004, p. A14.

submarine passage between the Atlantic to Pacific oceans, this is available only at the cost of a greatly extended transit. According to the Chileans, this did not deter the Soviets during the Cold War since their submarines made increasing use of the Cape route while relying on USSR and East European Antarctic bases to replenish supplies.[29] Russia is not alone in military use of research facilities in Antarctic. The New Zealand 'media' recently (2000) reported that as of result of its enquiries the United States Administration continued to show a marked reluctance to either confirm or deny allegations that U.S. navy makes use of facilities at McMurdo Sound to refuel its nuclear submarines and give their crews a chance to breathe real, albeit icy, air.[30]

3. 3 Scramble for resources

The end of the Cold War meant that there was no longer an enemy to confront across the artificial "East-West divide" in the Arctic. With threat perceptions having become more or less redundant a new era of bilateral as well as multilateral co-operation dawned. The establishment of the International Arctic Science Committee (IASC) in 1991 was but one initiative to build bridges between scientific communities throughout the circumpolar north.[31] Another CBM was the creation of the Northern Forum, to bridge the political divide that had previously existed amongst the leaders from Arctic-rim countries.[32] It was widely anticipated that the Northern Forum would be the harbinger for an Arctic Regional Council, an organisation capable of dealing with all issues pertinent to the Arctic including matters of security.[33] But resurgent Cold War fears,

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[29] See Morris, Michael A. *The Straits of Magellan,* Martinus Nijhoff, Dordrecht, 1989, p. 36.
[30] See Wishart, Ian, 'The Lost Fiords Mystery', *Investigate*, April 2000, p. 42.
[31] Chaturvedi, *op cit.,* p. 174.
[32] *Ibid.*, p.177.
[33] *Ibid.,* p.183.

especially within the United States, ensures that the Council's activities are restricted to pan-Arctic environmental issues[34] and the long-held dream of an Arctic Treaty remains unfulfilled.[35] Paradoxically, the only international agreement universally adopted by all Arctic littoral countries was negotiated during the height of the Cold War to establish conservation measures for the ongoing protection of Polar Bears. Unfortunately, like the CCAMLR it is breached more than it is honoured.[36]

In both the Arctic and the Antarctic sovereignty continues to be an issue. Whereas in the Antarctic disputes over sovereignty are predominantly about territory, in the Arctic, maritime issues are inevitably the source of potential conflict for they are invariably embedded within wider security considerations. The prospect of a significant oil field beneath the continental shelf adjacent to the Arctic Ocean Island of Svalbord continues to place a strain on the Norwegian-Russian relationship. The maritime boundary between these two countries in the Barents Sea is ill-defined and consequently a possible flash-point. Conflict cannot be discounted since the area under dispute not only contains significant oil deposits but also straddles the strategically important transit routes for Russia's SSBNs.[37] On the North American continent, the United States and Canada are polarized over the delineation of their mutual border in the maritime Arctic, as well as sovereignty over the Northwest Passage. The former matters since the Beaufort Sea is potentially rich in oil, while the latter is a question of free and unimpeded access for American tankers shipping oil from Alaska to America's

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[34] See U.S. Department of State, 'U.S. Arctic Policy', http://www.state.gov/g/oes/ocns/arc/ (16 March 2004).
[35]See Pharand, Donat, 'Draft Arctic Treaty: An Arctic Regional Council', 1991, http://www.carc.org/pubs/v19no2/5.htm (16 March 2004).
[36] Chaturvedi, *op cit.*, p. 99.
[37] See Churchill, Robin, 'The Soviet Union and Jurisdictional Disputes in Northern Water', in Clive Archer (ed.) *The Soviet Union and Northern Waters,* Routledge, London, 1988, pp. 45-53.

eastern seaboard.[38] The protection of national interests in the Arctic lies behind the United States' refusal to become a signatory to the 1982 United Nations Convention on the Law of the Sea (UNCLOS).[39] Similarly, national interest accounts for Canada's reluctant awakening to Antarctic affairs. Canada's attention to matters concerning Antarctica is now driven in part by a fear that its national interests in the Arctic could be placed in jeopardy by an inconvenient Antarctic precedent,[40] initiated perhaps at the behest of the United States. Since national interest is the common denominator in many Arctic disputes, resolution of

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[38] See Joyner, Christopher C. 'United States Legislation and the Polar Oceans', *Ocean Development & International Law,* Vol. 29, 1998, p. 268. In addition it should be noted that in 1970 Canada extended the outer limit of its territorial sea from three to twelve nautical miles, an action prompted by the unwelcome voyage of the US tanker *Manhattan* through the Northwest Passage the previous year. With this extension, Canada made it impossible for foreign shipping to use the Northwest Passage without entering Canadian territorial water at some point. (See Churchill, Robin R. 'Claims to Maritime Zones in the Arctic – Law of the Sea Normality or Polar Peculiarity?' in Alex G. Oude Elferink, and Donald R. Rothwell, *The Law of the Sea and Polar Maritime Delimitation and Jurisdiction,* Martinus Nijhoff, The Hague, 2001, p. 109.) In the mid-1980s, the United States once again challenged Canada's sovereignty over the Northwest Passage. The challenge came when the United States government ordered the Coastguard ship *Polar Sea* to transit the passage, having intentionally failed to give Canadian authorities prior notice of the voyage. As a consequence Canada redefined the boundaries of its territorial seas, but this time used the internationally recognised straight baseline system as specified in the 1958 Geneva Convention on Territorial Sea. (See Scovazzi, Tullio, 'The Baseline of the Territorial Sea: The Practice of the Arctic States', in Alex G. Oude Elferink, and Donald R. Rothwell (eds.), *The Law of the Sea and Polar Maritime Delimitation and Jurisdiction,* Martinus Nijhoff, The Hague, 2001, p. 69) An immediate affect of this change was that the entire sea area enclosed within the Canadian Arctic Archipelago became an integral part of Canadian territory. While the United States finally accepted, albeit with reservations, Canada's sovereignty over the sea area within the Arctic archipelago, Canada's authority over this maritime area is disputed by some member states of the European Community. (*Ibid.,* p. 78.) The Russian Federation has also adopted the straight baseline system to delimit its territorial seas. By so doing Russia has effectively prevented free passage along the NSR, for it is impossible to travel this sea-lane without intruding into Russian territorial water. The United States protested against the Soviet straight baseline system and in 1992 USS *Baton Rouge* "challenged the Russian straight baseline closing access to the Barents Sea port of Murmansk." (*Ibid.,* p. 83.)

[39] See Swing, John Temple, 'What Future for the Oceans', *Foreign Affairs,* Vol. 82, No. 5, 2003, p, 140. Also note that in October 1994 President Clinton submitted the 1982 UNCLOS and the 1994 Agreement Relating to the Implementation of Part XI of the Convention to the United States Senate for advice and consent. (See Galdorisi, George V. and Kevin R. Vienna, *Beyond the Law of the Sea: New Directions for U.S. Oceans Policy,* Praeger, Westport, 1997, p. 73.) While the Senate agreed to the signing of the 1994 Agreement it simultaneously advised the United Nations that the United States would not apply Agreement. (See Leitner, Peter M. *Reforming the Law of the Sea Treaty,* University Press of America, Lanham, 1996, p. 252.) The United States prefers the 1945 Truman Proclamation as its authority to claim control over the marine resources and fisheries well beyond the seaward reach of its territorial waters. (Galdorisi, *op cit.,* p. 21.) The Soviet Union, like the United States, did not sign the 1982 UNCLOS Treaty, but Russia, unlike the United States, signed and applies the 1994 Agreement. (Leitner, *loc cit.*)

[40] See Beck, Peter J. 'Identifying national interests in Antarctica: the case of Canada', *Polar Record,* Vol. 32, No. 183, 1996, p. 341.

disputes in Antarctica involving these same countries cannot be taken for granted, especially if their national interests are at stake.

Smolka during his 1937 tour of the Soviet polar region concluded that the extraction of minerals, initially coal, iron, copper and nickel, but more latterly oil, provided the impetus for Russian colonisation of the inhospitable Arctic rim lands.[41] There is little doubt that access to this mineral wealth played some part in Germany's decision to strike at the Soviet heartland through the Kola Peninsula. With developments in mineral extraction technologies since the Second World War, and in particular offshore oil extraction techniques, the Arctic Ocean today is set to become festooned with oil rigs at least as far east as the Kara Sea.[42] Further east under the tundra wasteland of Siberia lies an estimated 10 billion barrels of oil, more than the entire known reserves of the United States, including Alaska.[43] Fearing chronic instability in the Persian Gulf both Japan and China have now turned to their old adversary to secure future oil supplies. But if tension over access to Siberian oil turns China and Japan into adversaries then, as Michael Klare predicts, the Siberian Arctic will become a flash point for resource conflict.[44]

In Alaska, tension over oil exploration has a different genesis. Since 1977, oil companies have been pumping oil on the northern slope of Alaska from a field of potentially 30 billion barrels.[45] This large reserve is insufficient to meet the needs of the United States for more than a couple of years, hence reliance on oil from the Middle East. However, in today's uncertain world the United States is seeking to become independent of Middle Eastern oil, preferring instead to secure future

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[41] Smolka, *op cit*., p. 277.
[42] Chaturvedi, *op cit.,* p.186.
[43] See Fackler, Martin, 'Hunt for Oil', *Far Eastern Economic Review,* March 20, 2003, p. 19.
[44] See Klare, Michael T. 'The New Geography of Conflict', *Foreign Affairs,* Vol. 80, No. 3, 2001, p. 55.
[45] Bloomfield, *op cit.*, p. 91.

supplies from within its own territory. Unfortunately for both the oil industry and environmentalists the most likely new oil prospects lie along the Alaskan coast of the Arctic National Wildlife Refuge (ANWR). Recently the United States Congress set aside 600,000 hectares of the coast – the so-called Area 1002 – to be investigated for its petroleum potential. Geological surveys estimate that there could be between 3 billion and 16 billion barrels of oil in Area 1002.[46] While the ANWR is currently safe from the prospector's drill, President G. W. Bush remains adamant that no environmental issue should override America's national interest and that exploratory drilling will take place in the ANWR.[47] As one oil industry lobbyist maintains the best way to win the battle to drill for oil in Area 1002 is "to make people concerned about the cost of filling up their gas tank."[48]

3. 4 A lesson from the Arctic

Tension between unspoiled wilderness and economic development has reigned over the Arctic ever since technology enabled the rolling back of this inimical climatic frontier to allow for the exploitation of mineral wealth from beneath its frozen crust. It is no fanciful notion to use the Arctic experience as a guide to future prospects for Antarctica, especially if countries determine that their national interest is best served by securing minerals from beneath Antarctica's uninhabited coastal land. In the context of mineral development in the Arctic, Sam Hall had this to say:

> *Suddenly, arctic wealth has become a military liability. In political terms, oil, gas, uranium and other valuable minerals, in addition to the growing*

[46] See McCarthy, Terry, 'War over Arctic Oil', *Time Magazine,* February 19, 2001, p. 19.
[47] *Ibid.*, p. 18.

number of Arctic residents, must be defended. Oil installations and pipelines are tempting targets for terrorists and saboteurs. Tankers and liquefied natural gas carriers operating in northern seas are vulnerable in times of war. Communications and supply lines to isolated cities must be protected. Yet this preparation of defences leads inevitably to the formulation of plans for attack and counter-attack, an unwritten law which has impelled defence chiefs in the United States, Canada, Scandinavia and the Soviet Union to develop the Arctic as the decisive battleground in the event of a future world war.[49]

Although war has not erupted above the Arctic Circle in the decade and a half since Hall's caution, Arctic states still have no policies rooted in irenical ideals. Therefore, the political geography of the Arctic has changed little since the days of MacKinder. Consequently, the Russian military still view the Arctic through a geostrategic lens, as confirmed by Rear Admiral V. Aleksin, who stated in the summer of 1995 "he who controls the Arctic controls the world."[50] There is little doubt that these words are equally true of Antarctica. If the Arctic is Antarctica's predictive twin, then New Zealand can take nothing but cold comfort from the inescapable conclusion that national interest will continue to triumph over all other political considerations, including domestic politics and the sanctity of international agreements and régimes.

[48] *Ibid,*. p.19.
[49] See Hall, Sam, *The Fourth World: The Heritage of the Arctic and its Destruction*, Bodley Head, London, 1987, p. 203.
[50] Brubaker, *op cit.,* p. 304.

Chapter 4: Antarctic Entanglement

4. 1 Antipodean ambivalence

New Zealand's past association with Antarctica arose from its geographical proximity and the fact that no other country closer to the continent than New Zealand was better equipped to service the burgeoning whaling fleets seeking an oily fortune from the Antarctic Ocean. Thus New Zealand was the last landfall for Norwegian whalers who, in 1895, made the first landing on the Antarctic continent.[1] New Zealand quickly built up a strong international reputation as a logistic hub for Antarctic expeditions, a reputation greatly enhanced when Port Chalmers played host to adventurers Robert Falcon Scott (1901 and 1910), Ernest Shackleton (1908) and, during the nineteen thirties and forties, the American Richard Evelyn Byrd.

Playing host to foreign adventurers did not cement New Zealand's claim of sovereignty over the sector of Antarctica bestowed on it by the British Crown in 1923. Sovereignty claims to be valid require evidence of settlement [2] which is beyond the mere notion of 'effective occupation' as used by Britain, Australia and New Zealand to support their respective territorial claims.[3] New Zealand's apathetic attitude[4] towards establishing a settlement on the Antarctic continent

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[1] See Church, Ian, *Last Port to Antarctica,* Otago heritage Books, Dunedin, 1997, p. 8.
[2] See Braybrooke, E. K. 'The Future of Antarctica: Political and Legal', *Landfall,* Vol.10, No. 4, 1956, p. 333.
[3] See Beck, Peter, *The International Politics of Antarctica,* Groom Helm, London, 1986, p. 31.
[4] See Fogg, G. E. *A History of Antarctic Science,* Cambridge University Press, Cambridge, 1992, p. 161. See also Logan, Hugh, 'Antarctica: why are we there?' *New Zealand International Review,* Vol,VII, No. 3, 1982, p. 11. Who comments that the demise of inshore Antarctic whaling served to reduce licensing fees received by the New Zealand government from foreign whaling companies and left New Zealand nursing a possession it did not know what to do with. However with American attention to Antarctica increasing, particularly after *Operation*

prior to the IGY would in all likelihood be used by the United States in support of any sovereignty claim it made over the Ross Dependency. In support of its claim America could point to its semi-permanent presence in Antarctica since the Byrd expeditions.[5] No doubt these considerations influenced New Zealand's decision to participate in the IGY.

The IGY provided the stimulus for New Zealand to undertake research in the Ross Dependency for the first time. This was an adjunct to its participation in the Commonwealth Trans-Antarctic Expedition, which fulfilled Shackleton's cherished dream of traversing the continent from the Weddell Sea to the Ross Sea. So as not to be totally reliant on the Americans for logistic support during the IGY, the New Zealand government purchased the British research ship John Briscoe for the navy. The ship was renamed *HMNZS Endeavour*, but quickly become known as 'the little wooden piss-pot'[6] due to the cramped living conditions experienced on voyages to Antarctica. The Endeavour was sold in 1962 and replaced by another vessel bearing the same name. The second Endeavour began life as the *USS NAMAKAGON,* a wartime aviation-fuel carrier. Having been ice strengthened on arrival in New Zealand, this *Endeavour* served as the Royal New Zealand Navy's Antarctic supply ship from 1962 to 1970 before being sold to the Nationalist Chinese Navy.[7] Thereafter, New Zealand became totally reliant on the United States to provide sealift capabilities, while the air forces of both countries share air-provisioning responsibilities.

Highjump, the New Zealand government resolved to mount an Antarctic expedition in 1947. But it baulked at the projected cost of £100,000 and the idea was shelved, as was a similar proposal in 1949.

[5] See Prior, Stuart, 'Antarctica: View from a Gateway', *Centre for Strategic Studies*, Wellington, 1997, http://www.vuw.ac.nz/css/docs/working_papers/wp05.html (5 April 2004.)

[6] Church, *op cit.*, p.97.

[7] See Howard, Grant, *The Navy of New Zealand,* Reid, Wellington, 1981, p. 89.

New Zealand's participation in IGY was important since New Zealand territories from which scientists could make observations extended from the equator to the South Pole and also because there were no other observation stations between New Zealand, South America and Antarctica. The range of scientific work conducted during the IGY by New Zealand scientists at Scott Base and Hallet Station ranged from meteorology to oceanography and from glaciology to seismology.[8] The remote, undisturbed nature of Antarctica made the continent of unparalleled value for the establishment of biological, atmospheric and terrestrial baselines to monitor the effect of human activities on the local and global environment.

After the IGY a particularly close association developed between New Zealand and the United States as both had established bases in the Ross Sea region. Essential to that relationship was the establishment by New Zealand of a staging post for the Americans at Christchurch, in return for which the United States provided some transport to and from the Antarctic and ferried New Zealand scientists to research posts within Antarctica. These arrangements worked well because both parties showed good sense.[9] However, the relationship changed in 1985 when a dispute developed between the partners over New Zealand's anti-nuclear stance and enactment of anti-nuclear legislation. The United States navy immediately moved its Antarctic-bound conventionally powered icebreakers to Hobart and political realism began to determine just how much assistance New Zealand received from the American

[8] See Commission for the Environment, *New Zealand and Antarctica,* Government Printer, Wellington, 1983, p. 76.
[9] Fogg, *op cit.,* p. 189.

Antarctic Programme.[10] Today, the pragmatic politics of realism are visually evident with the construction of a road by the Americans between McMurdo Station and South Pole base. While this road snakes across territory claimed by New Zealand, the United States sought no approval from New Zealand for its construction[11] or for the re-building of the South Pole base itself.[12] Seeking such approval would serve only to legitimise New Zealand's sovereignty over the Ross Dependency; a situation that America assiduously continues to reject.

New Zealand's principal facility in Antarctica is Scott Base which was built in 1957 as the Ross Island 'jump-off point' for the British Commonwealth Trans-Antarctic Expedition, although scientists associated with IGY also used it. Scott Base became a permanent establishment in 1959-60 and was managed and funded by the New Zealand Antarctic Programme (NZAP) under governance of the Department of Scientific and Industrial Research (DSIR). In 1992 NZAP became the responsibility of the Ministry of Foreign Affairs &Trade (MFAT). This reporting structure barely changed when a new institution, Antarctica New Zealand, was created in 1996 by an act of parliament. Antarctic New Zealand's principal functions are the developing, managing and executing of all New Zealand activities in Antarctica.[13] New Zealand spends 2 per cent of its science budget, or NZ$11.5 million a year (2003), in Antarctica. This represents a minuscule amount when compared with Australia's Antarctic budget for the

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[10] See Collins, Simon, 'The Frozen Continent: Ice melts frostiness', *The New Zealand Herald*, January 5, 2004, p. A14.
[11] *Ibid.*
[12] See Kuenning, Kris, 'Home away from Dome' *The Antarctic Sun,* December 21, 2003, http://www.polar.org/antsun/Sun122103/homeAwayFromDome.htm (3 April 2004.) The new American base at the South Pole has been reported to cost the American Antarctic Programme $US236 million. (Collins, *loc cit.*)
[13] See Antarctic New Zealand, 'The History of New Zealand's Involvement in Antarctica from 1923 to Present', http://www.antarcticanz.govt.nz/Pages/WhoWeAre/History.msa (3 April 2004.)

current year of $A70 million[14] and the budget for the American Antarctic Program of over $US 300 million.[15]

New Zealand's national interests in Antarctica and the Southern Ocean are periodically articulated through a 'proclamation of strategic interests' published by the Ministry of Foreign Affairs and Trade - see Appendix III.[16] For the Clark led Labour minority government New Zealand's strategic interests in Antarctica continue to be best served only through the world-wide acceptance of the intrinsic conservation and wilderness values of the continent and its girdling ocean. In the 2002 "Statement of Strategic Interest" the labour government refused to acknowledge the latent benefits that could accrue from resource exploitation of the continent. This is contrary to the 'Strategic Objectives' of the previous National government that defined Antarctica not only through its conservation values but also in terms of the continent's potential to influence New Zealand's national security and future economic well being. Of the two documents of strategic intent that of the National government more closely parallels the strategic goals of other states with an expressed interest in Antarctica. Whereas the Clark led Labour government seeks to promote New Zealand's interest in "[n]ational and international peace and security through a commitment to keeping Antarctica peaceful, nuclear free and its environment protected" while "[e]suring that all activity is undertaken in a manner consistent with Antarctica's status as a natural reserve devoted to peace and science", the Bolger National government saw that New Zealand's national security interests were best served by "…keeping Antarctica as a neutral and non-aligned

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[14] Collins, *loc cit.*
[15] See National Science Foundation, 'U.S. Antarctic Program', http://www.nsf.gov/od/lpa/news/media/99/fs_usap.htm (30 March 2004.)
[16] See MFAT, 'New Zealand in Antarctica', *Ministry of Foreign Affairs and Trade,* 2002.

neighbour," while its economic well-being could be secured by "…enhancing New Zealand's economic opportunities within the parameter of the Antarctic treaty system".[17] This latter statement seems to imply that if the AT was amended to allow for the commercialisation of the continent then New Zealand must become involved in such activities.

