ROYAL CANADIAN NAVY MARINE ROYALE CANADIENNE

TRIDENT

ROYAL CANADIAN NAVY STRATEGIC DOCTRINE

CANADIAN ARMED FORCES

FORCES ARMÉES CANADIENNES

National Defence Défense nationale

Canada

FOREWORD

31 May 2024

Trident: Royal Canadian Navy Strategic Doctrine is the Royal Canadian Navy's capstone doctrine publication. This publication explains the strategic relevance of naval power, the attributes of naval forces, the components of Canadian naval power, and the roles of the RCN in delivering Canadian naval power.

As a maritime country, with the largest coastline in the world, it is incumbent upon the RCN to maintain strategic doctrine that resonates as equally with the sailors at sea as it does with the Canadian public which it serves. *Trident* enables all of us to better understand what the RCN is and when, where, and how naval operations are conducted at home and abroad. It explains who we are as an institution, what we do to protect and defend Canada's maritime strategic interests, and how our professional mariners live and workday after day with integrity, courage, loyalty, and a sense of duty.

The vision of the RCN – **Help, Lead, Fight**, draws inspiration from our past, is infused with the extraordinary commitment of our sailors to make a difference in the world today, and ensures that we are in all respects prepared for the uncertain challenges that will confront Canada in the future.

The RCN serves to protect Canada by exercising sovereignty in our home waters, deterring possible adversaries, and contributing to maritime peace and good order abroad; preventing conflict by strengthening partnerships and deploying globally to promote stability and conflict deterrence; and finally, projecting Canadian power to help shape and, when necessary, restore order to the global system.

The RCN fulfills its commitment to Canadians by demonstrating excellence at-sea on a daily basis, while successfully navigating through a period of modernization, unstable security environment, and the re-emergence of Great Power Competition. We are able to achieve this important balance thanks to our people who, ***Help, Lead, and Fight***.

Jason Armstrong
Commodore
Director General Naval Force Development

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INTRODUCTION

Strategic doctrine, also known as "capstone" doctrine, is "(i)n essence…an officially sanctioned, formalised and written expression of institutionally accepted ideas about what militaries do and how they do it."[1] Furthermore, "(d)octrine is more than the formal publication of military concepts. It stands for an institutional culture of conceptual thinking on the nature of conflict and the best conduct of warfare. It is the military's instrument for analysing experience (lessons learned), guiding current operations, and as a method for exploring future challenges."[2]

The Canadian Armed Forces (CAF) definition of doctrine is:

> *"Fundamental principles and proven practices by which military forces guide their actions in support of objectives." Note: Doctrine is authoritative but requires judgement in application.*[3]

Canadian Forces Joint Publication 01 further defines Strategic Doctrine as:

> *"Strategic doctrine sets out the most fundamental and enduring principles that guide the use of military forces across the continuum of operations.*
>
> *Strategic doctrine is the foundation of all military doctrine and establishes the framework for the effective use of force."*

[4]It is important to note that the carefully worded phrase "guide their actions" is reinforced by the qualification that it is "authoritative but requires judgement in application." Therefore doctrine, no matter how fundamental or sound, is not dogma. It is not intended to be rigidly adhered to regardless of circumstance. Instead, doctrine indicates that which has worked in the past, and, implicitly, that which is believed to be most likely to work again (all other things being equal). However, confronted by the fog and friction of war, all things are *never* equal. Thus, doctrine forms a guide, and is logically departed from when, and where, necessary.

RCN strategic doctrine has been shaped by the uniqueness of naval operations and naval culture. For example, naval operations tend to be platform-driven to a greater extent than army or even air force operations. This is particularly true in a comparatively small-fleet navy such as the RCN where the relative importance and value of each platform (surface combatants, submarines, patrol vessels, long range patrol aircraft, maritime helicopters, and remotely piloted and autonomous systems) is correspondingly high. As a natural result, RCN strategic doctrine devotes effort to explaining the role and importance of each of its fighting platforms.

Naval culture too is important to naval doctrine. As in the case for operations, naval culture centres around the ship and its crew, culminating in teamwork, self-reliance, and a willingness to meet the unpredictable challenges of life at sea. Just as important, the relatively consistent nature of modern naval operations has resulted in strategic doctrine that is time-tested and enduring. For example, from the early post-Second World

1 Aaron P. Jackson, "Dissecting Keystone Doctrine Development in Five Commonwealth Navies: A Comparative Perspective", Papers in Australian Maritime Affairs, No. 33 (Sea Power Centre: Canberra, 2010), p. 3.

2 Markus Mäder, In Pursuit of Conceptual Excellence: The Evolution of British Military-Strategic Doctrine in the Post-Cold War Era, 1989-2002 (Peter Lang: Bern, 2004), p. 22.

3 Defence Terminology Bank, Record #1761.

4 Canadian Forces Joint Publication 1, p.1-2

War period up to the present, RCN operations have all fit within one of the current doctrinal roles of the RCN, namely: Warfighting, Maritime Security, or Diplomacy.

Regardless of the level of conflict that doctrine is intended to address – strategic, operational, or tactical – there is a common objective: to educate, inform, and guide military professionals in order to shape their thinking and actions based on the intellectual efforts and hard-learned lessons of their predecessors. As such, the most important consumers of doctrine are military commanders and the people training for operations.

Doctrine therefore:

- is a body of beliefs, knowledge and thought that provides guidance and aids perception of the security environment. It represents the distilled insights and wisdom gained from experience;
- leads to consistent, predictable behaviour by instilling a common approach to the conduct of military operations across the levels of conflict, inspires mutual confidence, and enables effective collective action;
- is fundamental to the education and training of military personnel, developing and enhancing problem solving, decision making and planning; and
- provides a common point of reference and understanding to allow reasoned deviation when the situation dictates.