4. 2 Sub-Antarctic

Antarctica, however, is not the only southern region of national interest to New Zealand. Below the southern beaches of Stewart Island lies a scattered chain of island collectively referred to as New Zealand's Sub-Antarctic Islands - see fig. 3. Individually, they are known as the Snares, Bounty, Auckland, Antipodes and Campbell Islands.[18] The Constitutional Act of 1852, by altering the southern boundary of New Zealand to 50 degrees S. ensured that these islands became territories of New Zealand.[19]

Historically, these islands have received only spasmodic attention. In common with Antarctica, the seas around them were plundered firstly by sealers and then by the mechanised whaling fleets of the early twentieth century, with Campbell Island providing a sheltered haven for a floating whaling factory (as

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[17] *Ibid.*

[18] New Zealand's Sub-Antarctic Islands lie to the south and southeast of the South Island, scattered over a tri-angular-shaped section of the New Zealand plateau, between latitudes 47°South and 52°South and longitudes 165°East and 179°East. The Antipodes Islands are the furthest east, being 820 kilometres southeast of the South Island, while Campbell Islands are the furthest south, being 660 kilometre south of Bluff. [See UNESCO, 'New Zealand's Sub-Antarctic Islands', 2002, http://whc.unesco.org/sites/877.htm (6 April 2004.)] Presently New Zealand's Sub-Antarctic Islands are administered by the Department of Conservation and the government is seeking their World Heritage accreditation as a protective measure against any future exploitation.

[19] See Cain, Richard, 'The Southern Reaches', *New Zealand International Review,* Vol. XII, No. 5, 1987, p. 24.

distinct from a factory ship).[20] Pasturalists made several attempts to establish sheep runs on the larger islands but isolation and weather conditions militated against their success. Settlements were usually temporary, generally lasting only a few years. Eventually human habitation ceased altogether and the islands were left to the pelagic seabirds and penguins that nest there.

The strategic relevance of the islands became obvious during the opening phase of the Second World War. By 1940, German commerce raiders were operating in the southern ocean in an endeavour to pillage allied merchant shipping. And even as late as 1945 a German U-boat, U-862, traversed the sea-lanes south of Stewart Island on its return voyage from New Zealand to Japanese occupied Jakarta.[21] Naturally the New Zealand government established coast watching stations on several of them. The largest and most prominent was the station constructed on Campbell Island, where military personnel remained until the cessation of hostilities.[22] However, should hostilities once again envelop the Southern Ocean then the re-establishment of these stations would become an security imperative, as it would prevent their occupation by an unfriendly rival.

While the Sub-Antarctic Islands are deficient in land-based mineral resources their wealth lies in the ocean that surrounds them. In stark contrast to Antarctica, where New Zealand has not made a maritime territorial claim beyond a twelve nautical mile limit,[23] the Sub-Antarctic Islands have (since 1977) formed a contiguous EEZ with mainland New Zealand.[24] In total New Zealand's

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[20] See Chaturvedi, Sunjay, *The Polar Regions: A Political Geography,* Wiley, Chichester, 1996, p. 63.
[21] See Stevens, David, *U-boat Far From Home,* Allen & Unwin, St. Leonards, 1997, p. 183.
[22] Cain, *loc cit.*
[23] See Vigni, Patriza, 'Antarctic Maritime Claims: "Frozen Sovereignty" and the Law of the Sea', in Alex G. Oude Elferink, and Donald R. Rothwell (eds.), *The Law of the Sea and Polar Maritime Delimitation and Jurisdiction,* Martinus Nijhoff, The Hague, 2001, p.104.
[24] See New Zealand Government, *New Zealand Official Yearbook 2002,* Bateman, Auckland, 2004, p.351. The Territorial Sea and Fishing Act of 1965 established a three-mile limit around

EEZ - see fig. 4 - represents some 1.3 million square nautical miles and is the fourth largest in the world.[25] New Zealand's EEZ has a potential maximum yield of approximately 500,000 tonnes of fish per year.[26] Within the Sub-Antarctic EEZ there is an abundance of fish of economic significance, principally squid. The Total Allowable Commercial Catch (TACC) for squid for the year 2003-2004 was 127,332 tonnes of which 41,400 tonnes was exported at a value to New Zealand of NZ$86.2 million.[27]

However, the Sub-Antarctic Islands harbour other resources that are potentially more valuable to New Zealand than the annual squid catch. To the southeast of the South Island lies the Great South Basin with an area covering some 85,000 km². It is New Zealand's largest sedimentary basin with hydrocarbon potential. During the 1960s exploratory wells confirmed the presence of both gas and condensate and it was suggested at that time by Hunt Petroleum of America, possibly tongue-in-cheek, that the basin held oil reserves comparable in size to those of the North Sea or Alaskan North Slope. According to Hunt Petroleum, the Great South Basin held gas reserves thirty times larger than Kapuni along with at least 20 billion barrels of oil.[28] A more reliable

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the New Zealand coast, an area other countries could not exploit. This limit was extended to 12 miles under the Territorial Seas and Exclusive Economic Zone Act of 1977, which also established New Zealand's 200-mileEEZ. This was five years prior to the enactment of the United Nations Convention on the Law of the Sea (UNCLOS). Interestingly, New Zealand, along with the majority of developed nations, failed to sign the 1982 treaty preferring instead to become a signatory party to the 1994 Agreement relating to the implementation of Part XI of UNCLOS.

[25] See Ministry of the Environment, 'Oceans', http://www.mfe.govt.nz/issues/oceans/ (6 April 2004.)

[26] New Zealand Yearbook 2002, *loc cit.*

[27] *Ibid.*, p. 442.

[28] See http://www.nzaif.com/20_years_history_in_brief.html (3 April 2004.) Petroleum exploration began in 1969 when Hunt International Petroleum Company obtained a licence covering much of the Campbell Plateau. Hydrocarbons were found in four of eight wells Hunt drilled between 1976 and 1984. However, the estimated gas and condensate reserves were deemed to be sub-commercial in view of the water depth and remoteness. See Ministry of Economic Development, 'Great South Basin', 2001, http://crownminerals.med.govt.nz/petroleum/history/grtsth.html (3 May 2004.)

source[29] using world average figures, estimates that the Great South Basin could contain reserves of 6.5 x 10^8 m^3 oil equivalents. Whatever the truth, to be commercial any field would have to hold significant reserves, at least equivalent to existing oil fields in the giant or super-giant category.

Even more remote from New Zealand lies the Campbell Basin, an area of some 20,000km^2 and like the Great South Basin it is comprised of deep sedimentary rock. Although not the focus of extensive exploratory activity other than seismic surveying, its geological formation would suggest the presence of hydrocarbons. Until it is drilled, however, its hydrocarbon potential remains speculative. Cook and Davey suggest that such drilling would be worth considering on strategic grounds alone, even if it was not viable economically. [30] Petro-economics will be a significant determinant of the future that awaits Antarctica in the early decades of the twenty-first century, which is discussed in greater detail in chapter 5.

Mineral dredging has shown that the Campbell Plateau contains substantial quantities (60 per cent in some areas)[31] of manganese nodules. While an analysis of these nodules gave an average of 12 per cent of manganese,[32] they contain relatively low quantities of nickel, copper and cobalt and hence may not be worth exploiting given the region's distance from New Zealand and the unfavourable sea conditions.[33] However, the discovery of significant oil reserves in the same location resulting in the development of a suitable maritime

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[29] See Cook,R.A. and F.J. Davey, 'Hydrocarbon Exploration and Potential', in G.P.Glasby (ed.), *Antarctic Sector of the Pacific,* Elsevier, Amsterdam, 1990,p. 169.
[30] *Ibid.*, p.172.
[31] Cain, *loc cit.*
[32] *Ibid.*
[33] See Anderson, J.B. 'Sediment', in G.P.Glasby (ed.), *Antarctic Sector of the Pacific,* Elsevier, Amsterdam, 1990, p.205.

infrastructure could easily change perceptions on the economic viability of mining these ferromanganese deposits.

4. 3 Securing the backyard

Prior to the Second World War New Zealand displayed a lethargic attitude towards creating a military capability able to secure its own sovereignty. This folly was shattered early in 1940 by the hostile intrusion of German commerce raiders into the Antarctic Ocean. Antarctica was peaceful no longer. The birth of the Cold War served only to exacerbate those fears as the United States and the Soviet Union were poised to turn the continent into a military playground with nuclear overtones. In 1950, with a security dilemma developing at its back door, New Zealand expressed support in favour of an international trusteeship over the continent. This proposal would not only have brought continuing peace to Antarctica but would relieve New Zealand of an ongoing security predicament. Nevertheless, the AT did provide the security New Zealand sought but, because the Treaty was expected to last only thirty years, New Zealand's concerns were not entirely placated. Security fears were again heightened for New Zealand in the mid-1970s when Third World countries sought to collapse the ATS in a fever to exploit Antarctic resources for "the benefit of all mankind".[34] As a consequence New Zealand backed a proposal to turn Antarctica into a world park with the clear implication that it was prepared, as it had been in 1950, to forsake its sovereignty claim. Even today, New Zealand's priority for matters

[34] Chaturvedi, *op cit.*, p. 128.

Antarctic is to maintain the AT at any cost – to which its claim to the Ross Dependency takes second place.[35]

In the troubled world of the early 1950s, one of New Zealand's prime concerns was to acquire a security guarantee from the United States. To its immense relief New Zealand achieved this in the form of the Australia-New Zealand-United States Alliance (ANZUS) in 1951. ANZUS when combined with the Antarctic Treaty provided New Zealand with a security umbrella for thirty years. While the United States extracted full measure for its security guarantee by requiring New Zealand's participation in wars it might not otherwise have committed forces to, ANZUS did enable New Zealand to reduce defence expenditure to 2 per cent or less of Gross National Product (GDP); one of the lowest defence expenditures in the Western World. However, the nuclear footprint of ANZUS ultimately lead to New Zealand withdrawing from the alliance in 1985 and, as a result, the United States withdrew its security guarantee shortly thereafter. New Zealand has never undervalued security alliances and treaties, for as David Lange, New Zealand's Prime Minister in 1985 said "Any unravelling of the Antarctic Treaty system could only have an adverse impact on New Zealand's security."[36]

Explicitly New Zealand has accepted that its security concerns now lie in the South Pacific. Antarctica warrants no more than a scant glance, since the ATS, in the eyes of the government, is unlikely to unravel in the foreseeable future. The Antarctic continent is currently seen through an environmental prism and consequently policy makers tend to pursue those policies that perpetuate

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[35] See Spencer, Cisca, 'The evolution of Antarctic interests', in Stuart Harris (ed.), *Australia's Antarctic Policy Options,* Australian National University, Canberra, 1984, p.123.
[36] See Lange, David, 'New Zealand's Security Policy', *Foreign Affairs*, Vol. 63, No. 5, 1985, p. 1012.

environmental considerations over other politically less palatable alternatives. It remains Labour Party policy to continue New Zealand's active support for a treaty system that furthers the protection of Antarctica and its flora and fauna. Aligned with this philosophy is the current government's continuing advocacy for Antarctica to be declared a world park, free from mining and other human-initiated threats. With regard to the Southern Ocean, the Labour Party espouses support for listing toothfish as an endangered species under Convention on the Trade of Endangered Species (CITES) as a mechanism to better control illegal, unreported and unregulated (IUU) fishing in the region.[37]

Antarctica is scarcely mentioned in the vocabulary of New Zealand's security agencies. The External Assessment Bureau (EAB), as the principal advisor to the Prime Minister and Cabinet on external security and strategic issues, curtailed discussion on Antarctica in its most recently published strategic assessment (2000) to matters of the present rather than to issues of the future. The exception being the need at some future date to commit additional monitoring and enforcement resources to the Southern Ocean in order to protect dwindling stocks of toothfish.[38] Indeed, the document has a surprisingly restrictive near-time focus of five-year, a classic case of what the futurist Alvin Toffler would call technocratic myopia or short sightedness.[39] The EAB assessment presumes that the ATS will continue to protect New Zealand's national interests, even though other commentators do not share that view.[40]

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[37] New Zealand Labour Party, 'Conservation', http://www.labour.org.nz/frame-search.html (17 November 2003.)
[38] See External Assessment Bureau, 'Strategic Assessment 2000', March 2000, http://www.dpmc.govt.nz/publication/strategic_assessment_2000 (7 March 2003.)
[39] See Toffler, Alvin, *Future Shock,* London, Pan, 1970, p. 414.
[40] See James, Colin, 'Fishing pirates slice through seas of toothless treaties', *The New Zealand Herald,* March 4, 2004, p. C1.

Similarly dismissive remarks are to be found in other government publications that mention Antarctica. MFAT in June 2000 published its own assessment of New Zealand's foreign and security challenges in which it perceived New Zealand's security, presumably economic rather than military, to be linked only to the management of Southern Ocean fisheries. Antarctica itself remained an irrelevant security interest; an interest to be shared with Argentina and Chile![41]

The Defence Beyond 2000 Report released by Parliament's Foreign Affairs, Defence and Trade Select Committee in 1999 remains the basis of New Zealand's defence policy. In common with EAB and MFAT, the Select Committee sought strategic comfort in the knowledge that the AT continues to secure New Zealand's backyard.[42] According to the Committee, satellites remain the primary means of monitoring foreign vessels operating within New Zealand's EEZ and the Southern Ocean, with the navy and air force playing a secondary and less pivotal role.[43] However, the report does acknowledge that the armed forces are ill equipped to meet any serious challenge to New Zealand's national interests in the Southern Ocean or Antarctica. Such challenges include not only protection of New Zealand's southern fisheries but also stewardship obligations expected of a signatory to the AT, PEPAT and CCAMLR.[44]

While Dr. David Dickens,[45] in a critical critique of the Defence Beyond 2000 Report does not comment specifically on Antarctica or the Southern Ocean

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[41] See Ministry of Foreign Affairs and Trade, 'New Zealand's Foreign and Security Policy Challenges', June 2000, http://www.mft.govt.nz/pdfs/policy_challenges_0662-pdf (30 March 2004.)
[42] See New Zealand, House of Representatives, *Inquiry into Defence Beyond 2000,* House of Representatives, Wellington, 1998, p. 9.
[43] *Ibid.,* p. 25.
[44] *Ibid.*, p. 31.
[45] In 1999, Dr David Dickens was the Director of the Centre for Strategic Studies (CSS:NZ) at Victoria University of Wellington.

he does make two salient points pertinent to New Zealand's ongoing interest in Antarctica. Both points underscore the fragility of the Select Committee's argument for their preferred reconfiguration of New Zealand's defence forces - a reconfiguration that may ultimately render them incapable of securing New Zealand's backyard. The first of Dickens' points is that the report does not look to the future, preferring to gamble on the continuation of the status quo. In Antarctica New Zealand cannot afford to take the status quo for granted since nascent, but unresolved tensions, within ATS may ultimately cause it to implode. Dickens' second point relates to the Committee's belief, possibly naively, that other state's strategic interests will parallel those of New Zealand. The Committee gave no thought to the possibility of what would happen to New Zealand's security interests if all other previously reliable states shrugged off their responsibilities.[46] It is manifest that in the 21st century multilateralism will be sacrificed by states if communalism does not serve their national interests. The dilemma for New Zealand is how best to respond to a threat against its security interests in Antarctic if faced with international apathy, or worse still, out right hostility.

4. 4 How other states view Antarctica

New Zealand, like other Southern Hemisphere claimant states, see its security as being inextricably interwoven into the existing fabric of the ATS while for states north of the equator such security concerns are replaced by others appurtenant to that hemisphere. New Zealand's security interests should be viewed in an international context. This is most appropriately achieved by discussing attitudes

[46] See Dickens, David, 'Inquiry into Defence Beyond 2000', *CSS:NZ,* 1999, http://www2.vuw.ac.nz/css/doc/working_papers/WP13.html (20 January 2003.)

of other countries that have expressed an interest in determining Antarctica's future. However, limits of space restrict the choice of international comparisons to two original Treaty countries (Australia and the United States) and to two Third World countries, both with superpower pretensions and developing military capabilities (China and India).

4. 4. 1 Australia

After the ratification of the Treaty in 1961, Antarctic issues disappeared almost totally from Australia's foreign policy for some fifteen years. It was not until 1975 that Antarctica re-emerged as a foreign policy issue, this time related to the possible exploitation of resources, both living and non-living. By the late 1970s Australian foreign policy began to acknowledge that Antarctic issues were part of the overall Australian view of the world. Growth in this perception can be attributed to the developed world's dismay at being subjected to painful political and economic pressure from Third World commodity producers. The most notable of these was the Organization of Petroleum Exporting Countries (OPEC) which punished Western countries by dramatically increasing the price of crude oil immediately after the 1973 Arab-Israeli War.[47]

As with New Zealand, the AT presented Australia with a unique strategic windfall in that it removed all pressing needs to take Antarctica into its security considerations. Australia, therefore, remained unfettered by Antarctic considerations when formulating a strategic vision of its immediate security environs.[48] For Australia, the Asia-Pacific region became an arc of instability

[47] Spencer, *op cit.,* p. 120.
[48] Antarctic did not warrant a mention in either Australia's Defence 2000 White Paper (See Australia, Commonwealth of, *Defence 2000: Our Future Defence Force,* Defence Publishing

that continues, even today, to be the principal focus of its strategic deliberations. Recently, however, Australia's defence force, albeit with some reluctance, has undertaken armed patrols in the Southern Ocean to prevent the continued pirating of toothfish by foreign fishing fleets.[49]

In the forty plus years since the Treaty was negotiated Australia has not had to wrestle with the legal complexities that surround their sovereignty claims over the Antarctic landmass. Indeed, it remains in Australia's interest to pursue what has been titled the "Natural Option"[50] for the ongoing management of Antarctica. Under this option, the wilderness value of Antarctica would be protected in perpetuity as a World Park administered by the United Nations. While this concept has a New Zealand feel to it, divergence between these Antipodean neighbours does occasionally occur. For example, in 1975 Australia failed to support New Zealand's attempt to internationalise Antarctica as a means to protect the continent from mineral exploitation.[51] What is not in dispute is that the Treaty not only safeguards Australia's interests in Antarctica but also safeguards the Australian continent.

Australia is not recognised as a deep-sea fishing nation for it does not possess the necessary capabilities to profitably utilise its Southern Ocean fisheries. Nevertheless, Australia's awareness of the potential value of this fishery was sharpened by an announcement at the Third UN Conference on the Law of the Sea in 1973 that worldwide marine living resources were in danger

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Service, Canberra, 2000.) or the more recent publication 'Australia's national security. (A Defence Update 2003', http://www.defence.gov.au/ans2003/section3.htm (23 March 2003.)

[49] See *The New Zealand Herald,* 'Armed ocean patrols', December 18, 2003, p. B3.

[50] See Mosley, Geoff, 'The natural option: the case for an Antarctic world park', in Stuart Harris (ed.), *Australia's Antarctic Policy Options,* Australian National University, Canberra, 1984, p. 307.

[51] See Harris, Stuart, 'A review of Australia's Antarctic policy options', in Stuart Harris (ed.), *Australia's Antarctic Policy Options,* Australian National University, Canberra, 1984, p. 17.

of over-fishing.[52] As a consequence and in an endeavor to regulate fishing within Australian Antarctic Territory waters, the Australian government in 1979 established an Antarctic EEZ, only to reverse that decision the very next day.[53] While there remains considerable international debate over the legality of any claimant country being able to establish an EEZ in Antarctica,[54] this did not deter Australia in 1994, from reversing its previous decision to establish such a zone contiguous to its Antarctic land claim.[55] Australia is not the only claimant country to have formally established an EEZ in Antarctica - France being the first country to do so in 1978.[56] Given that Australia has never hidden its desire to exploit the mineral wealth beneath its Antarctic claim it should come as no surprise that it now seeks to use Article 76 of the UNCLOS to gain exclusive resource rights over the Continental Shelf beyond its existing Antarctic EEZ.[57]

4. 4. 2 United States of America

Antarctica is not a word commonly found in the lexicon of the American public and appears only when phenomenistic changes occur on the continent that have a high probability of affecting the American way of life. Depletion of

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[52] Spencer, *loc cit.*

[53] See Joyner, Christopher C. 'Antarctica and the Indian Ocean States: The Interplay of Law, Interests, and Geopolitics', *Ocean Development and International Law,* Vol. 21, 1990, p.50.

[54] The concept of an EEZ appears to be incompatible with the wording of Article IV (2) of the Antarctic Treaty, which reads "No new claim, or enlargement of an existing claim, to territorial sovereignty in Antarctica shall be asserted while the present treaty is in force". Incompatibility between the two treaties also arises from the fact that the existence of an EEZ depends on an expressed declaration by a coastal state. (See Vigni, Patrizia, *op cit.,* p. 96.) But in the absence of a legitimate territorial sovereign on the continent, Antarctica fails to qualify as a recognised coastal state and thus any such claims made are unlikely to be considered *de jure* by the world community.(See Joyner, Christopher C. ' The Exclusive Economic Zone and Antarctica: The Dilemmas of Non-Sovereign Jurisdiction', *Ocean Development and International Law,* Vol. 19, 1988, p. 479.) Both Argentina and Chile have established defacto exclusive economic zones by asserting an EEZ-style 'fisheries zone' adjacent to their respective territorial claims in Antarctica. (See Kaye, S. B. and D. R. Rothwell, 'Southern Ocean Boundaries and Maritime Claims: Another Antarctic challenge for the Law of the Sea', *Ocean Development and International Law,* Vol.33, 2002, p. 365.)

[55] Vigni, *op cit.*, p. 104

atmospheric ozone over Antarctica was one such change. Phlegmatic public attitudes serve only to indulge the interests of the few political personalities that shape American policy towards Antarctica. [58] Staff, often at a low level, from within the State Department and National Science Foundation, direct and in all likelihood slant the information upon which decisions on Antarctica are made by the Antarctic Policy Working Group (APWG).[59] Because of the multi-disciplined, multi-agency composition of the APWG membership consensus decision making is not always possible and in those instances issues are directed to the President through the National Security Council.[60]

Although domestic politics drives America's foreign policy, Antarctic policy continues to be oblivious to such machinations and has remained consistent over numerous decades. American Antarctic policy is centered on four principles,[61]

- non-recognition of territorial claims
- retention of right to participate in any future use of the region
- use of Antarctica for peaceful purposes only
- free access for scientific investigation and other peaceful pursuits

While these principles frame America's scientific activities in Antarctica the underlying support for them rest squarely on what is best for America's national

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[56] *Ibid.*
[57] See Hemmings, Alan, 'Commercial penetration of Antarctica', *Ecolink,* October 2004, p. 8.
[58] See Joyner, Christopher C. 'The role of domestic politics in making United States Antarctic policy', in Olav Schram Stokke and Savor Vidas (eds.), *Governing the Antarctic,* Cambridge University Press, Cambridge, 1996, p.413.
[59] *Ibid.*, p.416.
[60] *Ibid.*

security.[62] The United States willingly recognises that it benefits more than any other country from the AT. Without the Treaty the potential for international discord and conflict is, if anything, greater at the dawn of the twenty-first century than when the Treaty was negotiated in 1959. Americans consider that the effective operation of the Treaty is the direct result of their active and influential presence on the continent.[63]

America has sedulously maintained a policy towards Antarctica that neither encourages nor dissuades commercial development on the continent, for to deny future generations their right to exploit Antarctica would be counter to their national interest. In 1973, as a consequence of a looming oil shortage, it was an American drill-ship that sank exploratory oil wells in the Ross Sea. America's insistence on a mechanism to replace the defunct CRAMRA was driven in no small part by the perception of decision-makers that there was a critical need to retain access to possible deposits of hydrocarbons and strategic hard minerals on or around the continent.[64] Also it was America that scuttled a proposed annex to the Treaty to regulate tourism.[65] It is unclear whether commercial reasons lay behind the American stance but unregulated tourism, with the prospects of hotel complexes being constructed on the continent,[66] has now set in train commercial imperatives that ATCP cannot easily turn aside.

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[61] See USAP Participant Guide 2002-2004, 'USA policy and Antarctica', 2002, http://216.109.117.135/search/cache?p=usa+policy+and+antarctica&ei=UTF-8&n=20&… (30 March 2004.)
[62] See National Science Foundation, 'United States Antarctic Policy', 1996, http://www.nsf.gov/pubs/1996/nstc96rp/chii.htm (3 march 2004.)
[63] See, Presidential Decision Directive -PDD, 'US Antarctic Policy', *PDD/NSC-26*, 1996, http://www.fas.org/irp/offdocs/pdd26.htm (30 March 2004.)
[64] Joyner (1996), *op cit.*, p.430.
[65] *Ibid.*, p.431.
[66] See Collin, Simon, 'Keep hotels off ice, say officials', *The New Zealand Herald,* April 14, 2004, p. A4.

Antarctica remains important to America and especially to its scientists, for it offers a unique natural laboratory for undertaking research of global relevance especially concerning ozone depletion and worldwide climate change. But the scientific value of Antarctic to America would be considerably denigrated if the continent or the circumpolar ocean becomes polluted or significantly disturbed.[67] This implies that should either of these advents occur, then American attitude to Antarctica would change. Science could be replaced by commercial exploitation, subtly or unsubtly disguised as national interest, which would give voice to President Clinton's fears of a continent racked by discord and conflict.[68]

4. 4. 3 China

Although the ancient Chinese were skilled seafarers whose great fleets criss-crossed the Pacific and Indian oceans during the Ming dynasty (1368-1644), they never ventured south to Antarctica. Mao Zedong's closed-door policy of the early 1950s inhibited Chinese exploration of distant environs and prevented any inchoate interest in Antarctica from arising, at least until after the close of the IGY. In 1978, China discussed the possibility of joint research with Chile into Southern Ocean fisheries and in 1980 sought advice from New Zealand on possible future Antarctic activities. In May 1983, the National people's Congress Standing Committee decided that China should accede to the AT and it did so in July 1985.[69]

After accession to the Treaty, China formally launched its long march to Antarctica and established the Chang Cheng (the Great Wall) station on King

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[67] See, Joyner, Christopher C. 'United States Legislation and the Polar Oceans', *Ocean Development & International Law,* Vol. 29, 1998, p. 267.
[68] PDD, *op cit.*

George Island, in the South Shetland Island group, in 1985.[70] Chinese scientific activities have been driven as much by commercial interest – determining the future potential of the continent and surrounding seas for resource exploitation – as by pure scientific research.[71] Indeed, Chinese commitment to research has been severely criticised in the past by the international scientific community because of the environmental damage it caused.[72]

Chinese attitude towards the ATS remains positive, because the Treaty has prevented the continent from becoming the object of international discord, while at the same time promoting international co-operation in ice-bound activities. The Chinese also value the Treaty because it confers a freedom to undertake any scientific investigations that are within their logistic capability no matter where they are located on the continent. And China, like most world states, considers all territorial claims to Antarctica to be untenable and that Antarctica should be owned by all mankind. However, unlike most developing countries, China believes that Antarctica's resources should not be exploited for the benefit of all humanity, but are *res comminis*, and therefore the "first come, first served" rule should apply.[73]

Political pragmatism is a major characteristic of China's involvement in Antarctica. Only while the AT continues to serve Chinese political and economic aspirations will China continue to support the Treaty. However, possibly with an eye to the future, China has shifted priority of its Antarctic

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[69] See Keyuan, Zou, 'China's Antarctic policy and the Antarctic Treaty System', *Ocean Development & International Law,* Vol. 24, 1993, p. 239.
[70] *Ibid.*
[71] *Ibid.,* p. 240.
[72] See McDonald, Hamish, 'Chasing penguins', *Far Eastern Economic Review,* 27 June 1985, p. 34.
[73] Keyuan, *op cit.*, p. 243.

activities towards research that compliments economic resource exploitation[74] of the continent, the adjoining seabed, and the Southern Ocean.[75] At present China appears to have neither the intent nor the capability to exploit Antarctica. However, in the future, China will have the need, economic imperative and technical ability to do so and with characteristic single-mindedness China will pursue those policies that further its own national interest, even if these should seriously jeopardise the stability of the ATS.

4. 4. 4 India

India, along with all other Indian Ocean littoral states, associates four national interests with all considerations relating to Antarctica. The first consideration is the desire to secure access to natural resources, both living and non-living, and both proven and potential. Second is the desire to allay security apprehensions by retaining the Southern Ocean within the periphery of the Indian Ocean zone of peace. Third is that Antarctica should not be the preserve of a few select countries, but a public domain capable of serving the interests of all mankind. Lastly, is the desire to protect sea-lanes of the Indian Ocean/southern seas for transoceanic shipping.[76]

As the population of all Indian Ocean littoral states burgeons so will public pressure mount to make full use of Antarctic resources. A touchstone that would signal a change in the attitude by these states away from the continued preservation of Antarctica would be the unbridled harvesting of krill. Since krill in processed form contain as much as 50 per cent protein[77] exploitation of this

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[74] *Ibid.*, p. 241.
[75] *Ibid.,* p. 248.
[76] Joyner (1990), *op cit.*, p. 45.
[77] *Ibid.,* p.46.

fishery could substantially augment national protein needs of most Indian Ocean littoral states, including India.

India's initial foray to Antarctica in 1982 was a secret quasi-military affair, code named "*Operation Gangotri*". It was the brainchild of Prime Minister Indira Gandhi who launched the expedition to pre-empt activities by the United State perceived by her as being prejudicial to India's national interest.[78] Operation Gangotri successfully established an unmanned station on the Norwegian sector of Antarctica. While the expedition was considered a scientific success its real valve lay in its poignant symbolism of India's claim to a part of Antarctica and its riches.[79]

Although India continues to be a fervent advocate for the establishment of Antarctica legally, politically, and economically as *re omnium communis*, an area of common heritage of mankind,[80] it is difficult to believe that anything other than national interest drives its involvement in Antarctica. Also the interplay between India, South Africa and China cannot be overlooked. Operation Gangotri was in part a response to renewed South African interest in Antarctica while the timing of China's expedition to the continent paralleled that of India.

Placing environmental considerations ahead of wealth aggregation and resource exploitation is a concept of contemporary liberal western democracies rather than a universal dictate. Future population pressures and ongoing poverty will force developing countries to make pragmatic choices with regard to the world's environment. Many Western democracies will continue to advocate that

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[78] See Bobb, Dilip, 'Operation Gangotri', *India Today,* March 31, 1982, p. 88.
[79] See Ali, Salamat and Michael Richardson, 'An eye on Antarctica', *Far Eastern Economic Review,* January 27, 1983, p. 32.
[80] Joyner, *op cit.,* p.48.

the environment should not be sacrificed simply for the sake of humanity. In this irresolvable equation, it is unrealistic to expect Antarctica to be spared. In the world where realism appears to be the ascending force only time separates an unsullied Antarctica from becoming a defiled continent.

Chapter 5: Disparate Elements Imperilling Antarctica

5. 1 Climate Change

Mount Kilimanjaro is an iconic symbol to the people of Tanzania, for its snow-covered peak provides a dramatic contrast to the dry equatorial savannah. Kilimanjaro is also an icon for the world's glaciologist for its retreating glaciers stand as a bold testament to the ravages of climate change.[1]

While there is a universal acceptance that the world's climate is changing there are differing opinions within the scientific community as to the origins of this change. Some, within the scientific community maintain that climate change is a natural phenomenon that has a cyclical pattern of occurrence that is quite independent of human activity. Others scientists accept climate change as natural phenomenon but stridently maintain that present-day changes are of anthropogenic origin. Irrespective of its origins, climate change is predicted to wreak havoc throughout the world and especially in the two polar regions where much of the world's weather is born.

Contemporary climate change is considered to be a post-Industrial Revolution phenomenon caused or exacerbated by a build-up of "green-house" gases such as carbon dioxide (CO_2), methane (CH_4) and water vapour which trap the sun's heat in the lower atmosphere. Deforestation, along with the burning of fossil fuels to run motor vehicles, heat houses and generate electricity is credited with the responsibility for the majority of greenhouse gas emissions. Projections

[1] See Revkin, Andrew, 'Icon of the climate debate'. *New Zealand Herald,* March 27-28, 2004, p. B16.

published by the United Nations Intergovernmental Panel on Climate Change (IPCC) show that by the year 2100 the Earth's average surface temperature will have risen by between 1.0 and 3.5 degrees Celsius.[2] However, some climatologists speculate that by the turn of the century the average temperature will be nearly six degrees higher that it is today.[3] Even a temperature change of 0.1°C per decade is of concern because the climate will be changing faster than the adaptive capacity of many animals and plants.[4]

The Pleistocene glaciations occurred about 2 million years ago when ice ages interspersed with periods of warmer climate (interglacials) were the norm. [5] For the last 9,000 years the climate has remained relatively stable with an average global temperature close to 15°C.[6] However, since the first decades of the 20th century, steadily increasing levels of CO_2 rather than natural phenomena account for an exponential increase in global surface temperature. Evidence suggests that high levels of atmospheric carbon will cause sea levels to rise significantly and increase the rate of species extinction.

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[2] See Buckley, Richard (ed.), *Climate Change: What is happening to the weather?* Buxton Press, Cheltenham, 1997, p. i. It should also be noted that globally fossil fuel production and use accounts for approximately 60 per cent of the emissions that are causing the earth's atmosphere to trap more heat. (See Wirth, Timothy E. et al., 'The Future of Energy Policy', *Foreign Affairs,* Vol. 82, No. 4, 2003, p. 136.) Coal burning releases the most CO_2, while the combustion of quantities of natural gas and oil needed to produce the same amount of energy results in only about 57 per cent and 83 per cent as much CO_2, respectively. (See Wirth, David A. 'Climate Chaos', *Foreign Policy,* No. 74, 1989, p, 4.)

[3] See. Zimmer, Carl, 'Zeroing in on Climate Change', *Newsweek,* December 1, 2003, p. 41.

[4] Buckley, *loc cit.*

[5] *Ibid.* Also note that the medieval warm period (about 1000 A.D.) allowed agriculture to flourish on the southern tip of Greenland. Conversely, the Little Ice Age was an unusually cold period, primarily in Europe, which lasted for nearly half a millennia finally dissipating in the late 1700s or early 1800s. (See McCarthy, James J. and Malcolm C. McKenna, 'How Earth's Ice is Changing', *Environment,* Vol. 42, No. 10, 2000, p. 10.)

[6] *Ibid.,* p. 1

It is widely accepted that the global mean sea level has risen by 1-2mm per-year for the past century[7] and that the rate of sea-level rise will accelerate during the current century. The IPCC's best guess is that the sea level will rise by about 50 centimetres by 2100.[8] As the result of climate change some alarmists predict that sea level could rise by between 0.3 to 2.2 metres by 2075 depending on the level of greenhouse gases in the atmosphere.[9] Even this augury may turn out to be conservative should the Greenland ice sheet melt, as predicted by one notable authority.[10] However, the ice-caps over Greenland and Antarctica have not shown any cataclysmic change in recent history, although in the case of Antarctica, the ice sheet is now less extensive than at any other time in the past two million years (the Quaternary period).[11]

Antarctica represents a massive heat sink that has a profound affect on global weather patterns and climate. It is not only the Antarctic ice cap that exerts this climatic influence but also the circumpolar sea ice, which becomes fixed during the winter and spring seasons.[12] Even given its great size and distance from centres of industrial development, there is clear evidence that Antarctica is not immune from the effects of climate change. The warming of the Antarctic Peninsula by 2.5°C over the last 45 years, the dramatic reduction in sea ice by around 1.5° of latitude or approximately 170 kilometres over the past fifty years[13]

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[7] See Williams, Daniel, 'Sinking feeling' *Time Magazine,* August 20-27, 2001, p. 18.
[8] Buckley, *op cit.*, p. 7. The potential sea level rise according to the IPCC is likely to be between 15 and 95 cms by 2100, depending on what action is taken to curb greenhouse gas emissions.
[9] Wirth (1989), *op cit.*, p.8.
[10] See McCarthy, Michael, 'Green guru backs nuclear power' *The New Zealand Herald,* May 25, 2004, p. B1.
[11] See Hansom, James D. and John E. Gordon, *Antarctic Environments and Resources,* Longman, Harlow, 1990, p. 152.
[12] See Joyner, Christopher C. *Governing the Frozen Commons,* University of South Carolina Press, Columbia, 1998, p.193.
[13] See Curran, Mark and Tas Van Ommen, 'Decline in Antarctic Sea Ice', *Antarctica,* Vol. 22, No. 2, 2004, p. 39.

and the complete disintegration of five small ice shelves clearly illustrate the effects of climate change.[14] Antarctica represents a vital link in the global water balance and if it were to melt catastrophically the sea level could rise anywhere between 60 and110 metres.[15] As the West Antarctic ice shelf (the Ross Ice Shelf) is grounded below sea level for the most part it is sensitive to sea level change and climate change. Should it melt then a sea level rise of between 5 and 7 metres can be expected.[16] Even a sea level rise of 2 metres would seriously affect 50 per cent of the world's population that inhabits coastal regions. Countries such as Bangladesh, Egypt, Vietnam and Mozambique are vulnerable because each has dense populations living in low-lying river deltas. Rising sea levels could cause Bangladesh to lose as much as 18% of its land.[17] While entire countries, such as the Maldives in the Indian Ocean and Tuvalu in the Pacific, could disappear.[18]

Today as never before military tension and conflict has become intertwined with new global challenges: widespread underdevelopment and poverty and large-scale environmental problems that threaten human health, economic equality, and international security.[19] Climate change is one of these environmental challenges. Peter Gleick posits that there are three areas where climate change is likely to affect national and international behaviour and policy: agricultural productivity, the availability and quantity of freshwater resources, and access to strategic

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[14] Buckley, *loc cit.*
[15] See The Guardian, 'World's major cities to go under water', *The Sunday Star Times,* July 18, 2004, A16.
[16] *Ibid.*
[17] See Raven, Peter H. and Linda R. Berg, *Environment,* Wiley, Hoboken, 2004, p. 466.
[18] Williams, *loc cit.* Note that this assertion is disputed by some authorities that maintain that there is no evidence that sea levels are rising and in the case of the Maldives, the ocean that surrounds the island chain was higher thirty years ago than it is today. (See Collins, Neil, 'Atlantis and the myth of climate catastrophe', *The New Zealand Herald,* November 24, 2004, p. A20.)
[19] See Gleick, Peter H. 'Environment and Security: The clear connections', *The Bulletin of the Atomic Scientists,* Vol.47, No.3, 1991, p. 17.

minerals.[20] With regard to Antarctica, all three potentially provide stimuli for military conflict.

Unlike its polar twin, the Antarctic does not sustain any form of agricultural productivity save the potential for harvesting of marine mammals, in particular pelagic seals. In 1971, a year prior to the enactment of CCAS, the Soviet Union took 1,000 crabeater seals from Antarctica as an experiment, but did not develop an industry based on that species.[21] Past conservation measures have lead to burgeoning in seal numbers and, in particular, to an explosion in the crabeater seal population. Research carried out by the British suggests that an annual crop of 650,000 crabeating seals could be safely taken.[22] The increasing need for animal protein, albeit to feed caged fish, may cause countries to once again reassess the economic viability of an Antarctica seal industry. But unless this industry was strictly regulated the return of sealing could see a re-emergence of the resource mêlée that typified the industry during the 19th century.

Access to certain strategic hard minerals is already constrained in some regions by climatic conditions. Should climate change ease the extraction of minerals from previously inaccessible reserves, then exploitative industries will exert pressure upon governments to permit mining in regions that were previously forbidden. Apart from large deposits of coal and iron-ore, the presence of significant mineral wealth in Antarctica has yet to be confirmed. However, there is persuasive anecdotal evidence that indicates the presence of commercial quantities of copper, diamonds, molybdenum, gold, lead and zinc to name but a

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[20] See Gleick, Peter H. 'The Implications of Global Climatic Changes for International Security', *Climatic Change,* No. 15, 1989, P. 310.
[21] See Baker, A.N. 'Marine Mammals', in G.P. Glasby (ed.), *Antarctic Sector of the Pacific,* Elsevier, Amsterdam, 1990, p. 257.

few.[23] A proposal to mine platinum on the Dufek Massif in East Antarctica aptly illustrates that both the technology and willingness to exploit Antarctica's mineral wealth exits.[24] What should not be lost sight of is that many states involved in Antarctica are there only to protect a future claim to the continent's mineral wealth.

The burning of fossil fuels, irrespective of whether it is a contributing cause of climate change, brings with it the prospect of global pollution. For example, soot from diesel engines, which changes snow and ice albedos – the ability to reflect sunlight - is now a significant pollutant in both polar regions and a contributing cause to regional climate change.[25] Pollution has also been identified as a touchstone that could change America's proclivity for supporting only activities consistent with scientific research in Antarctica to one favouring the commercial development of the continent.[26] Any attitudinal change by the United States could result in a global scramble to secure access to the continent's resources.

5. 2 Frozen water

Fresh water is a recyclable finite resource upon which all life depends. The world has a total of 1.4 billion cubic kilometres of water of which almost 97 per cent is saline. Of the remaining three per cent which is fresh water nearly two-thirds is

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[22] See Templeton, Malcolm, *Protecting Antarctica,* New Zealand Institute of International Affairs, Wellington, p.11.
[23] See de Witt, Maarten J., *Minerals and Mining in Antarctica,* Clarendon Press, Oxford, 1985, p. 16.
[24] *Ibid.*, p. 18.
[25] See Associated Press, 'Diesel use adds to global warming', *The New Zealand Herald,* December 24, 2003, p. B3.
[26] See, Joyner, Christopher C. 'United States Legislation and the Polar Oceans', *Ocean Development & International Law,* Vol. 29, 1998, p. 267.

locked away as frozen water (ice) or in deep fossil water aquifers.[27] Currently, humans withdraw about 3,500 cubic kilometres of fresh water a year from various sources, chiefly rivers, of which about 1,400 cubic kilometres are returned to the source often in a polluted condition.[28] Agriculture use accounts for 73 per cent of global fresh water consumption of which huge amounts are wasted as the result of primitive irrigation methods or inefficiency. The inherent inefficiency of traditional irrigation systems has spurred an Australian billionaire, Richard Pratt, to commit A$100 million towards developing better water distribution technology in an attempt to conserve the resource he considers will be the subject of future wars.[29] Demand for fresh water has increased eight-fold since the beginning of the twentieth century[30] and consumption is growing at a rate of two to three percent a year.[31]

The cycling of water between the atmosphere and the surface of the earth generally ensures that there is a worldwide surfeit of fresh water. However, there are great differences between regions and areas — much of Europe, large parts of the United States, the Ganges basin in India, and the northwestern provinces of China – are facing an uncertain future as virtually all of their river runoff is being used.[32] In many dry and poor countries, rapid population growth has reduced per capita water availability to a level below those required to meet basic household, industrial, and agricultural needs. Should climate change cause significant shifts

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[27] See Bulloch, John and Adel Darwish, *Water Wars: coming Conflicts in the Middle East,* Victor Gollancz, London, 1993, p, 21.
[28] See Homer-Dixon, Thomas, 'Environmental and Demographic Threats to Canadian Security', *Canadian Foreign Policy,* Vol. 2, No. 2, 1994, p. 12.
[29] See Adams, Billy, 'Billionaire pledges his wealth to help conserve a liquid asset', *The New Zealand Herald,* February 5, 2004, p. B3.
[30] Bulloch, *loc cit.*
[31] Homer-Dixon, *loc cit.*
[32] *Ibid.,* p. 13.

in rainfall patterns, some regions may no longer face water shortages while others could suffer ruinous droughts.