CHAPTER 1: THE STRATEGIC RELEVANCE OF NAVAL POWER

The oceans have always been relevant in the strategic calculations of those political actors with coastlines. "From the very beginning of recorded history," Geoffrey Till wrote, "peoples and nations have sought to be powerful at sea. Those that did so recognized that there was something uniquely cost-effective about sea-power, as opposed to land power, and that those nations best able to exploit its attributes profited hugely over those who did not."[5] As a result, navies and seapower have had an enormous impact on human history. The Sea Peoples (12th and 13th centuries B.C.E.) were able to launch a series of devastating seaborne attacks in the eastern Mediterranean that influenced the emergence of the Classical World.[6] The Polynesians mastered open ocean navigation by the 12th century and settled islands across nearly 16 million square miles of water-space in the Pacific.[7] Victories in Europe in both world wars were facilitated by anti-submarine campaigns to keep the sea-lines of communication open in the North Atlantic. Since the Battle of Trafalgar, the international maritime order, including freedom of navigation, has largely been maintained first by the Royal Navy and, in turn, the US Navy.

These examples are admittedly a tiny sampling of maritime history but taken together they support Till's assessment. Support provided to diplomacy and foreign policy more generally, the assertion of sovereignty in territorial waters and the protection of other important maritime strategic interests, the guarding of maritime communications and trade routes, the promotion of safety at sea, and finally the ability to apply armed force on or from the oceans, attest to the strategic relevance of naval power.

5 Geoffrey Till, Seapower – A Guide for the Twenty-First Century, 3rd ed. (Routledge: London, 2013), p. 1.

6 Cyprian Broadbank, The Making of the Middle Sea; A History of the Mediterranean from the Beginning to the Emergence of the Classical World (Oxford University Press: 2013), pp. 461-464.

7 Brian Handwerk, "Native Americans and Polynesians Met Around 1200 A.D.", Smithsonian Magazine Blog, 8 July 2021 (accessed on 21 September 2021 at www.smithsonianmag.com/science-nature/native-americans-polynesians-meet-180975269/).

What does that observation mean as we look forward into the 21st century? Most striking is the widely held expectation that this century will have more of a maritime focus than the last few decades of the 20th. An international security environment characterized by a redistribution of economic and military power and intensifying Great Power competition is arguably a principal cause of this difference. This is especially so given the rise of the Indo-Pacific, quite obviously a maritime geopolitical arena, and the revival of China with its new focus on developing national seapower attributes including a navy to rival that of the USA. In acknowledging the significance of geography in the current security environment, Robert Kaplan wrote:

> *Europe is a landscape; East Asia a seascape. Therein lies a crucial difference between the twentieth and twenty-first centuries. The most contested areas of the globe in the last century lay on dry land in Europe, particularly in the flat expanse that rendered the eastern and western borders of Germany artificial, and thus exposed to the intensive to-ing and fro-ing of armies. But starting in the last phase of the Cold War the demographic, economic and military axis of the earth has immeasurably shifted to the opposite end of Eurasia, where the spaces between the principal nodes of population are overwhelmingly maritime.*[8]

It is therefore inevitable that, with the gradual emergence of a multipolar system, growing tensions and the possibility of war, particularly at sea, will increase. The latter need not even be the result of premeditation. In this type of security environment, frictions at sea, possibly as a result of maritime boundary disputes and the exploitation of ocean resources, could lead to unexpected escalation to armed conflict. The ongoing expansion and modernization of navies (as one sees, for example, throughout the Indo-Pacific), therefore, testifies to the importance governments place in navies for upholding national policies or for advancing national ambitions sometimes in the face of significant opposition. Given these circumstances, it is reasonable to assume that the demand for naval power will continue to increase in the coming decades.

Significantly, if the changing balance of power acts as a centrifugal force, globalization reveals another facet of this 'maritime century', namely the unifying dependence of modern economies on seaborne trade and commerce (including financial transactions, much of which is carried by undersea cables). Disruptions to that exchange of goods and services, including supply chains (Sea Lines of Communications or SLOCs) because of a lack of available shipping and commercial ports, or threats to freedom of navigation, can have a global impact. In recent years, we have seen this both in the threat posed by piracy off the coast of Somalia, as a lingering consequence of the COVID-19 medical emergency, and as the immediate effect of a temporary blockage of a key waterway (the Suez Canal) when a container ship ran aground in early 2021. Constabulary operations do not necessarily involve questions of war and peace, even if they sometimes require the application of armed force. A navy acting in that capacity nevertheless has an important role because disruptions to seaborne trade and commerce might harm its country's own interests, or they might negatively impact political stability in certain societies, countries, and regions. Protecting the SLOCs has traditionally been the focus of naval activity and it will continue to be.

8 Robert Kaplan, Asia's Cauldron – The South China Sea and the End of a Stable Pacific (Random House: New York, 2015), p. 1

Taken altogether, *the strategic relevance of a navy has always been proportional to its ability to offer credible responses across the full spectrum of possible operations from maritime security to diplomacy and, ultimately, to war.* It is the unique ability of naval forces to project power and demonstrate political intent (with varying degrees of armed force), to be easily re-tasked and redeployed, and to do so as long as at-sea support is available, that provides governments with an effective and inherently flexible instrument of policy.

MARITIME SECURITY

Maritime security is about contributing to safety and stability on the oceans. This includes advancing a country's maritime strategic interests in its ocean estate (e.g., sovereignty patrols and protection of national resources), working with other navies in the face of common threats and challenges, and contributing to the maintenance of an international maritime order. Navies (often alongside coast guards) have a long history of duties related to maritime security and that will continue into the future. History tells us how important it has been for states to apply naval power in this way including, for example when confronting piracy, a perennial scourge on the oceans. In the 1st century B.C.E., the Roman fleet under Pompey the Great swept the Mediterranean Sea clear of pirates: nineteen centuries later, in 1801, a US naval squadron sailed into those same waters to combat the Barbary pirates: today, off the Horn of Africa, a multinational force is engaged in a modern-day counter-piracy mission. With regard to maritime security, it might truly be said that the more things change, the more they stay the same, even if the traditional range of issues has expanded in recent decades to embrace a number of contemporary concerns (e.g., preventing environmental degradation, combating the use of the seas by terrorists and organized crime, as well as countering proliferation and illegal immigration).