Talk of water wars reverberates around the globe these days. United Nations Secretary-General, Kofi Annan, reportedly said in March 2000, "…fierce competition for fresh water may well become a source of conflict and wars of the future."[33] Likewise, a recent report (2000) by the United States National Intelligence Council concluded that the likelihood of interstate conflict would increase during the next fifteen years "as countries press against the limits of available water."[34] And in April 2004, the United Nations again identified water shortages as one of several environmental problems that could trigger regional conflict. There are about 80 countries worldwide with 40 per cent of the total world population that already experience water shortages in some regions at certain times of the year.[35] While water was not the primary cause behind the 1967 Arab-Israeli Six-Day War, it seems to have been the dominant factor behind Israel's determination to retain the West Bank once the territory had been taken.[36] Supplying safe water is increasingly difficult because the world's population is growing so fast (about 77 million per year).[37]

The volume of Antarctic ice is about 30 million cubic kilometres, representing approximately 90 per cent of all the earth's glacial ice and about two-

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[33] See Postel, Sandra L. and Aaron T. Wolf, 'Dehydrating Conflict', *Foreign Policy,* September/October 2001, p. 60.
[34] *Ibid.*
[35] See Buckley, Richard (ed.), *The Battle for Water: Earth's most precious resource,* European Schoolhouse Publishing, Cheltenham, 1994, p. 2.
[36] See Pearce, Fred, 'Wells of conflict on the West Bank', *New Scientist,* Vol. 130, No. 1771, 1991, p. 29.
[37] See Associated Press, 'UN studies environmental catalysts for warfare', *The New Zealand Herald*, April, 2004, p. B4.

thirds of the world's theoretical fresh water.[38] Captain James Cook, as far back as 1773, testified to the quality of the water, for he exclaimed even sea-ice, once drained of its salt-water covering, yielded fresh water that was perfectly sweet and well tasted.[39]

Although commercial harvesting of Antarctic freshwater ice has not yet begun it could become a reality because it is not prohibited by PEPAT. The commercial harvesting of icebergs has been discussed for many years as a potential source of fresh water for an increasingly parched world. Yearly production of icebergs in Antarctica represents an estimated 1000 billion tons of water and a "small" iceberg may yield as much as 10 billion litres of fresh water.[40] Even mining the continent itself or its larger ice shelves for water could become likely.

Countries that are confronting a desperate shortage of water have not discounted the potential of Antarctica as a source of fresh water. With water draw-off rendering Australia's great Murray River no more than a trickle as it nears the sea,[41] extraction of fresh water from icebergs transported to the South Australian coast has been seriously debated in the past.[42] A changing climate when coupled with exponential population growth and unfettered economic prosperity has resulted in both China[43] and India[44] being blighted with an acute

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[38] See Buckley, Richard, *Antarctica*: *Protecting the last wilderness,* European Schoolhouse Publishing, Cheltenham, 1995, p. 3.
[39] See Sellick, R.G. (ed.), *Antarctica: First Impressions 1773-1930,* Fremantle Art Centre Press, Fremantle, 2001, p.19.
[40] See Joyner, Christopher C. 'Antarctica and the Indian Ocean States: The Interplay of Law, Interests, and Geopolitics', *Ocean Development and International Law,* Vol. 21, 1990, p.47.
[41] See Easton, Brian, 'Nor any drop to drink', *New Zealand Listener*, May 15, 2004, p.36.
[42] See "Erebus", 'A Limited Antarctic Warfare Capability for Australia', *Pacific Defence Reporter,* February 1979, p.47.
[43] See Keyuan, Zou, 'China's Antarctic policy and the Antarctic Treaty System', *Ocean Development & International Law,* Vol. 24, 1993, p. 249.
[44] Joyner, *loc cit.*

shortage of potable fresh water. Since both countries have identified that Antarctic ice holds the potential to quench their insatiable thirst for water, it is only a matter of time before either or both turn their attention and technical resources towards harvesting the continent's ice.

In Antarctica icebergs are calved from the grumbling sea edges of the numerous glacier-fed ice shelves. According to Professor Pat Quilty[45] towing melted icebergs from Antarctica was first trialed by the Germans in the 1980s and since then the technology of wrapping icebergs in a plastic coat has been improved and patented by a North American company. When using this technology the optimum sized iceberg is around one million tonnes. However, as there is little economic merit in traveling to Antarctica to harvest a single iceberg, each voyage would result in a number of icebergs being wrapped and left to drift north away from the continent prior to being towed to their ultimate destination.[46]

The United Nations predicts that by 2025 global freshwater requirements will exceed by 5 per cent all accessible freshwater sources unless deep underground aquifers and polar icebergs are utilised.[47] Therefore, icebergs calved from the Ross Ice Shelf represent a valuable resource likely to be coveted by many nations. The choice for New Zealand, should it be able to retain sovereignty over the Ross Dependency, is whether to make icebergs a resource for all humanity or a market commodity. Irrespective of that choice, the need to corral such a precious resource could create a defence problem that New Zealand is ill prepared to meet.

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[45] Professor Pat Quilty retired in 1999 from his position as Chief Scientist with the Australian Antarctic Division. He is a geologist who has worked within both industry and academia and has published over 150 scientific papers. [See Australian Broadcasting Corporation, 2000, 'South of no North', http://www.abc.net.au/southnorth/film_talent_profiles.htm (2 June 2004)].

[46] See Johnston, Nicole, 22 November 2001, 'North American company patents ice berg towing', http://www.abc.net.au/worldtoday/s423378.htm (1 June 2004).

5. 3 Black gold

A century ago, Lord Selborne, the First Lord of the Admiralty, dismissed as foolhardy the idea of fueling the British Navy with something other than coal. Selborne pronounced that "The substitution of oil for coal is impossible because oil does not exist in this world in sufficient quantities."[48] Nonetheless, Selborne's concerns were dismissed by Winston Churchill who, in seeking a strategic edge over the Kaiser's blue-water navy, ordered only oil-burning battleships to be built thus committing the Royal Navy to this new fuel.[49] However, a hundred years later with oil reserves being rapidly depleted Lord Selborne's prophetic predictions appear to be on the verge of becoming the reality.

Obtaining good estimates of remaining worldwide oil reserves is notoriously difficult especially when oil companies such as Royal Dutch/Shell fraudulently overstate their oil reserves by some four billion barrels.[50] In 2001, Klare, using U.S. Department of Energy estimates, predicts that worldwide petroleum reserves amount to 1,005 billion barrels.[51] The oil industry itself, with characteristic

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[47] See United Nations, 'UN Assessment of Freshwater Resources', June 1997, http://www.un.org/ecosocdev/geninfo/sustdev/waterrep.htm (1 June 2004).
[48] Wirth (2003), *op cit.,* p. 132.
[49] See Yergin, Daniel, *The Prize,* Simon & Schuster, New York, 1991, p. 12. Interestingly, when Winston Churchill was appointed First Lord of the Admiralty he vowed to prepare Britain militarily for the coming war with Germany. Replacing coal with oil as the principal fuel for the Royal Navy provided the strategic benefits of greater speed and better utilisation of manpower. This was also the period when the Royal Navy discarded steam reciprocating engines in favour of the more powerful steam turbine, a creation of Sir Charles Parsons. Oil fired, turbine driven battleships proved to be the strategic edge the Royal Navy was seeking. (See Warner, Oliver, 'Floating Fortresses', *The Sea,* Vol. 1, Part 12, Orbis Publishing, London, 1971, p. 205.)
[50] See Big News, 'U.K. joins U.S. in Royal Dutch/Shell probe', 8th June 2004, http://www.bignewsnetwork.com/?sid=7823769ff7659387 (8 June 2004)
[51] See Klare, Michael T. 'The new Geography of Conflict', *Foreign Affairs,* Vol. 80, No. 3, 2001, p. 56.

optimism, estimates the reserves at between 1,019 to 1,160 billion barrels.[52] Petro-consultants Campbell and Laherrère estimated that as of 1996 worldwide oil reserves amount to no more than 850 billion barrels.[53] What does not appear to be in dispute is that oil production will peak in 2008[54] and then decline at a rate of about 6% per year unless new reserves are discovered.[55] By 2015, according to Jon Thompson of ExxonMobil, the oil industry will need to find, develop and produce 60 million barrels per day or 80 per cent of daily world consumption from yet to be discovered oil fields. This is equivalent to the discovery of ten new North Sea oil fields.[56] Thompson's predictions are supported by British Petroleum (BP), except that statistics issued by this British company indicate that the first of yet to be discovered oil fields must be in production by 2005 if consumers are not to experience interruptions to supply.[57]

The question, therefore, is how much as yet to be discovered oil is there? Campbell and Laherrère suggest that based on data available to them in 1998 about 1,000 billion barrels of conventional oil remain to be discovered.[58] Nine years prior to the Campbell and Laherrère estimated 'proven' but unexploited oil reserves were as low as 700 billion barrels.[59] In a more recent statement (2002) on oil reserves, BP concluded that there was 1047.7 billion barrels of oil were yet to be discovered but, like Campbell and Laherrère, BP made no mention of possible

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[52] See Campbell, Colin J. and Jean H. Laherrère, 'The End of Cheap Oil', *Scientific America,* March 1998, http://www.dieoff.com/page140.htm (8 June 2004.)
[53] *Ibid.*
[54] See Association for the Study of Peak Oil & Gas, 'Oil and Gas Liquid 2004 Scenario' 2003, http://www.peakoil.net/uhdsg/2004Scenario.jpg (4 June 2004.)
[55] See Swinney, Clare, 'Putting Out The Fire With Gasoline', *Investigate,* February 2004, p. 43.
[56] See Thompson, Jon, 'The Lamp', 2003, http://www.peakoil.net/TheLamp/Thelamp.html (8 June 2004.)
[57] See British Petroleum, 'Proved oil reserves at end of 2002', 2002, http://www.bp.com (4 June 2004.)
[58] Campbell, *op cit.* Non-conventional oil production occurs at enormous cost in Venezuela's Orinoco belt and Canada's Athabasca tar sands and ultra-deep waters.

polar oil fields.[60] The non mention of the polar regions by either source is interesting since United Kingdom's former Minister for the Environment, Michael Meacher, identified the polar regions as the only locations left where new conventional oil fields of significant size may be discovered.[61]

There appears to be a reasonable correlation between the statistics issued by the various sources on the quantity of available oil although how long these oil reserves will last depends on worldwide consumption. In 1996, worldwide consumption was 71.5 million barrels per day.[62] In 2000 consumption was approximately 80 million barrels per day.[63] Consumption is projected to rise to 110 million barrels per day by 2020.[64] At the beginning of 2000, Klare, using U.S. Department of Energy statistics, estimated that the world's total oil reserves at 1,033 billion barrels or sufficient oil to sustain global consumption at 73 million barrels per day until 2040.[65] If, however, oil consumption continues rises by 2 per cent per year — as predicted by the U.S. Department of Energy — then the existing reserves will disappear between 2025 and 2030.[66] Yet even this estimate could represent an optimistic scenario as satiation of Asia's oil thirst[67] could easily exhaust discovered reserves well prior to the earliest of these dates.

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[59] Gleick (1989), op cit., p. 317.
[60] BP, *loc cit.*
[61] Swinney, *loc cit.*
[62] See Klare, Michael T. *Resource Wars,* Metropolitan Books, New York, 2001, p. 39.
[63] See Victor, David G. and Nadejda M. Victor, 'Axis of Oil?', *Foreign Affairs,* Vol. 82, No. 2, 2003, p. 53.
[64] Klare (2001), *loc cit.*
[65] *Ibid.*
[66] *Ibid.*
[67] See Calder, Kent E. 'Asia's Empty Tank', *Foreign Affairs,* Vol. 75, No. 2, 1996, p. 58.
By 1996 China was importing 600,000 barrels of oil per day. By 2000 this figure had grown to one million barrels per day and is expected to reach three million by 2010. By 2015 China is expected to import more than seven billion barrels per day which is close to the total current production of the Saudi oil field which has reached 8.8 million barrels per day (June 2004). Also since 1994 China's oil usage has risen by 109%, South Korea's by 78% and India's by 68%. (Swinney, *op cit*., p.39.)

There is more than anecdotal evidence to suggest that Antarctica is rich in petroleum. In 1973, the American drillship *Glomar Challenger* drilled four exploratory wells in the Ross Sea bed and in three of these wells traces of hydrocarbons were found.[68] The same vessel revisited Antarctica in the mid-1980s[69] and as a part of the American managed Ocean Drilling Program (ODP) another drillship, *Joides Resolution,* drilled a series of holes in the Weddell Sea in 1987 and Prydz Bay in 1988. Although pressure still exists for the drilling programme to continue in Antarctic waters overt drilling for oil is currently not politically acceptable. However, seismic mapping of potential oil reservoirs and covert drilling continues under the auspices of science.[70] Also, there are reoccurring reports of Russia prospecting for oil in Antarctica's Cosmonaut Sea.[71]

While there are no proven commercial petroleum reserves in Antarctica it has long been speculated that extensive hydrocarbon deposits exist in the sedimentary basins in and around the continent. Such speculation is based on the relationships of hydrocarbon occurrence in sedimentary basins and undisturbed tectonic plate edges elsewhere in the world.[72] Although geophysical data is sparse, sedimentary basins with hydrocarbon potential exist in the Ross Sea continental shelf - see fig. 5, the Weddell Sea, the Bellinghausen Basin, along the Wilkes Land coast, and in the Prydz Bay-Amery Basin.[73] An additional potential site has been identified in

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[68] See Wallace, Catherine, *The Antarctic Minerals Convention: Negotiating the rules of the game for future development,* Victoria University, Wellington, 1988, p. 27.
[69] See Fox, Robert, *Antarctica and the South Atlantic,* British Broadcasting Corporation, London, 1985, p.176.
[70] See Wells, John, *Antarctic Resources: A Dichotomy of Interest,* Australian National University, Canberra, 1991, p. 9.
[71] See Hemmings, Alan, 'Commercial Penetration of Antarctica', *Ecolink,* October 2004, p. 8.
[72] See Hansom, *op cit.,* p.32.
[73] *Ibid.*

the Amundsen Sea close to Mary Byrd Land offshore from the Russian base of *Russkaya*.[74]

In Antarctica the prospects of commercial exploration for offshore hydrocarbons are better than for onshore. Of 21 onshore and offshore sedimentary basins ten have been identified viable for further exploration. There is conjecture that these basins hold in total some 203 billion barrels of oil equivalent,[75] which would be sufficient to turn the gaze of an oil-starved world south despite the AT. In New Zealand's zone of influence - see fig. 4 - one estimate suggests that the hydrocarbon potential locked deep within the various sedimentary basins of the Ross Ice Shelf amount to billion cubic metres of oil equivalents.[76] Another estimate posits that this reserve holds at least 15 times the hydrocarbons potential of the Maui field.[77]

New Zealand will view the depletion of today's easily exploitable oil reserves in the coming decades with increasing alarm. Not simply because of the changes it will bring about in its own society, but because of the international tension it could create along its southern perimeter. Two decades ago, as a result of Arabian imposed oil embargoes, numerous transnational petroleum companies with the overt support of their governments flocked to Antarctica in search of secure oil reserves. CRAMRA and its replacement PEPAT represented the international community's response - an attempt to forestall the inevitable. In the future it will not be the needs of agriculture, industry or even the comfort of its citizens that drive countries to disregard the AT in favour of exploiting Antarctic oil but rather

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[74] See Freedman, Lawrence, *Atlas of Global Strategy,* MacMillan, London, 1985, p. 179.
[75] Hansom, *op cit*., p.222.
[76] See Cook,R.A. and F.J. Davey, 'Hydrocarbon Exploration and Potential', in G.P.Glasby (ed.), *Antarctic Sector of the Pacific,* Elsevier, Amsterdam, 1990, pp. 173-177.

the need to gain access to these last reservoirs of oil in an attempt to secure their national defence.

5. 4 Crustacea

The right to harvest fish from the world's oceans still remains a continuing cause of interstate anxiety. History is littered with fisheries disputes that have escalated into armed conflict. In the 1960s there was a so-called "Lobster War" between France and Brazil.[78] The "Cod War" of 1975-76 was the third time Iceland and Great Britain had clashed over the rights of British fishers to trawl for cod in waters that Iceland unilaterally declared its sovereign territory.[79] In 1987, the unfettered right to fish the depleted Atlantic fisheries 12 nautical miles from the southern coast of Newfoundland led to another "Cod War", this time between Canada and France.[80] In North-East Asia, the detention by Chinese authorities of a Russian factory ship in the East China Sea was but one of thirty incidents in 1994 involving fishing vessel illegally entering Chinese waters. Indicating the potential seriousness of the situation, Russia dispatched a *Kara* class cruiser to the area to halt 'pirate' attacks on its vessels.[81]

Not all disputes need "gunboat" diplomacy for resolution, for diplomacy is invariably the political instrument that provides a lasting solution to interstate disputes. Australian and New Zealand objections to an experimental fishing

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[77] See Barrett, Peter, 'The Search for Wealth', *New Zealand International Review,* Vol. VI, No. 6, 1979, P. 7.
[78] See Song, Yann-Huei, 'The Canada-European Union Turbot Dispute in the Northwest Atlantic: An Application of the Incident Approach', *Ocean Development & International Law,* Vol. 28, 1997, p.269.
[79] See TED Case Studies, 'The Cod War', 1997, http://www.american.edu/TED/icefish.htm (1 December 2003.)
[80] Song, *loc cit.*

programme under which Japan would harvest an extra 2010 tonnes of Southern Bluefin Tuna is set to be resolved through the invocation of dispute procedures set out in the Southern Bluefin Tuna Convention.[82] With a value of up to NZ$90,000 per fish, the reasons underlying this dispute is obvious.

That Japan is willing to enter into an international dispute so far from its home water speaks volumes about the perilous state of world fish stocks. The global catch of sea fish was less than 20 million tonnes in 1939. After World War II, catch rate began to rise sharply, increasing at 6-7% a year until the early 1970s.[83] The first sign that fish stocks were being savagely depleted came in the mid-1970s with the collapse of the world's largest anchovy fishery in Peru. After a brief pause, caused by the collapse of this fishery, catches again began an upward spiral, this time boosted by the development of large-scale industrial fishing in oceanic waters. By the late 1980s the total reported fish catch had reached 82 million tonnes.[84] During the 1990s the catch progressively increased to about 90 million tonnes and then leveled off.[85] With proper management the FAO estimates that the catch could rise to 100 million tonnes a year and if less familiar species such as krill became commercially exploitable the figure could rise even higher.[86] However, Myer and Worm having analysed historical catch records have

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[81] See Valencia, Mark J. 'Asia, the Law of the Sea and International Relations', *International Affairs,* Vol. 73, No. 2, 1997, p. 273.
[82] See Mansfield, Bill, 'Backgrounder: Dispute between New Zealand and Japan concerning Southern Bluefin Tuna', *Ministry of Foreign Affairs and Trade,* lgo@mfat.govt.nz (11 June 2004.)
[83] See Buckley, Richard (ed.), *World Fishing: Harvesting the oceans,* European Schoolhouse Publishing, Cheltenham, 1994, p. 2.
[84] *Ibid.*
[85] See Swing, John Temple, 'What Future for the Oceans?', *Foreign Affairs,* Vol. 82, No. 5. 2003, p. 142.
[86] See Churchill, R. R. and A. V. Lowe, *The law of the sea,* Manchester University Press, Manchester, 1988, p.223.

concluded that existing catch levels of predatory fish are unsustainable[87] because fish stocks have been reduced by 90 per cent since 1950. Professor Daniel Pauly, recently called for the establishment of no-take fishing zones equal in extent to 50 per cent of the world's oceans,[88] because world's commercial fisheries will collapse by 2020.[89] Industrial-type fishing reduces community biomass by 80% within 15 years of exploitation and although compensatory increases among fast-growing species do occur they are short-lived often collapsing within a decade.[90]

Plunging fish stocks caused the United Nations in 1982 to adopt the Convention on the Law of the Sea, which allows countries bordering the ocean to claim an EEZ. These EEZs include the highly productive continental shelves of roughly 200 metres in depth where most fish live out their lives. Management of the EEZ is both a blessing and a curse. Within the EEZ the coastal state has 'sovereign rights for the purpose of exploring and exploiting, conserving and managing'[91] of all fish stocks. This places upon the state the responsibility to ensure that fish stocks are maintained or restored to a level that can produce the maximum sustainable yield.