We can expect that the political importance of constabulary operations will increase in number and in importance beyond the levels we have grown accustomed to in the post-1945-era. For all countries with a coastline, they will engage their navies in protecting and defending a core strategic interest, namely upholding legitimate national authority in territorial waters and internationally-recognized legal rights within Exclusive Economic Zones (EEZs), sometimes in the face of direct threats. Because of what is at stake, the ability to assert sovereignty - facilitated by presence at sea and maritime domain awareness - will necessarily be an aiming point for naval power. As such navies will be more visible, at home and abroad. In some cases, these objectives will be advanced in cooperation with like-minded partners, such as one sees in the Canada-US relationship where enhancing maritime domain awareness is an element of continental defence.

At the same time, multilateral cooperation in maritime security will continue be a logical response to pressures arising from larger international political trends. For example, an increasingly accessible Arctic will obviously demand greater attention by navies and coast guards as countries with frontage on that ocean seek to ensure that the existing international legal regime is respected there, that the requirements for safe navigation in its waters (always a serious challenge) are met, and that environmental degradation is not preordained due to a greater human presence.[9] The Arctic Council, the region's principal multilateral institution, has successfully provided a forum where cooperation in many such areas is encouraged, and members-states can coordinate policies. However, the militarization of the Arctic, itself a consequence of accessibility to the region and its resources and the ongoing Great Power contest (including China's interest and activities), is

9 See, for example, Gleb Stolyarov, "Russia aims for year-round shipping on the Northern Sea Route in 2022 or 2023", Arctic Today, 11 October 2021. Whether that objective is achieved is less important in the context of this discussion than the fact that such an objective is no longer considered far-fetched in an Arctic geo-strategic landscape that is very rapidly changing.

threatening to undermine such efforts.[10] In either case – cooperation or confrontation – the relevance of naval power throughout the region is set to grow as the Arctic ice cap recedes. Overall, therefore, the intensifying exploitation of the oceans – for transportation, resources, communication, and even recreation – will generate its own frictions that will frequently be magnified by the over-arching uncertainties of international security affairs. Increased attention to maritime issues will in some areas (e.g., 'illegal, unreported and unregulated' fishing) overlap with, and could exacerbate, larger and potentially more dangerous international disputes (e.g., maritime boundaries). In such circumstances, the strategic interests of countries, even those far removed from the immediate effects of such concerns, will be engaged.[11] Indeed, as the global balance of power continues to shift, the relevance of naval power deployed in support of maritime security at home or abroad will be underscored by the increasing difficulty of managing international tensions at sea.

DIPLOMACY

Naval power has always been highly prized by governments to support their diplomacy. As one writer has argued "(t)he familiar attributes of an oceanic navy – inherent mobility, tactical flexibility, and a wide geographic reach – render it particularly useful as an instrument of policy even in the absence of hostilities."[12] This role is revealed in port visits, in bilateral navy-to-navy programmes, multilateral exercises or forums (e.g., the USN-led Rim of the Pacific or RIMPAC, and the Western Pacific Naval Symposium or WPNS), or deployments of warships to demonstrate interest in a particular region or an international issue. The forward deployment by USN carrier strike groups to exercise influence abroad is perhaps the best-known contemporary example of the latter, but in naval history it is far from unprecedented. At the height of the British Empire, Royal Navy warships served 'on station' in distant waters as the physical embodiment of London's influence. The deployment in mid-2021 into Asian waters of a large Royal Navy task force, including its new aircraft carrier (HMS *Queen Elizabeth*), with the promise of a permanent British naval presence in those waters revives that tradition. Underlying such decisions is a desire to signal Britain's interest in developments throughout the Asia-Pacific, help deter Chinese aggression against neighbouring states, and to demonstrate a commitment to allies and partners throughout the Asia-Pacific (notably including the USA).[13] The firing of cruise missiles in early-2017 from Russian warships in the Caspian Sea was intended to destroy targets in Syria. Equally important, it was intended to increase Moscow's prestige in the Middle East and more generally signal to the world that Russia's Navy has now acquired the ability, similar to that of the US Navy, to accurately strike targets ashore from the sea.[14] Smaller Powers have also relied on their navies to support broad foreign policy goals. The decision by Iran to dispatch a naval squadron (a corvette and supply ship) into the Mediterranean in 2011

10 The uncertainty about what the future holds for international politics (and by implication, maritime security) in the Arctic is reflected in the scholarly literature. See Franklyn Griffiths, "Arctic Security – The Indirect Approach" in James Kraska (ed), Arctic Security in an Age of Climate Change (Cambridge University Press: 2009), pp. 3-19, Lutz Feldt and Patrick Hebrard, Below the Surface – Russia's and China's Approaches to the Arctic; Threats or Challenges for the Global Community? (Konrad Adenauer Stiftung, Canada Office – Ottawa, April 2021), and Troy J. Bouffard and P. Whitney Lackenbauer, "The Russian Arctic Chairmanship: National Security Considerations in the Shadow in Regional Cooperation", Russian Analytical Digest, No. 269, 27 June 2021, pp. 2-4.

11 James Kraska, Maritime Power and the Law of the Sea (Oxford University Press, 2011), p. 159.

12 Edward Luttwak, The Political Uses of Seapower (Johns Hopkins: Baltimore, 1974), p. 1.

13 Nick Childs, "UK Carrier Strike Group: meeting Indo-Pacific expectations?" Military Balance Blog (International Institute of Strategic Studies: London, 12 August 2021) (accessed on 15 September 2021 at www.iiss.org/blogs/military-balance/2021/08/uk-carrier-strike-group-indopacific).