Coastal states are also required to establish the total allowable catch (TAC) for each commercial fish species. Where the fishers of a coastal state are

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[87] See Myer, Ransom A. and Boris Worm, 'Rapid worldwide depletion of predatory fish communities', *Nature,* Vol.423, 2003, p.282. Also note that the effects of over fishing are now being experienced in New Zealand waters despite the implementation of a TAC regime several decades ago. Stock of Hake, Hoki and Rig are estimated at less than 20% of their 1975 level, while snapper stocks have declined by 95% since 1975. (See Beston, Anne, 'Our Empty Oceans', *The New Zealand Herald,* May 22-23, 2004, p. A1.) This has caused several New Zealand fishing companies to decommission vessels, while others are considering the future of their fleets. (See NZPA, 'Owners mothball their trawlers as catches dwindle', *The New Zealand Herald,* February 27, 2004, p. A11.)

[88] See Jessup, Peter, 'Fish expert sounds warning', *The New Zealand Herald,* August 17, 2004, p. A10.

[89] See Pauly, Daniel, 'Major trends in global marine fisheries', July 29, 2003, *IGBP,* http://www.igbp.kva.se/congress/banffprog.html#Day3 (12 November 2004).

[90] Myer, *op cit.,* p.280.

incapable of taking the whole of the TAC, the state must permit fishers from other states to harvest the balance between what its fishers take and the TAC.[92] In response to this imposition, several countries, for example Canada, have subsidised the growth of their domestic fishing fleets to supplant those of excluded foreign countries. Creation of EEZs has created a profusion of 'pirate trawlers' that plunder continental shelf fish stocks, particularly those of coastal states that cannot adequately enforce their territorial sovereignty at sea.

Of the world's requirement for animal protein, 16% is derived from products from the oceans. Humans eat on average 13 kilograms of fish per person per year.[93] The nutritional value of sea products is not in doubt. Recent US Food and Drug Administration advice is that people should eat two servings of fish a week to get enough omega-3 fatty acids, an essential ingredient for good health.[94] Since wild stocks are incapable of meeting the increasing world demand aquaculture is now supplanting traditional fishing methods. By 2000, aquaculture was already producing one-quarter of all the seafood consumed by humans and this figure is expected to rise to more than one-half by 2030.[95] In what seems an extraordinary claim, it has been estimated that it takes 2.2 million tonnes of wild fish ground into fishmeal to produce 556 tonnes of farm-fed salmon.[96] Therefore, aquaculture could hasten a collapse of wild fish stocks in the lower half of the food chain.

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[91] Churchill, *loc cit.*
[92] Myer, *op cit.*, p.283.
[93] Buckley (1994), *loc cit.*
[94] See Collins, Simon, 'US experts hooked on fish benefits'. *The New Zealand Herald*, June 10, 2004, p. A13.
[95] Swing, *loc cit.*
[96] *Ibid.* Interestingly, according to Don Staniford, an expert in aquculture farming, it takes 3 tonnes of wild fish to produce 1 tonne of wild salmon, 5 tonnes of fish to produce 1 tonne of cod, and a massive 20 tonnes of wild fish to fatten up just 1 tonne of tuna. (See Khan, Stephen and Kathy Marks, 'Big money stripping seas bare', *The New Zealand Herald*, June 12-13, 2004, p. B18.)

Overall productivity of the Southern Ocean is not high and the shortness of its food chain means that a greater portion of overall productivity reaches the higher tropic levels, which accounts for the unusually dense populations in Antarctic waters of sea birds and marine mammals. Competition for food has restricted the biomass of large pelagic fish. And of the fourteen commercial fish species found in Antarctica, the Patagonian toothfish is the most sought after. This bottom dwelling fish is caught both legally and illegally. Although the legal harvesting of toothfish is managed by CCAMLR it is often countries that are signatories to this convention that illegally plunder existing fish stock.[97]

Krill represents the largest biomass of all the Southern Ocean organisms. Estimates of krill biomass range from a conservative 40 million tonnes[98] up to 10 billion tonnes,[99] with annual production estimated to exceed 1,000 million tonnes.[100] However, annual production is a very different thing to the biomass; annual production is the turnover rate on a yearly basis. Given its abundance the potential sustainable yield for krill is estimated to lie between 25 million to 2.25 billion tonnes annually.[101] Fishing for krill has been in progress since the early 1960s when the Soviet Union sent the first krill fishing ship south to Antarctica. In recent years, the countries that have engaged in krill fishing include Chile, Germany, Japan, Poland, Republic of Korea, Russia and the Ukraine. The annual catch has been as high as 477,025 tons (1973-4) but recently fell to 81,384 tons

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[97] See Coalition of Legal Toothfish Operators (COLTO), ' Toothfish Fact Sheet', 2003, http://www.colto.org/Tfish_FactSheet.htm (1 December 2003.)
[98] See Kerry, Knowles, 'Catching Krill', *New Zealand International Review,* Vol. VI, No. 6, 1979, p. 8.
[99] See Glasby, G.P., 'Introduction' in G.P.Glasby (ed.), *Antarctic Sector of the Pacific,* Elsevier, Amsterdam, 1990, p. 17.
[100] Kerry, *loc cit.*
[101] See Chaturvedi, Sanjay, *The Polar Regions: A Political Geography,* John Wiley, Chichester, 1996, p. 29.

(1993-4) due to stringent economic conditions affecting the Russian and Ukrainian fishing fleets and difficulties in processing krill which has a very short spoilage time.[102] Human consumption of krill-based products is low hence most of the catch is ground into fishmeal. Antarctica has four known locations where there are extremely high concentrations of krill. One of these 'hotspots' - see fig. 6 - is located in the Antarctic coastal current zone adjacent to the Ross Ice Shelf. Swarms of krill within a 'hot spot' may contain a biomass of $10x10^3$ tons[103] and are easily detected by sophisticated echo-locators carried on modern industrial trawlers and impressive catch rates have been achieved in the past.

In a world driven by health fads and diets the consumption of fish continues to escalate while the catch rate of wild fish teeters on the very edge of plummeting. In less than three decades at least half the world consumption of fish will have to come from industrial aquaculture. Today it is pilchards, sardines, herrings and anchovies that feed caged fish, but these fish are themselves increasingly under threat as the fishing industry trawls down into the lower trophic levels. In the foreseeable future the only untapped source of food for caged fish could be the Southern Ocean krill. Given that the legality of Antarctic EEZs is questionable and that CCAMLR is proving ineffective at managing existing Antarctic fisheries there appears to be no mechanism to prevent the krill 'hotspots' from being plundered.

New Zealand has a Treaty responsibility to monitor and manage fishing activities in the Ross Sea, a responsibility currently not matched by an appropriate surveillance and enforcement capability and consequently the fishery remains

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[102].*Ibid.*, p. 30.

open to pillaging by foreign trawlers. As the past has proved, disputes over fish can quickly turn belligerent when a militarily powerful state determines that its national interests are best served closeting its fishing fleets within a naval umbrella.[104] Should the krill fishery become a hostile environment it is questionable as to whether the NZDF could mount an appropriate response.[105]

While hydrocarbons and minerals are known to be finite resources what is now becoming apparent is that renewable resources, such as water and fish, are also finite and thus depletory. Whether the time scale identified in this chapter proves true or not is irrelevant. What is of concern is the high probability that the known reserves of many resources, other than those in the polar regions, will be exhausted within the first third of the twenty-first century. Searching for new resource El Dorados has taken mankind into some of the most inhospitable environments on earth, with the polar regions being amongst the last. That Antarctic will be one of the new El Dorado appears beyond doubt. Satisfying the want for food, water, energy and consumer products will cause states to ultimately circumvent or ignore the provisions of the Antarctic Treaty. And once the Treaty's aegis is breached the desire to exploit Antarctica will be unquenchable and the seeds of international rivalry and discord will have been sown. In this situation New Zealand will become a 'front-line imperial state' and like all

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[103] See antarctic.org.nz, 'Antarctic Biology', http://www.antarctic.org.nz/04-biology (14 June 2004.)

[104] During the Icelandic "cod wars" the Royal Navy provided an escort for British trawlers while they fished within the waters claimed by Iceland as sovereign territory. On numerous occasions British and Icelandic warships engaged in offensive posturing as Icelandic fisherman attempted to cut the trawl-lines of their British counter-parts.

[105] The ongoing pirating of fish stocks in the Southern Ocean has caused the Australian government to purchase a suitable vessel, equipped with a deck-mounted machine-gun and manned by Customs officers carrying guns, to patrol the Southern Reaches of Australia's EEZ. (See Australian associated Press, 'Illegal fishing boat nabbed', *The New Zealand Herald,* May 26, 2004, p. B3.)

imperial states it must decide whether to defend or forego territory; in New Zealand's case the Ross Dependency. Irrespective of that decision, developing a military capability able to secure New Zealand's backyard is likely to displace all other defence and strategic considerations in the not too distant future.

Chapter 6: New Zealand - Alone in an Unstable Ocean

6. 1 Unheeded advice.

New Zealand's political literature is peppered with references to Antarctica including some that speculate about future prospects for peace and stability on the continent. Amongst this list of publicists are those who suggest that since New Zealand's security is inextricably linked with maintaining the *status quo ante* in Antarctica, then any change that adversely affects Antarctica's legal or political status must inevitably be detrimental to New Zealand's strategic interests. G. C. L. Bertram, one of the early commentators to acknowledge that New Zealand had a strategic interest in Antarctica, concluded that the diverse motivational imperatives that drove countries to establish a presence on the continent rendered lasting stability in Antarctica fictional. And that in the absence of international recognition of their sovereignty claims, the national interest of the three British Empire Antarctic claimant countries (Australia, Great Britain and New Zealand) would be best served by presenting a common front in the form of an Antarctic political alliance.[1] In 1959, two years after Bertram proposed this political affiliation all three British Commonwealth Antarctic countries became founding signatories to the Antarctic Treaty.

Some twenty years after Bertram expressed concern over the brittleness of Antarctic politics Laurie Barber proffered advice that in the 21st century the Treaty was unlikely to prevent Antarctica from becoming a zone of contention as countries sought to exploit the continent for its resources. In anticipation of this

event Barber recommended that New Zealand's naval defenses be strengthened.[2] A year later in 1983, Barber, in co-authorship with Michael Selby, reviewed possible strategic options available to New Zealand in the 21st century when, in their view, the "covetous" eyes of the world would become increasingly focused on Antarctica's mineral wealth. These authors concluded that since New Zealand was unlikely to possess sufficient military capability to defend the Ross Dependency the best option for New Zealand was to relinquish its sovereignty claim once it had garnered sufficient support for Antarctica to be administered by the United Nations.[3] However, those countries that covet Antarctica's resources are unlikely to endorse such a revisionist change.

Despite the 1991 ratification of PEPAT, there has been no shortage of publications positing a coming era of conflict in Antarctica. Indeed, the possibility of 'resource wars' features in three recent New Zealand contributions on Antarctica. Lieutenant Commander J.P. Taylor-Innes, in a Commander's Essay[4] written in 1996, makes the link between resources, conflict and New Zealand's security.[5] Dillon Burke also made this link when he explored the possibility of the AT crumbling before an onslaught of states wishing to exploit Antarctica for commercial benefit.[6] A similar theme also permeates a paper presented by

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[1] See Bertram, G.C.L., *Antarctica Today and Tomorrow,* University of Otago, Dunedin, 1957, p. 30.
[2] See Barber, Laurie, 'Keeping New Zealand's back door closed', *New Zealand International Review,* Vol. VII, No. 3, 1982, p.14.
[3] See Barber, Laurie and Michael Selby, 'The search for an alternative strategy: New Zealand and Antarctica', *The Round Table,* No. 288, 1983, p. 472.
[4] The Royal New Zealand Navy expects that its senior officers will author at least one essay of academic standing on a contemporary defense/security topic during their tenure of command.
[5] See Taylor-Innes, J.P., 'Antarctica's potential for International Conflict and its implications for New Zealand', *Royal New Zealand Navy,* 1996.
[6] See Burke, Dillon, 'The Possibility of Conflict in Antarctica: The 1990s and Beyond', an unpublished Masters of Arts Thesis, *University of Waikato,* Hamilton, 1997.

Dr Alan Simpson to the 3rd New Zealand Defence Force Conference, held at Massey University in 1998.[7]

Not withstanding these cautionary warnings, New Zealand's security policies still remain predominantly Asia-Pacific focused. Despite Antarctica being currently seen as a region of little strategic importance, New Zealand overlooks the continent as a locus of future conflict at its peril. It has been suggested that the 1982 Falkland Islands War was at least in part motivated by Argentina's desire to control the region's potentially lucrative fishing, oil and natural gas reserves. Whether this is fact or not, the Falklands War riveted world attention on the strategic significance of Antarctica as nothing before.[8]

The implications arising out of the 1982 Falkland War appear lost on New Zealand's polity which clings to an unfounded expectation that PEPAT will, for at least the next forty years, shield New Zealand from the disagreeable prospect of having to confront conflict in Antarctica. But what current policy does not acknowledge is the disparate changes, some of which were discussed in the previous chapter, that are already exerting influence over Antarctica and as a consequence the fifty-year life span of PEPAT may be truncated by several decades.[9]

Some changes are being driven by the self-interest of countries over which New Zealand can exert little or no influence. The unilateral decision by the United States to construct a road the length of the Ross Dependency is a poignant reminder of New Zealand's inability to exert authority over many activities occurring within the Ross Dependency. In yet another example of self-interest

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[7] See Simpson, Alan, 'Prospects for Conflict in the Antarctic Treaty System', *University of Waikato,* 1998.
[8] Taylor-Innes, *op cit.*, p.12.

was the decision by the United States to reconstruct rather than abandon its South Pole Station. The strategic importance of this Station was confirmed in a State Department memorandum that concluded "Abandonment of the Station would create a [power] vacuum and likely result in a scramble to occupy the site to the detriment of our position as well as to the stability of the treaty system." [10] Besides confirming in the minds of the American administration their hegemonic position in Antarctica, this memorandum speaks volumes about the inherent fragility of the treaty system. The memorandum implies that there exists within the ATCP a willingness to seize any opportunity to gain a strategic advantage over other ATCP members - a point New Zealand would do well to dwell upon.

New Zealand should also consider other changes which in the future have a high probability of impacting on Antarctica to New Zealand's detriment: climate change being one of the more significant. A recent Pentagon report paints a "plausible … though not the most likely" scenario, in which abrupt climate change "could potentially destabilize the geopolitical environment, leading to skirmishes, battles, and even war." [11] According to Dr. David King, the chief scientific advisor to the British government, climate change poses a greater threat to world security than terrorism.[12] Indeed, if this is a prophetic truth then climate change could pose the greatest threat of all to Antarctica; a threat that has the potential to ultimately affect New Zealand's security.

Of the other likely changes to affect Antarctica the greatest is the need to secure access to natural resources. Given that many non-living resources are

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[9] In the 2003 MFAT publication, "New Zealand in Antarctica" there is no overt mention of the surreptitious commercialization of the continent or of the threat posed to Antarctica by climate change.
[10] See National Science Foundation, 'United States Antarctic Policy', 1996, http://www.nsf.gov/pubs/1996/nstc96rp/chii.htm (30 March 2004).
[11] See Carey, John, 'Global Warming', *BusinessWeek,* August 30, 2004, p. 54.

harboured by Antarctica the one most likely to drag states into conflict is oil. Throughout the world the need to secure future oil reserves is forcing the world to consider the willful degradation of the environment. In the United States, the current Bush administration, having been thwarted in its bid to drill for oil in the Arctic National Wildlife Refuge, is redirecting its attention to exploring for oil everywhere else in the Alaskan wilderness. In doing so it appears impervious to the schism created between itself and Alaska's indigenous people and conservation-orientated NGOs.[13] However, America is not the only country to show such blatant disregard for public opinion. In the South Pacific, Australia is willing to incur the fury of its new found friend East Timor in order to gain exclusive access to oil and gas reserves beneath the Timor Sea.[14] And the prospect of becoming a net petroleum importer by 2008 has provided the Australian Federal Government with sufficient impetus to consider drilling for oil along the length of the Great Barrier Reef, despite howls of protest from environmentalists.[15]

Dwindling reserves of oil and gas will conceivably superimpose Antarctica upon the consciousness of many political régimes within the next three decades. Should states, as a consequence of diminishing world-wide oil reserves, be seduced into sacrificing Antarctica by importune overtures from compatriot oil conglomerates then New Zealand could be forced to yield its sovereignty over the potential oil reservoirs beneath the Ross Sea to a myriad of foreign drillships. Even if New Zealand withstood this challenge it is doubtful that the Ross

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[12] See Townsend, Mark and Gaby Hinsliff, 'Queen asks PM to lobby US on Kyoto treaty', *The New Zealand Herald,* November 12, 2004, p. B3.
[13] See Babbitt, Bruce, 'Another Attack on the Arctic', *New York Times,* July 8, 2004, http://www.nytimes.com/2004/07/08/opinion/08BABB.html (9 July 2004).
[14] See Dusevic, Tom, 'Hands Off My Petroleum', *Time Magazine,* May 10, 2004, pp. 36-41.
[15] See Adams, Billy, 'Black gold threatens national living treasure', *The New Zealand Herald,* July 14, 2004, p. B4.

Dependency could remain detached from a multinational scrimmage over the right to exploit the off shore oil reserve in the adjacent but unclaimed and unoccupied territory known as Mary Bird Land. Any imbroglio on the eastern flank of the Ross Dependency has the potential to draw New Zealand into a limited resource conflict that could readily metamorphose into a continental resource war.

Not withstanding that world attention has recently been focused on the slaughter of whales for 'scientific purpose' an even greater catastrophe appears to have befallen another marine living resource - fish. Given that existing fishing grounds are already badly depleted world-wide then fish farming, despite known environmental and conservation concerns, appears the only option capable of satiating human consumption. Because of its abundance Southern Ocean krill is likely to be a main feed stock for fish farms in the future. One of the few Antarctic Ocean locations where krill congregate in vast numbers is adjacent to the Ross Ice Shelf. Once a fish species becomes a maritime prize of immense value, history shows that interstate conflict over harvesting rights becomes inevitable.[16] Such conflicts could involve New Zealand in constabulary operations or worse still, the military defense of krill stocks and those licensed to harvest it.

Oil and krill are but two possible sources of conflict that lurk around the continent. With the United Nations forecasting a worldwide shortage of fresh water by 2025 many countries could be forced to satisfy their water needs by harvesting Antarctica's vast store of icebergs. American scientists have calculated that Iceberg B15A, which calved off the Ross Ice Shelf in March 2000, contained enough fresh water to supply the Nile River complex for 80 years[17] or the needs of

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[16] See Dupont, Alan, *The Environment and Security in Pacific Asia,* Oxford University Press, Oxford, 1998, p. 51.
[17] See Associated Press, 'Giant iceberg spells death for thousands of penguins', *The New Zealand Herald,* December 15, 2004, p. A7.

the United States for five years;[18] a resource worth fighting for in the future? Besides water, bio prospecting, the protection of the terrestrial environment and the control of tourism are all sources of tension within ATS. Also the ATS has yet to experience the strain of ameliorating concerns over access to hard strategic minerals; a potentially divisive issue in a world becoming bereft of such resources. Whether PEPAT, as a voluntary restraint agreement, will be instrumental in assisting the world community to resolve these issues only history can determine. Despite the best of intentions, PEPAT could fail because countries come to see the protocol for what it is; a legal instrument of dubious substance designed to preserve the status quo. However, without the cloak of PEPAT the whole treaty system is laid naked and vulnerable to "the emperor has no clothes" syndrome.[19] All that remains then is for a country to announce that Antarctica is clothed in a garb of unenforceable misconceptions, for PEPAT, along with the Treaty, to be at an end.

6. 2 In Antarctica, national interest weighs against the Treaty

Political opacity is not the only reason why the history of international relations is littered with defunct treaties, pacts and declarations. As Dr. Ron Smith points out "[W]hen the chips are down they [Leagues, Treaties, Pacts and declarations] do not work."[20] Smith quotes as an example the *General Treaty for the Renunciation of War,* signed by sixty-three states in 1928. The sanctity of this treaty ultimately stood for nothing as most signatory countries were fighting the next Great War

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[18] See Stone, Gregory S., *Ice Island: The Expedition to Antarctic's largest Iceberg,* http://www.bunkerhillpublishing.com/title.htm?ISBN=1-59373-017-9 (30 September 2004).
[19] See Barnes, James N., 'The Antarctic Treaty System in Crisis', in Joe Verhoeven, Phillipe Sands & Maxwell Bruce (eds.), *The Antarctic Environment and International Law*, Graham & Trotman, London, 1992, p. 22.

some twelve years later.[21] However, after forty-five years the AT has assumed a greater weight than that of a treaty for it has metamorphosed into a stable international régime.[22] In this guise there is an understandable reluctance by ATCP members to sanction the Treaty's demise. Nonetheless, in a world where states are given to pursue exceptionalist foreign policies only régimes that support long-term national interests are likely to be retained.[23]

Peter Leitner has drawn a similar conclusion from his analysis of the UNCLOS. Leitner concludes that the legitimacy of any régime depends on a variety of factors including its perceived importance, relevance, reasonableness and practicality and that these factors are in large part influenced by the power and prestige of states that recognise or are parties to that régime.[24] In the case of the UNCLOS, the United States decided for reasons of national interest not to implement its provisions although it remains a signatory, albeit a recalcitrant one. If states can't place their trust in freely entered into pacts, treaties and declarations then what reliance can New Zealand bestow on the AT to protect its long-term strategic interests in Antarctica – probably none!