14 Ben Lombardi, Navies and strategic effect – Maritime power projection, DRDC-RDDC-2017-0153, 26 May 2017, pp. 2-3.

had limited operational effectiveness but was a signal to the entire region that it is now able to project power far from its shores.[15]

Naval power can also be used as an instrument of coercive diplomacy, in which a government attempts to coerce an opponent to respect its interests without triggering an armed conflict. The role of the US Navy during the Cuban Missile Crisis, when Washington imposed a quarantine zone around Cuba, is a well-documented case study. It is far from certain that the USSR would have altered its military buildup on that island in the absence of that effort.[16] Freedom of Navigation patrols (FONOPS) to assert longstanding maritime rights in the face of very vocal state-based resistance, such as in the South China Sea, are a more recent example;[17] China's use of its navy, Coast Guard, 'maritime militia' and fishing fleet in a concerted attempt to force recognition of disputed maritime claims in the South and East China seas is another.[18] None of these examples are exceptional and, because of the flexibility offered by navies, there will be greater reliance on these sorts of operations, what has traditionally been called "gunboat diplomacy", as countries grapple with the challenges of contemporary ocean politics.[19]

15 Joshua C. Himes, The Iranian Navy's Historic Mediterranean Deployment: Timing Is Everything (Center for Strategic and International and Studies: Washington, D.C., March 2011), [accessed on 11 September 2017 at www.csis.org/analysis/iranian-navy%E2%80%99s-historic-mediterranean-deployment-timing-everything].
16 See Jeffrey G. Barlow, "The 1962 Cuban Missile Crisis" in Bruce A. Elleman and S.C.M. Paine (eds.) Naval Blockades and Seapower; Strategies and counter-strategies, 1805-2005 (Routledge: London, 2006), pp. 157-168.
17 John Norton Moore, "Navigational Freedom: The Most Critical Common Heritage", International Law Studies, Vol. 93, 2017, pp. 252-261, Peter M. Swartz, American Naval Policy, Strategy, Plans and Operations in the Second Decade of the Twenty-first Century (Center for Naval Analysis: Washington, D.C., January 2017), p. 30 and Robert D. Kaplan, Asia's Cauldron – The South China Sea and the End of a Stable Pacific (Random House: New York, 2015), pp. 24-28.
18 Anthony H. Cordesman, Chinese Strategy and Military Power in 2014 (Center for Strategic and International Studies: Washington, D.C., November 2014), pp. 460-467.
19 Mike Lawrence Smith and Matthew R. H. Uttley, "The Changing Face of Maritime Power" in Andrew Dorman et. al. (eds.), The Changing face of Maritime Power (Palgrave-MacMillan: New York, 1999), p. 187.

Navies clearly also have a role to play when maritime security operations and diplomacy overlap. This is perhaps most obvious regarding capacity building or humanitarian assistance and disaster relief (HADR) efforts. For some countries, their responses to the tsunami in Southeast Asia (2004) or the earthquake in Haiti (2010) not only sought to alleviate human suffering and forestall greater regional instability, but were also intended to augment their 'soft power' with local governments. The assistance provided by the Canadian Armed Forces, including three warships, to victims of Hurricane Katrina (2005) reinforced the close relationship that Canada and the US enjoy, and not only in defence.[20] Many countries will also continue to rely on navies to advance regional interests by reassuring allies (e.g., NATO's Op Reassurance), by urging greater transparency with putative adversaries and competitors to avoid a dangerous escalation of tensions (e.g., the 2014 *Code for Unplanned Encounters at Sea*), and by supporting various programmes to augment maritime security capabilities among less-developed partners "as a building block for greater stability on land."[21]

WARFIGHTING

The ultimate strategic purpose of a navy has always been to deter enemies and to contribute to victory in war, either alone or as part of a coalition. "War at sea is an integral part of war as a whole," one writer has advised, adding the important qualification that "[i]t has never taken place alone but has been conducted in conjunction with war on land and, in the modern era, with war in the air"[22], space, and cyberspace. Countries invest in navies in order to access the world's oceans for strategic purposes; and in doing so they retain the means of using deadly force when they deem that doing so is the most effective option to defend, protect and advance their interests. This will, of course, frequently include denying access to those same waters to another country. A navy is, therefore, inseparable from its identity as an instrument of purposeful violence.

The littorals have always been strategically important from a purely maritime perspective because it is in that zone of water space that humanity's reliance on, and exploitation of, the oceans is concentrated. Much of the writing today therefore is focused at the operational level and on the idea of joint warfighting in what is called the "congested littorals". That focus is a valid one if only because throughout most of history that has been where most naval engagements have taken place, often in support of expeditionary operations. While navies need not and have not always been employed as part of a joint capability, they very often are and will continue to be called upon to play that role in support of forces ashore. This was certainly the case for the Royal Navy during the lead up to the capture of Quebec (1759), the RCN during the Korean War, and US naval operations (1964 to 1973) during the conflict in Vietnam.[23] It is entirely consistent with this record that many of the operations (combat or otherwise) of the past two decades – in Europe (the Balkans, Georgia and Crimea), Iraq and Libya, in Africa (Sierra Leone), and in Afghanistan – all had operationally significant naval components. Arguably in both Libya and Crimea, the naval component was essential to achieving the initial objectives of the campaign. Equally important, in all of these cases naval power made a significant contribution to strategic success by shaping the operational space.[24]

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20 Joseph Scanlon and Elizabeth Steele with Alex Hunsberger, "By Air, Land, and Sea: Canada Responds to Hurricane Katrina", Canadian Military Journal, Vol. 12, No. 3, Summer 2012.

21 Chris Trelawny, "Maritime Security Beyond Military Operations: A Civilian Perspective", RUSI Journal, February/March 2013, p. 51.

22 Milan Vego, Operational Warfare at Sea (Routledge: London, 2009), p. 21.

23 Michael Whitby, "The Long Reach: the RCN and the Korean War", Canadian Naval Review, Vol. 1, No. 4, Winter 2006, pp. 19-23.

24 Although "naval operations" is often used to include a wide variety of naval actions – strategic, tactical, logistics or training -- such liberal usage creates ambiguities. Milan Vego in Operational Warfare at Sea (pp. 51-52) draws attention to this impreci-

The last great battles at sea were fought more than seventy years ago during the Second World War, and it is therefore fashionable to argue that neither war on the high seas nor fleet-on-fleet engagements are likely in the current age. It is important to bear in mind, however, that the expansion of regional navies, especially in Asia, indicates that countries view naval platforms as strategic assets (not merely national symbols) and at-sea confrontation is possible, perhaps even likely. After all, the growth of naval forces that enhance national deterrent capabilities also increases the capacity to wage war at sea (as well as from the sea) and, perhaps, also underwrites a greater willingness to consider doing so. In the coming decades, it is reasonable to assume that the strategic reach and the sophistication of many navies will continue to grow. Despite the advent of precision strike weapons, traditional concepts such as *sea control* and *sea denial* continue to be very relevant to any discussion of naval power.[25] As countries continue to modernize their navies, naval planners will confront an operational environment in which the return of major war at sea has to be viewed as increasingly probable.[26]

Nevertheless, while naval operations in wartime are a constant presence in the historical record, decisive naval battles are few in number. Engagements like Actium (21 B.C.E.), Trafalgar (1805) and Midway (1942), are certainly present but they are not commonplace. Instead, the consequences of war at sea are frequently indirect.[27] Strategic-level considerations might dictate the use of a naval blockade, as the Royal Navy applied to Germany in the First World War, or to deter an enemy fleet from entering a theatre of operations, as happened to the Argentine Navy during the Falklands War. Both of those approaches contributed to victory but did so in the absence of battle that always carries with it considerable unpredictability and, by its very nature, risk that is often enormous. (And sometimes it is not even certain at the time who prevailed: Jutland in 1916 was not widely seen in Britain as the strategic victory that it was later revealed to be.) Similarly, the concept of the Fleet-in-Being involves a fleet that purposely avoids combat but, by remaining intact (and even sometimes in port), retains the potential to influence events. Such a fleet poses a latent threat to its adversaries that must be neutralized, requiring the diversion of naval and air resources and thereby jeopardizing operational success, possibly even strategic victory.[28] In this regard, it is often forgotten that the Crimean War (1853 to 1856) was largely decided, not by decisive battles on land or sea, but rather by the *threat* of a massive assault led by the Royal Navy via the Baltic Sea on St. Petersburg. As Russia lacked the means to resist such a campaign, the potential impact of applying British sea power made it possible for diplomacy to bring the war to an end and to initiate peace negotiations.[29]

Naval history is very obviously focused on past events, and it teaches not with lessons but by analogy. It offers a repository of evidence and insights that underscore the many ways in which navies have played (and very likely will do so again) strategically relevant and sometimes decisive roles in wartime. Importantly, it is

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sion. In this case, strategic success refers to the achievement of the mission's overall political purpose.

25 See Andrew F. Krepinevich, Maritime Competition in a Mature Precision-Strike Regime (Center for Strategic and Budgetary Assessments: Washington, D.C., 2014).

26 The necessity of doing so is, for example, underscored in United States Navy, Chief of Naval Operations, A Design for Maintaining Maritime Superiority (Washington, D.C., January 2016).

27 Norman Friedman, "Naval Strategy" in Andrew T.H. Tan (ed.), The Politics of Maritime Power (Routledge: London, 2007), p. 32.

28 Ian Speller, Understanding Naval Warfare (Routledge: London, 2014), pp. 49-50.

29 The preparations were described by the British foreign secretary, Lord Clarendon, as 'unparalleled". See Winfried Baumgart, The Peace of Paris 1856 (ABS-Clio Inc.: Santa Barbara, California, 1981), pp. 5-8. Andrew Lambert discusses the gradual evolution of British strategic thought leading up to the decision to launch "the great armament" in The Crimean War: Britain's Grand Strategy against Russia, 1853-56 (Ashgate: Farnham, Surrey, 2011).

not necessarily the specific actions of the combatants during past navy engagements that are most important, captivating though those details might be. Instead, it is the principles and objectives behind the application of naval power that are most relevant.

THE ENDURING RELEVANCE OF NAVAL STRATEGY

It is important to observe that today's navies and those who serve in them are part of a maritime tradition that dates back millennia. Even while recognizing the technological gulf that separates the ancient Athenian or Roman war galleys from modern surface combatants, it must nonetheless be acknowledged that naval power has played a continuous and important influence on the course of history. It continues to do so even if it is not always readily apparent. Focus is often placed on the individual sea battles that act like milestones for an understanding of sea power. Such attention is understandable, but it ought not to be allowed to obscure the essential contribution that naval power has made in permitting the expansion of trade and commerce upon which the modern liberal international order depends. That order, including its most obvious maritime expression (i.e., freedom of navigation), must be seen as an international public good from which no country or society can be excluded, but it is not a naturally occurring phenomenon. It is the product of decisions taken by governments, particularly the premier naval Powers of the past two centuries, to maintain that order sometimes in the face of the most formidable challenges. One author has very aptly written that "(t)he sea makes globalization possible."[30] But as the historical record suggests, it is just as valid to say that without the order at sea provided by preponderant naval power, either regionally or globally, utilizing the oceans would be more dangerous and more costly. It needs to be borne in mind, therefore, that as the global balance of power shifts toward the Asia-Pacific, the strategic competition between the Great Powers that inevitably follows will, in greater or lesser measure, play out at sea.

30 Friedman, "Naval Strategy", p. 32.

It is true that navies depend on their ships, submarines and maritime aircraft. However, possession of even the most modern and advanced variants of each type of platform does not itself define effective naval power. On the contrary, naval power flows from the *purposeful* use of those platforms. Even the most advanced warships alone, without a clear understanding of what ends they exist to advance, and how they can be used to achieve those objectives, will be significantly, perhaps drastically, less effective than lesser capable ships employed with a clear strategy. If one thinks of strategy as comprising the *ends, ways,* and *means,* then the political purposes for which governments deploy their naval assets represent the *ends*, naval platforms are the *means*, and strategic and operational doctrines describe the *ways*. Taken together, the *ends*, the *ways* and the *means* provide the best plan for the use of naval power as an effective instrument of strategic policy.

While the preceding discussion can be applied to all navies, size does matter. The largest navies might comprise several fleets with a broad array of platforms and capabilities, and very likely enjoys comparably larger budgets for operations, shipbuilding and research and development. Their size alone impresses itself upon observers and immediately suggests the strategic weight of such a force. Mid-sized or small navies have fewer and a narrower range of platforms, smaller budgets, and are often confronted by a variety of problems including the age of their fleet, readiness challenges and the costs involved with modernization, in addition to the difficulties associated with projecting power in a persistent and consistent manner. It is reasonable to conclude, as a recent study noted, "that small navies do have significant limitations on their scope of action."[31] Technology – uncrewed systems and automation of platforms – can assist in overcoming some of the constraints imposed by size, but over-reliance on innovation creates its own problems, not the least of which are the risk and the affordability of comparatively untried capabilities and systems. Integrating with other navies might be an obvious response for small-sized navies, but the cost of specialization (a likely consequence) will be accompanied by a loss of independence in international policy-making. A balanced assessment of requirements and courses of action to mitigate capability gaps must, therefore, take account of a navy's value to its own government.