National interest continues to be the propellant that dictates the actions of states towards Antarctica, particularly in a world confronting imminent resource depletion. In the mid-1970s, George Kennan, a well respected American diplomat, maintained that American foreign policy was primarily "guided by a pragmatic

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[20] See Smith, R. C., *Violence Politics and Morality: Ethical and Political Issues in War and Peace,* Hillcrest Books, Hamilton, 1996, p. 218.
[21] *Ibid.*
[22] See Little, Richard, 'International Regimes', in John Baylis and Steve Smith (eds.), *Globalization of World Politics,* Oxford University Press, Oxford, 1997, p. 235. Little favours Krasner definition of an international regime as being "…*'sets of implicit or explicit principles, norms, and decision making procedures around which actors' expectations converge in a given area of international relations.'"* A full-blown regime is one where there is a high expectation that formal rules will be observed. (*Ibid.*)
[23] *Ibid.,* p.242.
[24] See Leitner, Peter M., *Reforming the Law of the Sea Treaty,* University Press of America, Lanham, 1996, p.23.

concern for the protection of our resources — ours, wherever they happen to be located, to which we must preserve our inherent 'right of access' by conquest if necessary, in accord with the ancient law of nations."[25] America is not alone in coveting another state's resources, for as Robert Lansing, President Woodrow Wilson's Secretary of State, cynically noted Britain, France and Italy were willing to accept a mandate from the League of Nations to administer other nations provided they gained access to "mines, oil fields, rich grain fields and railroads."[26] And more recently (2004), both Britain and the United States stand accused of being willfully neglectful in not advising President Teodoro Obiang of Equatorial Guinea of an impeding coup, as required by a long standing United Nations convention. It has been suggested that this oversight arose from a feeling within both countries that their oil interests in Equatorial Guinea's would be better protected if the Obiang régime was changed.[27] In Antarctica, the need to secure future access to minerals caused President George Bush (Senior) to issue New Zealand with a veiled threat that its continued opposition to a time-limited ban on mining in Antarctica could jeopardise United States support for New Zealand's favoured environmental initiatives.[28] Joyner and others – see chapter 4 – maintain that it is national interest that determines the policies of many, if not most, ATCP countries.

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[25] See Chomsky, Noam, *Hegemony or Survival: America's Quest for Global Dominance,* Allen & Unwin, Crows Nest, 2003, p. 47.
[26] See Stivers, Williams, *Supremacy and Oil,* Cornell University Press, Ithaca, 1982, p. 53.
[27] See *Observer,* 'UK, US knew full coup plan', *The New Zealand Herald,* November 29, 2004, p.B1.
[28] See Templeton, Malcolm, *Protecting Antarctica: The Development of the Treaty System,* Wellington, The New Zealand Institute of International Affairs, 2002, p. 41.

6. 3 Canada's plight

If New Zealand requires an impetus to discard its myopia towards the frailty of the AT it needs look no further than the Arctic. The potential imbroglios catalogued in Chapter 3 are verging on becoming a reality. As climate change continues to crumble the ice covering the Arctic Ocean, the Northwest Passage around Canada's polar extremity could, within a decade, become ice-free for much of the year. While this would offer a shipping route from Europe to Asia some 7,000 kilometres shorter than that through the Panama Canal,[29] it would also bring into sharp relief the antipodal strain that can exist between sovereignty and the right of free passage. For Canada, sovereignty over these high latitudes has become an intractable problem, for its territorial integrity is not only regularly breached by the passage of American, British and Russian nuclear submarines, but more recently by vessels from other states, notably China, that appear unannounced off its northern shores.[30]

Europeans first settled in Canada some two centuries before the first human footfall pockmarked the Antarctic continent in 1895 and yet three hundred years on, acceptance of Canadian sovereignty over the Arctic Archipelago remains a contentious international issue. The antagonistic aura that impedes American acceptance of Canada's sovereignty over the Arctic Archipelago is fueled primarily by the inimical politics of oil. The contemporary souring of relationships between Canada and the United States deepened recently as a result of America's out-right rejection of a Canadian protest over the sale of prospecting

[29] See The Economist, 'Breaking the ice', August 21, 2004, p. 34.
[30] *Ibid.* How Canada justifies denying the international shipping community an unfettered right of free passage through the Arctic Archipelago is explained in Chapter 3: footnote 38.

licenses in the disputed oil-rich Beaufort Sea.[31] No doubt America's attitude in this matter was shaped by the fact that while Canada's claim to the Arctic Archipelago may be well founded it could legally fail due to past dereliction and an inability to meet the test of *occupatio.*[32] Obviously, for America, securing oil reserves was more important than maintaining cordial relations with its northern neighbour.

In August 2004, Canada "threw down the gauntlet" to those countries that would challenge its sovereign right to govern the Arctic Archipelago by staging its largest military exercise in the region for several decades.[33] An even larger exercise is planned for 2006.[34] There appears to be a similarity between the Canada's plight in the Arctic and New Zealand's situation in Antarctica. Both countries claim territory where their right of sovereignty is disputed by members within the international community, among them the United States.[35] The pertinent lesson New Zealand can learn from the Canadian experience is that polar diplomacy has its limitations when dealing with more powerful countries and there may come a time when stilted negotiations may have to give way to more strident measures to under-score a fervent intention to defend one's national soil.

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[31] *Ibid.* The United States and Canada share a common border in the Arctic at the 141st meridian. Canada contends that this boundary extends seaward into the Beaufort Sea and delimits the maritime border between it and the United States. The United States avers that the ocean border between the two countries should be delimited by the equidistance principle, in which case the boundary would move further east into the territory currently claimed by Canada. According to Joyner the discovery of oil beneath the Beaufort Sea has made an already complex situation even more complicated. See Joyner, Christopher C., 'United States Legislation and the Polar Oceans', *Ocean Development & International Law,* Vol. 29, 1998, p. 268.
[32] *Ibid.*
[33] *Ibid.*
[34] *Ibid.*
[35] See CIA Factsheet, 2004, http://www.cia.gov/cia/publications/factbook/geos/html (24 September 2004).

6. 4 New Zealand's Antarctic myopia

To militarily defend one's national soil implies that less violent means of deterring acts of territorial infringement have been exhausted. The exact point, at which this exhaustion occurs, where diplomatic efforts turn to more discordant means of persuasion, is determined by a national policy that incorporates both foreign policy and security policy dimensions.[36] National policy represents an unequal partnership, since foreign policy dictums usually determine when national security outcomes are best obtained by military means. In New Zealand, it is MFAT that advises the government on appropriate foreign and security policies. Thus, by default, MFAT plays a significant roll in determining the future capabilities and force structure of the armed services. While a simple determiner/executor relationship exists between MFAT and the NZDF it is a relationship of vital importance. Should MFAT, either independently or in conjunction with another government security agency, e.g. EAB, fail to recognise the rise of a inchoate security threat within a timeframe that allows the NZDF to field appropriate response, then New Zealand's security is placed at risk. Although MFAT acknowledges that the world today is less secure that it was during the Cold War it is unable to conceive any circumstance in which New Zealand would face a direct military threat.[37] However, it does concede that lesser challenges exist in the form of resource pirating, illegal migration and transnational crime.[38] Seemingly MFAT has not considered that a confluence of disparate issues like those postulated in previous chapters could arise and seed the collapse the benign security environment New Zealand currently enjoys.

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[36] See *Foundations of New Zealand Military Doctrine,* New Zealand Defence Force,
[37] See Ministry of Foreign Affairs and Trade, 'New Zealand's Foreign and Security Policy Challengers', February 2004, http://www.nzdf.mil.nz and http://www.mfat.govt.nz/foreign/spd/defence/greenbook.html (1 October 2004).

Besides supporting foreign policy initiatives sanctioned by the government, the armed services enable New Zealand to make a military contribution to United Nations or other multilateral operations.[39] The cumulative impact on the NZDF of operating under the primacy of a multilateral umbrella has been the steady constriction of focus resulting in the narrowing of capabilities; the recent disbanding of the Air Force's air-combat wing being an illustrative example. Despite New Zealand being a maritime trading nation surrounded by the world's fourth largest EEZ, the current Labour-led government has implemented a security policy that commits both the air force and the navy to no more than a supportive role for the army. While the recently announced restricted upgrade of two ANZAC frigates, the purchase of seven additional naval vessels, and the limited re-equipping of the Orion P-3K aircraft are welcome developments they are not the result of any reappraisal of New Zealand's strategic situation. Rather they are confirmation that the government is determined to complete a systematic repositioning of the armed services into constabulary and peacekeeping roles. The NZDF's new military doctrine[40] could readily fail because it is based on a very narrow vision of New Zealand's security environment. Nowhere within this doctrine is there a suggestion that the armed services forgo its defensive orientation in favour for even a limited strike capability. This is an essential capability should New Zealand need to defend its 'backyard' against violations by a better equipped military force.

The Battle for the Falkland Islands high-lighted the potency of anti-ship missiles through the loss to the Royal Navy of a Type 42 Destroyer, *HMS*

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[38] *Ibid.*
[39] *Ibid.*
[40] New Zealand Defence Force, *Ibid.*

Sheffield[41] and a 13,000 ton container ship the *Atlantic Conveyor.*[42] Both vessels were sunk by the Argentine Air Force using French supplied Exocet missiles. Not withstanding the potency of the Exocet, anti-ship missiles have over the past two decades have continued to develop in both sophistication and capability. This is best exemplified by the modern Russian anti-ship cruise missiles (ASCM) such as the ramjet powered Mach 2+ 4.5 tonne class Kh-41 Sunburn, and three tonne class Kh-61 Yakhont/Brahmos.[43] The former missile is now found in the military inventory of two ATPC members - China and India. While Russian ASCMs could provide the NZDF with the requisite strike capabilities a more palpable option is to seek commonality with the Australian Defence Force (ADF) by acquiring the McDonnell Douglas Harpoon family of missiles. Since the Harpoon is manufactured in a number of different variants it could equip both air force and navy with a reliable war-tested anti-ship missile. Also the Standoff Land Attack Missile (SLAM) variant of the Harpoon missile, in particular the SLAM-ER,[44] could provide the NZDF with the ability to attack infrastructure assets on the continental landmass of Antarctica.

Unlike New Zealand, the other Pacific Ocean Antarctic 'Gateway' countries – Australia and Chile – are currently strengthening their air and naval strike capabilities and could, through some form of security alliance, provide New Zealand with access to those capabilities it now lacks. Conceptually, a Southern Ocean security alliance has much to recommend it since all 'Gateway' countries

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[41] See Hastings, Max and Simon Jenkins, *The Battle for the Falklands,* Michael Joseph, London, 1983, p. 153.
[42] *Ibid.*, p. 227.
[43] See Kopp, Carlo, 'Defeating Cruise Missiles', *Australian Aviation*, October 2004, p. 48.
[44] The SLAM-ER (Stand-off Land Attack Missile – Expanded Response) is the ultimate evolution of the Harpoon and is one of three possible cruise missile options currently being considered by Australia to arm the Royal Australian Air Force.

are likely to face the same security vulnerabilities. However, on closer analysis the prospects of such an Antarctic alliance appear slim.

6. 5 Alone

Undeniably, it is in the interest of all claimant countries to present a common front when faced with a situation that might undermine their special status with regard to Antarctica. While a peaceful resolution to problems that divide the claimant countries may be in their best interest, history shows that realpolik is likely to mitigate against any action being taken by the group as a whole. This is evidenced by the schism that quickly appeared at the time of the 1982 Falkland War. Britain, when reclaiming the Islands, received tangible support from both Chile and New Zealand while France, after a hiatus lasting for the duration of the war, resumed the supply of Exocet missiles and Super Etendard aircraft to Argentina, which angered the British.[45] Individually and collectively this group of disparate states is incapable of forcing a resolution of political issues in their favour, especially if such action is counter to the national interest of Antarctica's other major powers, in particular America. Despite setbacks New Zealand should not be deterred from seeking an alliance with other claimant countries even if the immediate prospect of such a coalition appears unpromising.

Existing New Zealand and Australia military ties were spawned out of the Canberra Pact (1944). Less than a decade after this pact came into being a more comprehensive security relationship was achieved through the inclusion of the United States in what became known as the ANZUS alliance. Although, New Zealand withdrew from ANZUS in 1985, Australia remained committed to the alliance. However, Australia by continuously strengthening its relationship with

the United States has placed its developing community of interest with America ahead of fraternal kinship with New Zealand. No doubt this friendship would be fully tested should the United States unilaterally decide that its national interests are best served by exploiting Antarctica's resources, especially those resources that lie beneath territory claimed by its antipodean ally. Without American military support any coalescing of unfriendly military forces in Antarctica could compel Australia to yield the AAT without a fight.

An alliance with Chile would be complicated by the nature of that country's Antarctic claim. The collapse of the ATS could conceivably bring three states – Argentina, Britain and Chile - into conflict, as all three countries claim sovereignty over a portion of Antarctica claimed by the other two. Since the demise of the Treaty would have an identical effect on Chile as it would have on New Zealand, each country would in all probability concentrate its initial diplomatic and military efforts on protecting its own Antarctic possession, thus rendering immediate assistance between them unlikely.

Assistance from the remaining claimant states would be equally unlikely. Britain would need to reflect on the desirability of entering into a conflict so far from its home shores, especially given that any fracas involving itself and Argentina over Antarctica would likely re-ignite the thorny issue of the Falkland Islands *(Malvinas)*.[46] Besides engaging in conflict with Britain, Argentina could simultaneously be involved in hostilities with Chile over the Antarctic Peninsula. A dispute between Argentina and Chile would quickly bring to the surface past enmities over territory, including the historical dispute over ownership of several Beagle Channel Islands.

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[45] Hastings, *op cit.*, p. 327.

From the two remaining claimant states New Zealand can expect little in the way of assistance. Norway is no longer the Antarctic power it was during the disorderly days of whaling and represents an untested ally whose strategic interests now lie north within the Arctic Circle. France, despite its miniscule Antarctic possession, still proffers an interest in the continent. Although France possesses adequate military capabilities to support an adventure in Antarctica, a lack of a history of alliance building between it and New Zealand could inhibit the forming of a bi-lateral Antarctic alliance.

Given that the claimant states are unlikely to coalesce into a stable alliance New Zealand could be tempted to build a coalition with other ATCP or gather support from the United Nations. Irrespective of which ATCP country New Zealand turned to such overtures are likely to fail since the world community does not recognise New Zealand's claim to the Ross Dependency. As for the United Nations, all past attempts to have it declare Antarctica a 'global commons' or a world park have been thwarted by the same countries that are potentially New Zealand's adversaries in any imbroglio that engulfs Antarctica. Hence New Zealand is likely to stand alone in defense of its Antarctic realm.

6. 6 New Zealand's hegemonic reality

Even low level acts of aggression – terrorism or sabotage - should they occur in Antarctica would severely tax the military capabilities of most countries, including those of Australia and New Zealand. An Australian defence commentator writing under the *nom de plume* of "Erebus" has suggested that even minor acts of territorial violation in Antarctica would require the ADF to commit

[46] See Collier, Simon, 'The First Falkland War? Argentine Attitudes', *International Affairs,* Vol. 59, No. 3, 1983, p.464.

a land element with the equivalent strength of a single rifle company, while continuing its maritime patrols.[47] Dispatching a single rifle company to Antarctica would necessitate, in broad terms, the commitment of:[48]

- one rifle company equivalent, with suitable clothing and weaponry;
- two C130 transport aircraft;
- six utility helicopters;
- two ice-strengthened helicopter carrying ships;
- a force headquarters with communications and logistic support elements attached;
- a number of tractor trains or similar means of surface transport, depending on the task; and three long range maritime surveillance aircraft.

To allow for unit rotation within the land force element, a minimum of three rifle companies would need to be assigned to Antarctic operations. Each rifle company would need to undertake specialised 'polar' training to give personnel experience in operating under frigid conditions. For the officer corps, competency in Antarctic operations could take ten years to reach a suitable level in terms of knowledge and skill.[50] Add to the land force element a requirement to provide new sealift capabilities and the total cost of this specialised military force was estimated at $A100 million (in 1979 dollars) over a ten-year period.[51] While this cost estimate includes the additional cost of the land force element, plus

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[47] See "Erebus", 'A Limited Antarctic Warfare Capability for Australia Part 2', *Pacific Defence Reporter,* March 1979, p.57.

[48] *Ibid.*
[49] *Ibid.*
[50] *Ibid.*
[51] *Ibid.* By 2004, the A$100 million cost of maintaining a single rifle company in Antarctica would have risen to a conservative $A267.2 million (if the average cost of money was 4% over the 25 year period) to a possible $A542.7 million (if the average cost of money equalled 7% over the same period). If the currency exchange ratio between Australia and New Zealand was on average 1.0:0.80 over the 25 year period then the cost to New Zealand of maintaining a rifle

purchasing and operating two ice strengthened helicopter-carrying ships, its does not include the purchase and operational cost of the six utility helicopters, the two C-130 aircraft or the three long range maritime surveillance aircraft. Expenditure of this magnitude would severely curtail other ADF operations and place a similar operation well beyond New Zealand's capacity to finance without a significant increase to the defence budget.

If countering even a minor infraction in Antarctica would overextend NZDF capabilities then the ability to defend the Ross Dependency against hostile acts by another state or group of states does not exist. Despite any lingering romantic ideas of an Antarctic empire the cost of defending such an imperialist ambition would force New Zealand to quickly redefine the southern region over which it can realistically enforce its hegemony or maintain security in a situation less than an external threat. While Antarctica may lie beyond New Zealand's hegemonic reach this does not relieve it from an ongoing security obligation born of the need to know the extent to which commercial and military activities are occurring on and around the continent. Any increase in Antarctic activity, in particular shipping and aircraft movements, both civil and military, would necessitate the gathering of both visual and electronic intelligence, with such activities likely to become a principal role for the Government Communications Security Bureau (GCSB), navy and air force.

While New Zealand's legal claim to the Ross Dependency is weak, its sovereignty over the Sub-Antarctic territories, including an extensive EEZ to the south of Stewart Island, is beyond dispute. Given the closeness of the EEZ southern boundary to a potentially unstable Antarctica combined with the

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company in Antarctica over a 10 year period in 2004 dollar terms would range from $ NZ 320.6 million to $ NZ 651.3 million.

presence of valuable natural resources within the EEZ, New Zealand cannot remain complacent towards an assertive defense of its own 'backyard'. An additional complication for those agencies responsible for the surveillance of New Zealand's EEZ is the proposal to add a further 2 million sq. km. of continental shelf to the zone through the enactment of Article 76 of the UNCLOS.[52]

Although nearly fifty years has elapsed since Hunt Petroleum discovered several oil reservoirs beneath the Great South Basin the prospect of exploiting such a large and potentially valuable oil field has not been lost on international petroleum companies. In June 2004, the Australian oil explorer Magellan Petroleum completed explorative investigations of numerous petroleum prospects in the Great South Basin including the giant Toroa field, which holds the potential of satisfying New Zealand's foreseeable natural gas needs.[53] Further south lies the Campbell Basin, another region potentially rich in mineral resources. Any commercial development of these oil fields would, in time of conflict, provide tempting targets of opportunity to an adversary possessing sea or air launched anti-shipping cruise missiles. Although, the Sub-Antarctic is a unique battlespace, the NZDF could gain valuable knowledge of the capabilities required to defend off-shore hydro-carbon assets by assimilating information arising out of the ADF preparations for the defense of Australia's northwest off-shore oil and natural gas fields.[54]

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[52] See New Zealand Press Association,' Research centre takes plunge into the depths', *The New Zealand Herald,* November 25, 2004, p. A12.
[53] See Clark, Lindsay, 'Oil and gas search swings to the deep south', *The Sunday Star-Times,* June 13, 2004, p. D1.
[54] See Bostock, Ian, 'Australia plans to guard natural resources', *Jane's Defence Weekly*, Vol. 41, No. 38, 2004, p. 6. Australia plans to boost its maritime and aerial surveillance capability over the North West Shelf (NWS) to protect its most valuable liquified natural gas (LNG), oil reserves and infrastructure against attack, especially attacks by terrorists. There is also an intention to construct two extra *Armidale*-class patrol boats specifically for defence of NWS resource protection. Also see Dr. Carlo Kopp who recently discussed in detail the defence of Western Australia's off shore oil and gas fields. (See Kopp, Carlo, 'Wedgetail and the Region', *Australian*

In the future the Sub-Antarctic region could represent a confluence of security threats. A time could readily arise when aggressive actions spilling north from an unstable Antarctica coincide with acts of resource piracy in Sub-Antarctic waters. Under these circumstances New Zealand would be hard pressed to field a commensurate military response. It could be argued that this eventuality is unlikely to occur but such an argument is too simplistic. Australasia's history is festooned with unforeseen threats, which in hindsight were evident well before they became a reality. Undeniably the most serious threat to Australasia came from Japan in 1941/42. This was less than two decades after Winston Churchill dismissed any threat posed by Japan "…as not a possibility which any reasonable government need take into account."[55] Japan's thirst for resources drove its military deep into the Southwest Pacific and on several occasions its submarines violated New Zealand's territorial waters.