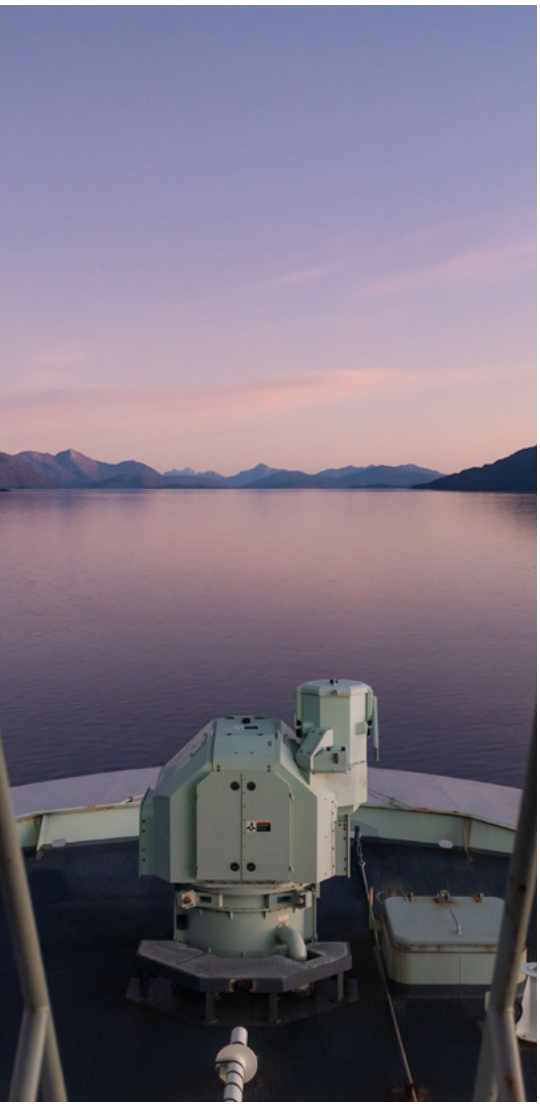
Ultimately, both smaller and larger navies are dependent on strategy and strategic thinking. Indeed, it might even be argued that, especially regarding force planning, strategy and strategic thinking are more important to smaller navies precisely because of their size and more limited resources. The greater resources a larger navy can call upon often permit it to absorb and adapt to the consequences of error more easily, *at least in peacetime* (viz., the controversy in the US Navy regarding the Littoral Combat Ship class).[32] That qualification is important because it always must be borne in mind that the *raison d'être* of a navy - to have a reasonable chance of prevailing in armed combat with a determined enemy - is intolerant of error. In this regard, British strategic thinker Colin S. Gray admonished his readers that "(n)ot all wars are so structured so forgivingly as

31 Andrew Mallia and Chris Xuereb, "Special Effects: Force Multiplier and Small Navies" in Robert McCabe, Deborah Sanders and Ian Speller (eds.), Europe, Small Navies and Maritime Security; Balancing Traditional Roles and Emergent Threats in the 21st Century (Routledge: London, 2020), p. 40.

32 A report by the Congressional Research Service stated that "(t)he LCS program has been controversial over the years due to past cost growth, design and construction issues with the first LCSs, concerns over the survivability of LCSs (i.e., their ability to withstand battle damage), concerns over whether LCSs are sufficiently armed and would be able to perform their stated missions effectively, and concerns over the development and testing of the modular mission packages for LCSs. The LCS program has been modified or restructured several times over the years, in part to address these issues." (Congressional Research Service, Navy Littoral Combat Ship (LCS) Program: Background and Issues for Congress (Washington, D.C., 17 December 2019), p. 3.) A small- or mid-sized navy might be crippled by the failure of such a major ship procurement programme to meet initial expectations.

to allow civilized pauses for reflection on, and perhaps recovery from, errors revealed in pre-war defence preparations."[33] Despite the constraints they encounter due to their size, the strategic relevance of smaller navies is determined by the same standard applied to their larger counterparts - although obviously their margin for error is far less.

Big or small, the value of a navy lies squarely in its ability to provide viable options to its government given an enhanced understanding of that country's maritime interests in the global security environment. Strategy, defence planning and force development, and taking account of the uncertainties of the international security environment, are, as Gray wrote, "interdependent in the vital sense that one cannot understand any of them without simultaneously grappling with the meaning and implications of the others."[34] The ability of any navy to provide realistic options in a highly uncertain and increasingly dangerous world - in other words to ensure the strategic relevance of a country's investment in the attributes of naval power - is itself a function of strategy.



33 Gray, Strategy and Defence Planning; Meeting the Challenge of Uncertainty (Oxford University Press: 2014), p. 11.
34 Ibid.

CHAPTER 2: THE ROYAL CANADIAN NAVY

THE ROYAL CANADIAN NAVY: BUILDING IDENTITY AND ACHIEVING STRATEGIC EFFECT

Seapower has had an important presence in Canadian history. It has been especially evident following the establishment of a national navy in 1910, after which the Royal Canadian Navy (RCN) participated in the two world wars (making a substantive contribution to victory in the second), supported the United Nations in the Korean conflict, and deployed both at home and abroad throughout the Cold War, as well as myriad operations in the nearly three decades since. The history of Canada's relationship with the oceans and with seapower also includes the close links forged with the navies of the two leading maritime Powers of the past two centuries - Great Britain and the United States - that, as the RCN's Official History stated, "practically begins and ends with that acknowledgement."[35]

The CAF definition of doctrine – "fundamental principles and proven practices by which military forces guide their actions in support of objectives" – nonetheless underscores the practical importance of being aware of the history of the RCN. The reference to proven practices refers to how the Navy has supported the government of the day. History, however, does not speak in the form of clearly formulated lessons. In approaching the RCN's record "one must be alert to different times, different outlooks, different ideas, different problems, different mind-sets, different capabilities, different decision-making structures and different technologies."[36] Rather than looking for lessons, therefore, the value of looking to Canada's naval history lies in the *insights* that effort can offer. What can we learn about the RCN as it addressed the many challenges it confronted while also striving to be an effective instrument of policy, in peace and war?