The Sub-Antarctic is potentially as much a region of conflict for Australia as it is for New Zealand. The recent interception of two vessels, the *South Tomi* and *Viarsa,*[56] caught illegally fishing around Heard Island and well inside Australia's EEZ is illustrative of the need for constant vigilance and armed patrols. As neither

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Aviation, Fishwyck, ACT, October 2000, pp. 28-32. Also see by the same author, 'Defeating Cruise Missiles', *Australian Aviation,* Fishwyck, ACT, October 2004, pp. 48-53.)

[55] See Smith, Ron, 'A Response to the Parliamentary Select Committee Interim Report "Inquiry Into Defence Beyond 2000"', in *Papers On The Interim Report of the Defence Beyond 2000 Inquiry,* Centre for Strategic Studies, Wellington, 1999, p. 4.

[56] See Dikkenberg, John, 'Greater capability needed in Southern Ocean', *Asia-Pacific Defence Reporter,* Vol. 30, No. 4, 2004, p, 47. Because the unarmed Australian fisheries patrol vessel *Southern Supporter* was unable to apprehend the pirate fishing vessel *South Tomi* it was required chase the ship across the southern Indian Ocean to the waters south of Africa. Here members of the Australian Special Air Service embarked in a South African ship, boarded the *South Tomi,* bringing the pursuit to a close. A month later, on the 6 August 2004, the *Southern Supporter* again intercepted a foreign vessel illegally fishing within Australia's Sub-Antarctic EEZ and gave chase. This pirate vessel was the Uruguayan ship *Viarsa*. After a chase lasting 21 days the *Viarsa* was apprehended in pincher movement involving coast guard vessels from South Africa, Britain and Australia. In comparison, in August 2004, an armed Micronesian fisheries patrol boat brought to an abrupt halt the illegal fishing activities of a Chinese long-liner with a single shot across the bow. The Micronesian incident has validated a decision already taken by the Australian government to arm their Sub-Antarctic fishery patrol vessels. (See Kiriona, Renee, 'Air Force swoops on long liner', *The New Zealand Herald,* August 27, 2004, p. A9.)

New Zealand nor Australia can adequately patrol the vast Southern Ocean both are calling on the Commission that administers CCAMLR to impose significantly more stringent controls over all fishing vessels entering Antarctic waters; an action taken to curtail pirate fishing. However, such calls have previously gone unheeded since several CCAMLR members are the main sponsors of pirate fishing, while others are the market recipients of this illegal catch. Since neither Australia nor New Zealand are capable of securing their own 'backyard' against determined sovereignty violations a rationale exists for the development of a joint – ANZAC – force to provide the security presently lacking. Such rationale is given weight by the close proximity of the two countries' EEZs, which at some locations in the Tasman Sea share a common boundary.[57] While there is evidence that New Zealand and Australia will not agree to a common ocean policy, there would be obvious strategic synergies to both countries should such union come to pass.

Despite differences in strategic doctrine each country shares a responsibility for the defense of the other. The Canberra Pact along with the Statement on Closer Defence Relations (CDR) acts as poignant symbols of this intertwinement.[58] While both the pact and CDR are responses to perceived threats emanating from the Asia Pacific, their orbit could easily encompass the Sub-Antarctic. No doubt under such an arrangement Australia would seek a more equal defence partnership than currently exists; a factor that could create political difficulties for New Zealand. But the advantages gained from a joint security relationship covering the

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[57] See Cozens, Peter, '*An Australasian Oceans Policy?*', Centre for Strategic Studies, Wellington, 2000, p.1.
[58] See Defence-areospace.com, 'New Closer Defence Relations Statement Released', 26 June 2003, http://www.defence-areospace.com/cgi-n/client/modele.pl?session=dae.dae.5507513.1098(26 October 2004).

vulnerable Sub-Antarctic backyard far outweigh any additional defence expenditure required for the relationship to mature into a partnership of equals.

The potential ANZAC sphere of polar vulnerability is extensive, covering a considerable portion of the sub-polar latitudes of both the Pacific and Indian Oceans. While Australia may relieve New Zealand of the need for a military presence west of the Tasman Sea, New Zealand would need to extend its surveillance and patrol activities further east towards South America. The shortest route for vessels of super tanker size bound for West Antarctica from either the American eastern seaboard or Eastern Hemispheric countries is via the turbulent waters south of Cape Horn. If Chile and Argentina are forced to forsake their Antarctic claims then both could be amenable to developing a security association with the ANZAC twins since all four countries face the same vulnerabilities. Inevitably, the time must arrive when for the sake of their mutual strategic interests all five "Gateway" countries form a political/military alliance to underscore their presence in the Sub-Antarctic.

Despite any alliance that maybe entered into, the protection of New Zealand's territorial integrity cannot be devolved to others, for national security is the prime responsibility of every sovereign government. For New Zealand this will impose an additional burden upon it financially and militarily. No doubt New Zealand, as a responsible world citizen, will remain inclined to maintain its existing military obligations to allies throughout Asia and the Pacific while continuing to uphold its responsibilities under the UN Charter. Even these limited requirements have pushed NZDF capabilities to a crisis point and questions are now being raised as to the ongoing availability of suitably qualified and trained military personnel.[59]

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[59] See Taylor, Kevin, 'Forces worry that staff will keep leaving', *The New Zealand Herald,* June 24, 2004, p.A6.

Adding the additional capabilities required to defend the Sub-Antarctic is likely to exacerbate this situation. However, these capabilities, both in terms of hardware and trained personnel, are additional to those that already exist, so the NZDF will be spared the problems associated with introducing entirely new capabilities.

6. 7 Defending the Sub-Antarctic backyard

New Zealand could take unto itself an option of not defending its Sub-Antarctic backyard by retreating further north to directly secure the three 'home' islands. Forsaking the Sub-Antarctic region could conceivably bring any conflict that may develop in the southern latitudes to New Zealand's backdoor while not alleviating the need to restructure the armed services. The prospect of conflict so close to the 'home' islands would require an even more radical restructuring of the NZDF, making the development of the armed services into an assertive strike force inevitable. If national security relies on keeping distance between New Zealand and all sources conflict then the country's southern borders should be secured as far as possible from the 'home' islands. This would make the Sub-Antarctic New Zealand's logical southern defense perimeter.

Under any future security scenario, including that posited as the 'alternate scenario', the need for enhanced airborne Intelligence, Surveillance and Reconnaissance (ISR) would become paramount. While surveillance by satellite is currently of considerable import in identifying and tracking ships entering and leaving New Zealand's EEZ, the use of commercial satellites to satisfy military requirements is not optimal. In a rush to become a modern military power Australia may decide that there are advantages in accessing ISR from indigenous satellites. Should this event occur then New Zealand should not be reticent in participating in such a project if invited to do so. Irrespective of any such future

developments it is prudent to supplement satellite ISR with observations from non-space bound military platforms. In this regard airborne intelligence gathering – visual and electronic – assumes additional importance. Electronic intelligence can be used to gain knowledge on both commercial and military actives through the detection and analysis of electro-magnetic spectrum emissions. Although New Zealand's current fleet of six P-3K Orion aircraft could fulfil this role to some extent, electronic surveillance is usually a task allocated to special mission aircraft rather than degrade mission capabilities of maritime patrol aircraft. Australia has two modified P-3C Orion dedicated to Electronic Intelligence (ELINT) [60] and is currently developing indigenous ISR capabilities for insertion into other ELINT aircraft.[61]

There are alternatives to enhancing the P-3K ELINT capabilities, with some being relatively cheap to acquire. Australia has shown interest in the developmental RQ-4A Global Hawk, a high-altitude long endurance unmanned aerial vehicle (UAV) that is capable of conducting wide ranging missions, including ELINT and maritime patrol tasks.[62] New Zealand could become a partner to this Australian initiative. An alternative "poor man's" reconnaissance capability exists through the use of roll-on, roll-off palletised systems for unmodified C-130 transport aircraft, while light utility aircraft when fitted with discrete ELINT components offer yet another low-cost solution.[63] However, continuous patrolling in the southern latitudes may dictate the need for an aircraft

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[60] In this thesis electronic intelligence is regarded as a generic term covering both active and passive techniques designed to detect electro-spectrum transmissions and then derive information from them. As a generic term ELINT includes **COM**munications **INT**elligence (COMINT); **ELE**ctronic **INT**elligence (ELINT) and **SIG**nal **INT**elligence (SIGINT).
[61] See Ricketts, Peter, 'Special Mission Aircraft: Same Result, Lower Cost', *Asia-Pacific Defence Reporter,* Vol. 28, No. 3, 2002, p. 44.
[62] See Hoyle, Craig, 'Reconnaissance: The information war in the air', *Jane's Defence Weekly,* 24 July 2002, p.72.
[63] *Ibid.*

with a more robust airframe than that provided by light utility aircraft. This requirement could be met by purchasing additional second-hand P-3C Orion aircraft now surplus to US Navy requirements. In the future there may be an opportunity to acquire dedicated SIGINT EP-3E Orion aircraft once the United States Navy (USN) introduces its new Aerial Common Sensor (ACS) aircraft. Conversely, given that the need for such dedicated aircraft is not immediate, New Zealand could achieve a quantum leap in its ELINT capabilities by participating directly in the USN's ACS program.

Given that New Zealand is unlikely to follow either Australia or Chile and purchase Airborne Early Warning and Control (AEW&C) aircraft or Airborne Early Warning (AEW) aircraft a lesser but adequate capability could be obtained by installing synthetic-aperture radar (SAR) [64] in maritime surveillance aircraft. This would enable the air force to identify shipping and aircraft movements that could represent a potential threat to Sub-Antarctic assets from standoff range. Although *Project Guardian* the upgrade of the mission/communications/navigation systems on the P-3K Orion aircraft – will to some extent mitigate the current electronic surveillance deficiencies within the Orion fleet, these improvements fall well short of those sought under *Project Sirius*. Project Guardian the P-3Ks will be optimised for "surveillance of the exclusive economic zone and surrounding waters for illegal fishing, search and

[64] Synthetic aperture radar (SAR) take advantage of the long-range propagation characteristics of radar signals and the complex information processing capability of modern digital electronics to provide high resolution imagery. SAR complements photographic and other optical imaging capabilities because of the minimum constraints by time-of-day and atmospheric conditions and because of the unique responses of terrain and cultural targets to radar frequencies. Imaging radar was developed to meet the needs of advanced weapon systems, verification and non-proliferation programmes and environmental applications. [See Mileshosky, Katelyn, ' What is Synthetic Aperture Radar?', *Sandia National Laboratories,* http://www.sandia.gov/radar/whatis.html (1 November 2004)].

rescue and maritime interdiction"[65] rather than the detection of "a submarine with a radar cross section …of 0.1 square metres …at a minimum range of 20 nautical miles."[66] However, as *Operation Highjump* proved, countries, in that case the United States, are not beyond dispatching submarines to Antarctic waters to underscore their national interest.

Any intelligence gained from ISR activities would form the basis of operations undertaken by other sectors of the armed services. Theoretically, military operations in Sub-Antarctic waters could simultaneously occur with activities elsewhere within New Zealand's region of strategic interest. Thus, New Zealand's armed services maybe placed in a position where they are required to maintain international obligations while having to defend New Zealand's backyard. A navy - airforce operation of this magnitude would severely tax these services and brings into sharp relief hardware suitability and availability. Unquestionably, in such a situation the six ageing P-3C Orion aircraft represent an inadequate maritime patrol capability. While additional purchases may be required in the short term, the ultimate need to replace this aircraft type, plus the time taken to source a suitable replacement, indicates that Project Guardian can only be regarded as an interim solution. A more palpable option would be to plan for the introduction of the next generation of maritime patrol aircraft such as the Boeing 737 Multi-mission Maritime Aircraft (MMA). Both the US Navy and Australian Air Force have signalled their intention to acquire the Boeing 737MMA as a P-3C Orion replacement.[67]

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[65] See 'Newsdesk', *Australian Aviation,* No. 210, October 2004, p. 10.
[66] See Harger, Nicky, 'Project Sirius', http://www.converge.org.nz/pma/alert.htm (1 November 2004).
[67] See Gardner, Richard, 'Boeing notches MMA win', *Asia-Pacific Defence Reporter,* Vol. 30, No. 6, pp. 9-12.

New Zealand does not currently possess any naval vessels specifically designed to operate year round in a Southern Ocean. As a partial correction of this deficiency the New Zealand navy recently (2004) ordered a Multi-role Vessel (MRV) and two Offshore Patrol Vessels (OSVs) under the aegis of *Project Protector*. While the MRV is seen as a replacement for the ageing Leander-class frigate HMNZS *Canterbury,* it is a different class of vessel. The MRV will provide limited tactical sea-lift capacity for disaster relief, humanitarian relief operations, peace support operations and military support activities in New Zealand's EEZ and the Pacific and Asia regions.[68] The OSVs, while similar in physical dimensions and displacement to corvette-class warships, such as Indonesia's new Dutch built Sigma class corvettes, they are vessels of a lesser league.[69] The OSVs are designed to meet patrol and surveillance requirement in support of civil agencies in New Zealand's EEZ and the Southern Ocean and to assist South Pacific states to patrol their EEZs.[70] As the MRV and OSVs are being built to civilian rather than naval specifications and as a consequence will be lightly armed, both class of vessel have limited war fighting capabilities.

Rather than invest in an OSV-class of vessel for Antarctic and Sub-Antarctic patrol operations, John Dikkenberg, an Australian defence analyst, suggests that a more appropriate ship would displace some 2,500 to 3,000 tons;[71] similar in displacement to a frigate and twice the displacement of the OSVs. Such a vessel would need to be ice strengthened, perhaps have shrouded propellers and be capable of operating a medium size helicopter.[72] However, what really separates a

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[68] See Scott, Richard, 'Tenix to fashion New Zealand vessels', *Jane's Defence Weekly,* 15 September 2004, p. 30.
[69] See 'New Corvettes', *Asia-Pacific Defence Reporter,* Vol. 30, No. 1, 2004, p. 6.
[70] *Ibid.*
[71] *Ibid.*
[72] Dikkenberg, *op cit.,* p.48.

vessel charged with constabulary duties from a warship is the lack of a comprehensive weapon system and sensor suite.

Although it is common for fishing vessels sailing out of Asian ports to carry heavy machineguns and rocket-propelled grenade launchers[73] such weapons are unlikely to represent a serious threat to the OSVs with their single Rafael Typhoon 25mm stabilised cannon.[74] A greater threat would arise if fishing fleets were accompanied by a naval flotilla, a not infrequent event, especially in the highly contested waters of Pacific Asia.[75] The arrival of warships in the Southern Ocean, no matter the reason, would introduce a level of firepower well beyond that which the OSVs could match. Such an event would necessitate raising a naval force comprised of vessels, such as that described by Dikkenberg, but equipped with weaponry and sensors typically found onboard a warship.

The ability to provide a continuous presence in the Southern Ocean, particularly if New Zealand was to undertake naval activities east towards South America could not be achieved with a solitary specialised ship. As the operational conditions imposed by the Southern Ocean differ significantly from those of a more temperate climate a new class of warship would need to be acquired and in sufficient numbers. Much has been written on the so-called 'critical mass' of New Zealand's frigate fleet[76] – the irreducible number of frigates needed for a navy to carry out the duties assigned to it. However, if the design specifications for a warship optimised for operations in the Sub-Antarctic and Antarctic preclude the ANZAC frigates, then the critical mass of new warships for a 'Southern Ocean

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[73] Dupont, *op cit.,* p. 53.
[74] Scott, *loc cit.*
[75] *Ibid.,* pp. 31-35.
[76] See Smith, Ron, 'Contingencies and Capabilities: The defence of New Zealand in the third millennium', in *Papers On The Interim Report of the Defence Beyond 2000 Inquiry,* Centre for Strategic Studies, Wellington, 1999, p.12.

Fleet' must, for the reasons given by Professor G.A. Vignaux,[77] equal at least three, preferably four. To what extent an alliance with Australia and/or Chile would attenuate the need to create an independent Southern Ocean Fleet of four warships is unknown, although an alliance with the navy of either or both countries represents a possibility worthy of close examination. Capitalising upon the synergies between navies could readily take the concept of a Southern Ocean Fleet out of the realm of fantasy and make it a reality.

By continuing to underplay the importance of Antarctica in its security lexicon New Zealand leaves its backyard vulnerable to territorial violations and acts of resource piracy emanating from Antarctica and the Southern Ocean. Such conflict may arise through a direct clash with malevolent and uninvited state and non-state actor(s) in the Southern Ocean or as a consequence of a third party conflict on or around the Antarctic continent. The NZDF is not currently well equipped or trained to respond to acts of aggression occurring in the unmerciful climes of the Sub-Antarctic, let alone to a conflict in the frigid wilderness of Antarctica. As natural resources become increasingly scarce worldwide, many countries are likely to turn to Antarctica to satisfy their needs and given that the laws governing access to these resources are contentious, there exists an increasing likelihood of conflict amongst the ice floes. Sooner rather than later, New Zealand needs to acknowledge this threat and restructure and re-equip its armed forces accordingly.

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[77] *Ibid.*

Chapter 7: Conclusion

Antarctica is a continent without parallel, being both geophysically and geopolitically unique. Antarctica is also a continent of paradox.

Antarctica's geophysical uniqueness comes from being the highest, coldest, driest and windiest continent on Earth. No other continent displays such extremes in climate nor has climate been such a primordial determinant in shaping its terrestrial and marine environments. Geopolitically, Antarctica is unique for being without an indigenous people it is the only continent that can justifiably be called *terra nullius.* As a consequence, the legal status of Antarctica still remains undetermined and not beyond dispute. And since the legal status of Antarctica remains undetermined so does the legality of the seven sovereignty claims to Antarctic territory, including New Zealand's claim. Had it not been for the AT preventing the international community from assertively challenging the validity to these claims, Antarctica may have become a continent raked by continual dissention and conflict. National interest has in the past shaped Antarctica's future and is likely do so again especially when access to natural resources displaces any lingering veneration amongst states towards Antarctica and its unique environment.

It was the coming together of states in 1957 under the auspices of the International Geophysical Year that sparked a determination by those countries that later became the inaugural members of the Antarctic Treaty to establish a governance régime that would protect Antarctica from devastation born of a Cold War malison - a nuclear curse that could have turned Antarctica into a decimated

battle field pockmarked for eternity by weapons fielded by the ideologically driven combatants. Interestingly, having survived this nascent threat, Antarctica could now be entering a new antithetical geopolitical situation created by a previously unknown geophysical malison - climate change. Paradoxically, it is this curse that could render impotent the geopolitical régime installed forty-five years ago to protect Antarctica's geophysical environment from anthropogenic destruction.

That climate change is affecting Antarctica is beyond the realm of mere conjecture. Of significant import to New Zealand is recent research (2004) showing that numerous glaciers flowing north into the eastern Pacific Ocean continue to thin at an alarming rate averaging one metre per year. Such dramatic changes are giving rise to a fear that West Antarctica – the Ross Dependency lies within this region – is becoming unstable and could disintegrate.[1]

The treaty system has not led to any lessening in the desire among states to recommence mining Antarctica's strategic hard mineral or commence explorative activities to determine the exact extent of the continent's oil reserves. Indeed, despite protestations to the contrary, evidence suggests that Antarctica is being surreptitiously penetrated by the commercial interests of countries that have pledged their support to protect Antarctica against all forms of commercialisation.[2] In a rush to sate their national interest, states, particularly those which foresee future commercial opportunities in a less regulated Antarctica, are already displaying a declining respect for the treaty system. This cavalier attitude towards the spirit of the Treaty may be a precursory signal

[1]See Collins, Simon, 'NZ bid for global warming study fund', The New Zealand Herald, December7, 2004, p. A7.
[2] See Hemming, Alan, 'Commercial Penetration of Antarctica', ECOlink, October 2004, pp.6-8.

indicating that the long standing reverence shown the continent is now on the wane. If that is so then PEPAT, which currently affords Antarctica protection from most exploitative activities, may have a severely truncated life span. Any renewed interest in the continent's mineral wealth would bode ill for the preservation of the *status quo ante*.

Given that the Arctic became a contested militarised region once excavation of minerals began, it is conceivable that the same fate awaits Antarctica should its mineral wealth be validated. Just the prospect of a militarised Antarctica would present New Zealand with a security dilemma unlike any previously confronted.

For New Zealand Antarctica would represent an indefensible frontier unless it became part of a union of countries whose collective interests were best served by forming an alliance against states eager to change the *status quo ante*. Such an alliance may, but not necessarily, be military in orientation. New Zealand has much to gain from such an accord, for in defending the Ross Dependency against commercial and military assaults New Zealand guarantees its own security. However, there is no certainty that such a union could be forged, for countries in a world of diminishing resources, could determine that their national interests would be better served by exploiting Antarctica despite the prospect of such activities being the harbinger of interstate conflict. Unless New Zealand could reach an accommodation with other states to participate in the peaceful exploitation of Antarctica, then the only realistic option for New Zealand is to withdraw from Antarctica and militarily establish itself behind a Sub-Antarctic frontier.

Although a coalition of states dedicated to maintaining the *status quo ante* in Antarctic may fail to materialise, a union devoted to the assertive defense of the

Sub-Antarctic is a realisable prospect. There exists a community of interest among the five Antarctic "Gateway" countries since all would face an unstable Antarctica. Each country would have to retreat from the continent if confronted by a superior military force(s) and each has an extensive Sub-Antarctic EEZ to defend. Since several geographical locations within the Sub-Antarctic region are potentially rich in many resources, especially oil, natural gas and fish, these may become the target for pillaging by those same actors that show a willingness to exploit Antarctica. Thus, any alliance formed amongst the "Gateway" countries would not necessarily relieve individual countries of the military burden born of the need to assertively defend its own Sub-Antarctic backyard. However, an alliance would provide the opportunity for combined military operations, an interlocking of operational zones and most crucially the sharing of ISR information.

An unstable Antarctica, raked by interstate imbroglios, would pose a serious threat to New Zealand as an independent state and compel a paradigmatic shift in national defence policy. To counter such a threat both the navy and air force must reassume their senior status within the NZDF and both would warrant a capability enhancement programme to better equip them for continuous operations within the Sub-Antarctic region. Such enhancements would probably include the acquisition of a number of new warships – possibly four - with capabilities greater than those of the recently ordered MRV and OSVs; along with the procurement of additional maritime patrol aircraft, a number of which should be configured for ELINT assignments. Both services would need access to a store of offensive weaponry in the form of modern anti-ship guided missiles, plus weapons capable of intercepting stand-off missiles launched by an adversary.

When predicting the future equal weight must be given to the probability of either an agreeable and disagreeable outcome could occur. But the prospect that tomorrow's outcome may be disagreeable to today's polity is not sufficient reason for the polity to curtail conjecture about the future. Toffler suggests "…it is time to erase, once and for all, the popular myth that the future is 'unknowable.' The difficulties ought to chasten and challenge, not paralyse. A rough idea of what lies ahead is better than none…."[3] It is impossible to know with certainty what the future holds for Antarctica and consequently for New Zealand, but what is palpably clear is that the current *status quo ante* in Antarctica will not continue indefinitely.

The confluence of numerous disparate influences discussed in this thesis makes change on the continent inevitable. And with change comes the possibility that Antarctica could slide into anarchy; a future resembling that posited in this thesis under the banner of the 'alternate scenario'. Under this scenario Antarctica tumbles into chaos as states wantonly disregard the spirit of the AT in a rush to secure access to the continent's natural resources. Indeed, should the alternate scenario look like becoming the reality then New Zealand has little time, probably no more than twenty years, to shed its lethargy towards its own defense and embark upon a defence capability enhancement programme commensurate with securing its Sub-Antarctic backyard. Prevarication, when faced with such a disagreeable outlook could be a tempting but totally unrealistic option for New Zealand to indulge, for the future has a tendency to remorselessly overwhelm those who procrastinate.

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[3] See Toffler, Alvin, *Future Shock*, Pan Books, London, 1970, p. 417.

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Appendix I: Antarctic Treaty[1]

The Governments of Argentina, Australia, Belgium, Chile, the French Republic, Japan, New Zealand, Norway, the Union of South Africa, the Union of Soviet Socialist Republics, the United Kingdom of Great Britain and Northern Ireland, and the United States of America,

Recognising that it is in the interest of all mankind that Antarctica shall continue for ever to be used exclusively for peaceful purposes and shall not become the scene or object of international discord;

Acknowledging the substantial contributions to scientific knowledge resulting from international cooperation in scientific investigation in Antarctica;

Convinced that the establishment of a firm foundation for the continuation and development of such cooperation on the basis of freedom of scientific investigation in Antarctica as applied during the International Geophysical Year accords with the interests of science and the progress of all mankind;

Convinced also that a treaty ensuring the use of Antarctica for peaceful purposes only and the continuance of international harmony in Antarctica will further the purposes and principles embodied in the Charter of the United Nations;
Have agreed as follows:

Article I

1. Antarctica shall be used for peaceful purposes only. There shall be prohibited, *inter alia*, any measure of a military nature, such as the establishment of military bases and fortifications, the carrying out of military manoeuvres, as well as the testing of any type of weapon.
2. The present Treaty shall not prevent the use of military personnel or equipment for scientific research or for any other peaceful purpose.

[1] Source:- Scientific Committee on Antarctic Research of the Council of Scientific Unions - http://www.scar.org/Treaty/Treaty_Text.htm (17 January 2003)

Article II

Freedom of scientific investigation in Antarctica and cooperation toward that end, as applied during the International Geophysical Year, shall continue, subject to the provisions of the present Treaty.

Article III

1. In order to promote international cooperation in scientific investigation in Antarctica, as provided for in Article II of the present Treaty, the Contracting Parties agree that, to the greatest extent feasible and practicable:

   a. information regarding plans for scientific programs in Antarctica shall be exchanged to permit maximum economy of and efficiency of operations;
   b. scientific personnel shall be exchanged in Antarctica between expeditions and stations;
   c. scientific observations and results from Antarctica shall be exchanged and made freely available.

2. In implementing this Article, every encouragement shall be given to the establishment of cooperative working relations with those Specialized Agencies of the United Nations and other technical organizations having a scientific or technical interest in Antarctica.

Article IV

1. Nothing contained in the present Treaty shall be interpreted as:

   a. a renunciation by any Contracting Party of previously asserted rights of or claims to territorial sovereignty in Antarctica;
   b. a renunciation or diminution by any Contracting Party of any basis of claim to territorial sovereignty in Antarctica which it may have whether as a result of its activities or those of its nationals in Antarctica, or otherwise;
   c. prejudicing the position of any Contracting Party as regards its recognition or non-recognition of any other State's rights of or claim or basis of claim to territorial sovereignty in Antarctica.

2. No acts of activities taking place while the present Treaty is in force shall constitute a basis for asserting, supporting or denying a claim to territorial sovereignty in Antarctica or create any rights of sovereignty in Antarctica. No new claim, or enlargement of an

existing claim, to territorial sovereignty in Antarctica shall be asserted while the present Treaty is in force.

Article V

1. Any nuclear explosions in Antarctica and the disposal there of radioactive waste material shall be prohibited.

2. In the event of the conclusion of international agreements concerning the use of nuclear energy, including nuclear explosions and the disposal of radioactive waste material, to which all of the Contracting Parties whose representatives are entitled to participate in the meetings provided for under Article IX are parties, the rules established under such agreements shall apply in Antarctica.

Article VI

The provisions of the present Treaty shall apply to the area south of 60º South latitude, including all ice shelves, but nothing in the present Treaty shall prejudice or in any way affect the rights, or the exercise of the rights, of any State under international law with regard to the high seas within that area.

Article VII

1. In order to promote the objectives and ensure the observance of the provisions of the present Treaty, each Contracting Party whose representatives are entitled to participate in the meetings referred to in Article IX of the Treaty shall have the right to designate observers to carry out any inspection provided for by the present Article. Observers shall be nationals of the Contracting Parties which designate them. The names of observers shall be communicated to every other Contracting Party having the right to designate observers, and like notice shall be given of the termination of their appointment.

2. Each observer designated in accordance with the provisions of paragraph 1 of this Article shall have complete freedom to access at any time to any or all areas of Antarctica.

3. All areas of Antarctica, including all stations, installations and equipment within those areas, and all ships and aircraft at points of discharging or embarking cargoes or personnel in Antarctica, shall be open at all times to inspection by any observers designated in accordance with paragraph 1 of this Article.

4. Aerial observation may be carried out at any time over any or all areas of Antarctica by any of the Contracting Parties having the right to designate observers.

5. Each Contracting Party shall, at the time when the present Treaty enters into force for it, inform the other Contracting Parties, and thereafter shall give them notice in advance, of

a. all expeditions to and within Antarctica, on the part of its ships or nationals, and all expeditions to Antarctica organised in or proceeding from its territory;

b. all stations in Antarctica occupied by its nationals; and

c. any military personnel or equipment intended to be introduced by it into Antarctica subject to the conditions prescribed in paragraph 2 of Article I of the present Treaty.

Article VIII

1. In order to facilitate the exercise of their functions under the present Treaty, and without prejudice to the respective position of the Contracting Parties relating to jurisdiction over all other persons in Antarctica, observers designated under paragraph 1 of Article VII and scientific personnel exchanged under sub-paragraph 1(b) of Article III of the Treaty, and members of the staffs accompanying any such persons, shall be subject only to the jurisdiction of the Contracting Parties of which they are nationals in respect of all acts or omissions occurring while they are in Antarctica for the purpose of exercising their functions.

2. Without prejudice to the provisions of paragraph 1 of this Article, and pending the adoption of measures in pursuance of subparagraph 1 (e) of Article IX, the Contracting Parties concerned in any case of dispute with regard to the exercise of jurisdiction in Antarctica shall immediately consult together with a view to reaching a mutually acceptable solution.

Article IX

1. Representatives of the Contracting Parties named in the preamble to the present Treaty shall meet at the City of Canberra within two months after the date of entry into force of the Treaty, and thereafter at suitable intervals and places, for the purpose of exchanging information, consulting together on matters of common interest pertaining to Antarctica,

and formulating and considering, and recommending to their Governments, measures in furtherance of the principles and objectives of the Treaty, including measures regarding:

a. use of Antarctica for peaceful purposes only;
b. facilitation of scientific research in Antarctica;
c. facilitation of international scientific cooperation in Antarctica;
d. facilitation of the exercise of the rights of inspection provided for in Article VII of the Treaty;
e. questions relating to the exercise of jurisdiction in Antarctica;
f. preservation and conservation of living resources in Antarctica.

2. Each Contracting Party which has become a party to the present Treaty by accession under Article XIII shall be entitled to appoint representatives to participate in the meetings referred to in paragraph 1 of the present Article, during such times as that Contracting Party demonstrates its interest in Antarctica by conducting substantial research activity there, such as the establishment of a scientific station or the despatch of a scientific expedition.

3. Reports from the observers referred to in Article VII of the present Treaty shall be transmitted to the representatives of the Contracting Parties participating in the meetings referred to in paragraph 1 of the present Article.

4. The measures referred to in paragraph 1 of this Article shall become effective when approved by all the Contracting Parties whose representatives were entitled to participate in the meetings held to consider those measures.

5. Any or all of the rights established in the present Treaty may be exercised as from the date of entry into force of the Treaty whether or not any measures facilitating the exercise of such rights have been proposed, considered or approved as provided in this Article.

Article X

Each of the Contracting Parties undertakes to exert appropriate efforts, consistent with the Charter of the United Nations, to the end that no one engages in any activity in Antarctica contrary to the principles of the present Treaty.

Article XI

1. If any dispute arises between two or more of the Contracting Parties concerning the interpretation or application of the present Treaty, those Contracting Parties shall consult among themselves with a view to having the dispute resolved by negotiation, inquiry, mediation, conciliation, arbitration, judicial settlement or other peaceful means of their own choice.

2. Any dispute of this character not so resolved shall, with the consent, in each case, of all parties to the dispute, be referred to the International Court of Justice for settlement; but failure to reach agreement on reference to the International Court shall not absolve parties to the dispute form the responsibility of continuing to seek to resolve it by any of the various peaceful means referred to in paragraph 1 of this Article.

Article XII

1. a. The present Treaty may be modified or amended at any time by unanimous agreement of the Contracting Parties whose representatives are entitled to participate in the meetings provided for under Article IX. Any such modification or amendment shall enter into force when the depositary Government has received notice from all such Contracting Parties that they have ratifies it.

   b. Such modification or amendment shall thereafter enter into force as to any other Contracting Party when notice of ratification by it has been received by the depositary Government. Any such Contracting Party from which no notice of ratification is received within a period of two years form the date of entry into force of the modification or amendment on accordance with the provision of subparagraph 1(a) of the Article shall be deemed to have withdrawn from the present Treaty on the date of the expiration of such period.

2. a. If after the expiration of thirty years from the date of entry into force of the present Treaty, any of the Contracting Parties whose representatives are entitled to participate in the meetings provided for under Article IX so requests by a communication addresses to the depositary Government, a Conference of all the Contracting Parties shall be held as soon as practicable to review the operation of the Treaty.

   b. Any modification or amendment to the present Treaty which is approved at such a Conference by a majority of the Contracting Parties there represented, including a majority of those whose representatives are entitled to participate in the meetings provided for under Article IX, shall be communicated by the depositary Government to all Contracting Parties immediately after the termination of the Conference and shall enter into force in accordance with the provisions of paragraph 1 of the present Article

   c. If any such modification or amendment has not entered into force in accordance with the provisions of subparagraph 1(a) of the Article within a period of two years after the date of its communication to all the Contracting Parties, any Contracting Party may at any time after the expiration of that period give notice to the depository Government of its withdrawal from the present Treaty; and such

withdrawal shall take effect two years after the receipt of the notice by the depositary Government.

Article XIII

1. The present Treaty shall be subject to ratification by the signatory States. It shall be open for accession by any State which is a Member of the United Nations, or by any other State which may be invited to accede to the Treaty with the consent of all the Contracting Parties whose representatives are entitled to participate in the meetings provided for under Article IX of the Treaty.
2. Ratification of or accession to the present Treaty shall be effected by each State in accordance with its constitutional processes.
3. Instruments of ratification and instruments of accession shall be deposited with the Government of the United States, hereby designated as the depositary Government.
4. The depositary Government shall inform all signatory and acceding States of the date of each deposit of an instrument of ratification or accession, and the date of entry into force of the Treaty and of any modification or amendment thereto.
5. Upon the deposit of instruments of ratification by all the signatory States, the present Treaty shall enter into force for those States and for States which have deposited instruments of accession. Thereafter the Treaty shall enter into force for any acceding State upon the deposit of its instruments of accession.
6. The present Treaty shall be registered be the depositary Government pursuant to Article 102 of the Charter of the United Nations.

Article XIV

The present Treaty, done in the English, French, Russian and Spanish languages, each version being equally authentic, shall be deposited in the archives of the Government of the United States of America, which shall transmit duly certified copies thereof to the Governments of the signatory and acceding States.

Appendix II: Member states to the Antarctic Treaty[1]

The Antarctic Treaty, signed on 1st December 1959 and entered into force on 23rd June 1961, established the legal framework for the stewardship of Antarctica. This framework recognises three categories of treaty membership: claimant nations; consultative (voting) nations, which include the claimant nations; and non-consultative (non-voting) nations. At the 1st January 2003 there are 45 treaty nations: 27 consultative nations and 18 non-consultative nations – the list of contracting states remains unchanged as at 31st December 2004. The year in parentheses indicates when a consultative member nation acceded to full consultative status and for a non-consultative member nation the year of accession.

Claimant nations

(All claimant nations were accorded consultative nation status in 1959.)

Argentina, Australia, Chile, France, New Zealand, Norway and the United Kingdom.

Non-claimant consultative nations

Belgium (1959), Brazil (1983), Bulgaria (1998), China (1985), Ecuador (1990), Finland (1989), Germany (1981), India (1983), Italy (1987), Japan (1959), South Korea (1989), Netherlands (1990), Peru (1989), Poland (1977), Russia (1959), South Africa (1959), Spain (1988), Sweden (1988), Uruguay (1985) and The United States of America (1959).

Non-consultative member nations

Austria (1987), Canada (1988), Colombia (1989), Cuba (1984), Czech Republic (1993), Denmark (1965), Estonia (2001), Greece (1987), Guatemala (1991), Hungary (1984), North Korea (1987), Papua New Guinea (1981), Romania (1971), Slovakia (1993), Switzerland (1990), Turkey (1995), Ukraine (1992) and Venezuela (1999).

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[1] Source: CIA Factbook – Antarctica, 1st August 2003, http://www.cia.gov/cia/publications/factbook/geos/ay.html (17 November 2003.)

Appendix III: Documents of Strategic Intent

New Zealand Statement of Strategic Interest (Revised 2003)

As published by the Labour Government

New Zealand is committed to conservation of the intrinsic and wilderness valves of Antarctica and the Southern Ocean, for the benefit of the world community and for present and future generations of New Zealand. This will be reflected in active and responsible stewardship, under the Antarctic Treaty System, that promotes New Zealand's interest in:

- National and international peace and security through a commitment to keeping Antarctica peaceful, nuclear free and its environment protected;
- Continued influence in Antarctic governance through maintaining an effective role in the Antarctic Treaty system, and maintaining its long-term interest' commitment to and credible presence in the Ross Dependency;
- Conserving, protecting, and understanding the biodiversity of Antarctica and the Southern Ocean, in particular the biodiversity of the Ross Sea region, including promotion, protection and management of representative special areas, and enhancing biosecurity;
- Conservation and sustainable management of the marine living resources of the Southern Ocean, and in particular the Ross Sea, in accordance with the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) and the Antarctica Environmental Protocol, and within this context supporting strong environmental standards and sustainable economic benefit;
- Supporting and where appropriate leading, high quality Antarctic and Southern Ocean science that benefits from the unique research opportunities provided by Antarctica;

- Demonstrating and advocating for the best practice in environmental stewardship and all other activities throughout Antarctica, and in particular the Ross Sea region;
- Ensuring that all activity is undertaken in a manner consistent with Antarctica's status as a natural reserve devoted to peace and science.

Strategic Objectives (Revised 1995)

Published by the 1990-1999 National Government

The Government's vision for Antarctica is the conservation of the intrinsic valves of Antarctica and the Southern Ocean for the benefit of the world community and for present and future generations of New Zealanders, reflected in active and responsible stewardship, that promotes New Zealand's interests in:

- Maintaining New Zealand's long term interest in, and commitment to, the Ross Dependency
- National security – keeping Antarctica as a neutral and non-aligned neighbour
- Economic well being – enhancing New Zealand's economic opportunities within the parameters of the Antarctic Treaty System
- International stability – enhancing New Zealand's leadership in the governance of Antarctica
- Values and ideology – promoting Antarctica as a natural reserve devoted to peace and science

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Source: Ministry of Foreign Affairs and Trade, April 2004.

Appendix IV: Geopolitics of Latin American Antarctica[1]

Spain was the major European imperialist power to colonise what is known contemporarily as Latin America; the political fusion of the Central American peninsula with the continent of South America. From this eclectic collection of states, those south of the equator have become known as the Southern Cone Countries in recognition that Latin America, south of the equator, assumes a conical shape. Encouraged by Spain, these Latin American countries are attempting to impose their geopolitical ambitions over the affairs of Antarctica, especially within the segment between 0° and 90° West known as the 'American quadrant'. Unlike, many European and Anglo-American states, geopolitical thinking exerts a significant influence over the attitude displayed by most South America governments towards Antarctica. In Antarctica, South American geopolitics favours sovereignty, access to resources, removal of all non-Latin American bases, and the possibilities of international co-operation and conflict, over science, wildlife or exploration history. Such geopolitical thinking is of considerable salience to two Latin American countries, Argentina and Chile, since both have territorial claims in Antarctica.

Southern Cone Countries perception of Antarctica and its girdling ocean is strongly conditioned by their respective geophysical location and their geopolitical vision for the region. Certainly, their geopolitical ambitions for Antarctica are frequently different from those held by more distant southern

[1] Source for this Annex was Child, Jack, "Latin *lebensraum'*: the geopolitical of Ibero-American Antarctica,' *Applied Geography,* Vol. 10, No. 4, 1990, pp. 287-305.

hemisphere countries such as Australia and New Zealand. However, within the nest of southern cone states there exists a lack of a common approach to issues affecting Antarctica. Argentina and Chile, being approximately a 1,000 kilometres from the Antarctic Peninsula are more concerned about the affect any surreptitious commercialisation of the continent will have on the sanctity of existing sovereignty claims than, for example, either Brazil or Ecuador. Brazil, however, has indicated that it would be deeply concerned if any increase in commercial activity on Antarctica heralded a serious challenge to its cherished aspiration of being the South Atlantic 'hegemonic' power in the twenty-first century. This is a contentious ambition for it holds the potential to bring Brazil into conflict with Argentina, for the later also harbours the same ambition. Brazilian geopoliticians, in an attempt to underscore Brazil's claim to hegemonic status, have proposed a novel, if not brilliant means of undermining both the Argentine and Chilean sovereignty claims in Antarctica: Brazil's proposal is a simplistic cartographic model known as the 'frontage' concept.

Under the 'frontage' concept – fig. 7 - the American quadrant of Antarctica would be apportioned among the six South American countries having a 'frontage' projection; that is, meridians unobstructed by another country lying to the south. Thus, each country's Antarctic sector would be defined by two meridians which form the 'frontage' limits. The actual sectors vary according to whether the meridians are drawn from the mainland or maritime boundaries. Irrespective of the emanating source of the meridians the net result of the 'frontage' concept is to reduce the sectors allocated to Argentina and Chile while assigning the largest zone to Brazil. Receipt of a section of Antarctica has ensured that Ecuador, Peru and Uruguay are supportive of the concept.

While the 'frontage' concept has never been official Brazilian policy the map has appeared in numerous government publications. Nonetheless, the geopolitical value to Brazil lies in the implied challenge it makes to the Argentine and Chilean Antarctic claims.

fig. 7. Brazilian inspired 'frontage' concept. (Source: Child 1990)