THE NAVY AND CANADA ON THE INTERNATIONAL STAGE

It is difficult to ignore that naval power has been an integral component of this country's development. The Royal Navy made it possible for the lands that eventually became Canada to remain British when the "lower thirteen American colonies violently severed their connections with the crown."[37] It did the same again in 1812, permitting British North America to pursue a different path of political development that eventually led to

35 William Johnston, William G.P. Rawling, Richard H. Gimblett, and John MacFarlane, The Seabound Coast - The Official History of the Royal Canadian Navy, 1867-1939, Volume 1 (Dundurn Press: Toronto, 2010), p. xiii.
36 John Hattendorf, "What is a Maritime Strategy", Soundings (SeaPower Centre, Australia), October 2013, p.1.
37 Nicholas Tracey, A Two-Edged Sword; The Navy as an Instrument of Canadian Foreign Policy (McGill-Queen's University Press: Montreal, 2012), p. 18.

Confederation (1867) and, ultimately, to the independent country that exists today. In the first decades after Confederation, however, the new country was largely uninterested in national defence, and was prepared instead to defer to British policy and to remain largely dependent on British military and naval resources. That ambivalence rested upon the assumption that because Great Britain was predominant on the oceans it could and would deal effectively with any threats to Canada emanating from the maritime sphere.

With the onset of the 20th century, this perspective slowly changed, triggered by a concern that the country's fisheries needed to be protected from the US by *Canadian* vessels (due largely to British indifference and the prioritization of improved Anglo-American relations), and as the Royal Navy was believed to be overstretched by threatening developments in European waters as well as imperial commitments. Britain eventually also began to ask for naval 'contributions' from its dominions.[38] Understandably focused on building the new country's industry and infrastructure while still contributing to British naval supremacy from which it drew political and economic benefits, Ottawa decided to allocate resources to create what came to be the RCN.[39] According to the Official History, the Laurier government wanted "a truly national institution, intended to enhance "dominion autonomy" by providing warships to safeguard Canada's territorial waters. At the same time, it was to be seen as a complement to the Royal Navy but its actual ability to perform such a role was strictly limited."[40] In explaining the adoption of the *Naval Service Act* (1910) that created Canada's navy, historian Richard Gimblett wrote that it "was the logical conclusion of many years of slow and steady progress preparing the nation to look for the protection of her maritime sovereignty by her own means."[41]

There were fierce political debates in the years that followed the passage of that legislation, centred on the nature of the relationship of the fledgling force with the Royal Navy. The RCN's first commander, Charles Kingsmill (photo above), was a Canadian-born senior Royal Navy officer. But there was a large segment of public opinion in Canada that believed the country needed a naval force distinct from that of Great Britain, to strengthen Ottawa's ability to control its own waters, and to merit some measure of influence in the larger issue of imperial defence.[42] In fact, a strong public backlash to a proposal to provide a sizeable financial contribution to the Royal Navy's budget two years before the outbreak of the First World War (1914-1918) increased the popular support for the idea of a national Canadian navy. This new attitude was further reinforced by the country's exertions in the First World War (1914 to 1918) and, as the war drew on, the government's demand that Canadian perspectives be taken into account by British policy-makers. In 1918, therefore, the British proposal for an imperial navy in the postwar era that was centrally controlled was categorically rejected by the Borden government because "it did not give sufficient status to the Dominions."[43]

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38 William Glover, "The RCN: Royal Colonial or Royal Canadian Navy?" in Michael L. Hadley, Rob Huebert and Fred W. Crickard (eds.), A Nation's Navy; In Quest of Canadian Naval Identity (McGill-Queen's University Press: Montreal and Kingston, 1996), pp. 73-74.

39 Barry Morton Gough, "The End of Pax Britannica and the Origins of the Royal Canadian Navy: Shifting Strategic Demands of an Empire at Sea" in W. A. B. Douglas (ed.), RCN in Transition 1910-1985 (University of British Columbia Press: Vancouver, 1988), pp. 90-102.

40 For an overview of the discussion in Canada regarding the 'idea' of a national naval service, see Johnston et. al., The Seabound Coast, pp. 69-139.

41 Quoted in Tracey, A Two-Edged Sword; The Navy as an Instrument of Canadian Foreign Policy, p. 26.

42 Two years before the outbreak of the First World War, Prime Minister Robert Borden believed that naval coordination with Great Britain would lead to a greater role for Canada in imperial matters, telling his British counterpart that in the near future "the dominion should have a direct and immediate voice in foreign policy." Quoted in Johnston et. al., The Seabound Coast, p. 194.

43 Glover, "The RCN: Royal Colonial or Royal Canadian Navy?", p. 74.

Even though the country conceived of itself as a British dominion, it can be argued that the foundation of the RCN was, therefore, an expression of an emerging Canadian national identity. And, indeed, the goal of 'maritime sovereignty' that Gimblett identified in his analysis remains the Navy's paramount justification more than a century later. However, just as then, the pursuit of that objective has always proven to be an uphill struggle, characterized by competing visions of what the Navy should be able to do, inevitable resource constraints and close partnership with the leading naval Power of the day to make up capability shortfalls. Indeed, during the interwar period (1919 to 1939) the ambitions of Canadian naval planners were to prove unrealistic. After the Armistice (November 1918), and as a result of severe cuts to the naval budget and reductions in force structure and personnel, "[t]he Canadian Navy barely survived the postwar decades."[44]

What can be recognized as a modern balanced Canadian naval force first emerged in the Second World War. The RCN had been a small anti-submarine trawler fleet in the First World War, so when the Second World War broke out it comprised only "six fairly modern destroyers, five small minesweepers, and two training vessels, of which one was a sailing ship" distributed between two distant coasts.[45] Perhaps more important, however, was that, while the RCN drew upon close ties with Britain's Royal Navy – inevitably so, given the strong historical, political, cultural and social bonds between the two countries - by 1939 it saw itself as serving Canadian interests.[46] According to the Official History, the RCN entered the war as

> *a much more coherent force with a much better sense of what was expected of it, than it had been at the beginning of the previous global conflict. (…) facing severe budgetary constraints in the early 1930s - and even the possibility of its extinction as a service - the navy cogently and coherently defined its role in the defence of Canada, namely, to protect the waters through which the country's overseas trade passed and the shipping routes that led to its principle ports.*[47]

During the six years that followed, Canada's navy grew enormously, beyond anything that could have been predicted in the first months of the conflict, and it participated in every phase of the war at sea. Indeed, by 1945, it became for a time the world's third largest navy with 96,000 personnel and over 400 warships and had achieved the status of a 'blue water' navy. "It seems incredible," the Official History stated in looking forward from the situation in September 1939, "that not only would it prove the value of a navy to Canada, but also [that] it would make an essential contribution to the final Allied victory in the Second World War."[48]

The RCN distinguished itself throughout the global conflict especially during the Battle of the Atlantic, in what some historians have called the 'longest campaign' of the war. It did so by protecting convoys in the northwest Atlantic Ocean from Germany's U-Boats and *Wolf Packs* thereby ensuring the flow of food and other necessary supplies to Great Britain. "Effective naval control of shipping and convoy routing," Marc Milner wrote, "was one of the unheralded victories of Canada (and the British Commonwealth) in the northwest

44 Tracey, A Two-Edged Sword, p. 38.
45 Joseph Schull, Far Distant Ships: An Official Account of Canadian Naval Operations in World War II (Stoddart Publishing: Toronto, 1987), p. 1.
46 In this regard, the Official History noted that "[t]he RCN had its share of anglophiles and anglophobes, but, as would be confirmed throughout the war, "Britishness" - an interest and belief in British institutions, ideals, and conventions that made up the RCN officer type - did not necessarily entail sacrificing Canadian interests and conditions." See W.A.B. Douglas, Roger Sarty and Michael Whitby et. al., No Higher Purpose: The Official History of the Royal Canadian Navy in the Second World War, 1939-1943 - Volume II, Part I (Vanwell Publishing: St. Catherine's Ontario, 2002), p. 34.
47 Johnston, Seabound Coast, pp. 978-979
48 Douglas, Sarty and Whitby et. al., No Higher Purpose, p. 40.

Atlantic."[49] By early-1943, and with the agreement of the US and Great Britain, the RCN was in command of all northwest Atlantic convoy operations. The only theatre command held by a Canadian, it is particularly noteworthy because of the status it accorded this country's naval contribution in the ongoing war against the Axis.[50] The RCN was, however, not only fighting in the notoriously storm-swept waters of the North Atlantic. It was also active in the Mediterranean where it supported the Allied invasions of Sicily (1943), and it contributed to the success of the Normandy invasion (Operations Neptune and Overlord in 1944) where over one hundred ships and 10,000 personnel were engaged.[51] Even after the invasion of occupied Europe, the RCN continued to confront the German submarine threat in Canada's littorals throughout the remainder of the war, losing both ships and personnel.[52]

Its role did not end with the cessation of hostilities, as RCN warships were then assigned to minesweeping duties in European waters, clearing the seas of the detritus of conflict to ensure safe navigation in the sea lines of communication it had fought so hard to maintain. Looking back, it is important to acknowledge that, alongside the tangible contributions of the RCN to victory in 1945, Canada had significantly advanced its goal of maritime autonomy that had only been an unrealistic aspiration when the war began.

The wartime expansion that the RCN experienced and its large international profile, were however, an anomaly. After the Second World War, the RCN became a much smaller force; and the slow eclipse of British power with the emergence of the United States as a superpower also meant an intensification of the close relationship with the United States Navy that had been forged as wartime allies. These changes and the onset of peacetime social attitudes had implications for the service culture within the RCN. Following incidents in

49 Marc Milner, "The Atlantic War, 1939-1945: The Case for a New Paradigm" in Marcus Faulkner and Christopher M. Bell (eds.), Decision in the Atlantic: The Allies and the Longest Campaign of the Second World War (Andarta Books: Lexington, Kentucky, 2019), p. 11.
50 Richard Gimblett, "Royal Canadian Navy", The Canadian Encyclopedia (online), 3 April 2015.
51 Douglas, Sarty, and Whitby et. al, No Higher Purpose, p. 184.
52 See W.A.B. Douglas, Roger Sarty and Michael Whitby et. al., A Blue Water Navy: The Official Operational History of the Royal Canadian Navy in the Second World War, 1943-1945 - Volume II, Part 2 (Vanwell Publishing: St. Catherine's, Ontario, 2007), pp. 409-452.

1947 and 1949 "which might have been described as mutiny had there not been a mandatory death sentence for that naval crime", the *Mainguy Report* concluded that while service conditions needed to be improved, there was also a need to "Canadianize the navy".[53] While historians dispute the source of the unease within the navy that the Mainguy Commission investigated, the continuation of British traditions and styles of leadership (that were described in its report as an "artificial distance" between officers and men inherited from the Royal Navy[54]) is often identified as an important cause and led to changes in military education, training, and career management.

It is nonetheless also true that the stresses in the Navy's ranks that emerged in the immediate postwar era mirrored what was happening in Canadian society. The speedy reduction in size - a force of 10,000 personnel was approved in 1946, but only 6,600 agreed to stay in uniform - and the development of a Royal *Canadian* Navy that embraced the country's social conditions in the decades that followed revealed that the impressive wartime effort and sacrifices that were widely acknowledged by Canadians had not fundamentally revised prewar attitudes toward the armed forces. In the decades that followed, therefore, ambitious naval plans largely came to naught as the government refused to support the level of expenditure necessary to fund a large and modern fleet capable of independent offensive operations.

Despite the many changes it experienced after the Second World War, Canada's strategic interests required that its navy continue to be an active 'Blue Water' combat-ready force. Alongside Allied navies, particularly those of the USA and United Kingdom, the RCN contributed to collective security operations (during the Korean War), to NATO's collective defence (anti-submarine patrols in the North Atlantic), and to the defence of North America by working closely with the USN. After the Cold War ended, the peace dividend was accompanied by increasing demands on the RCN to support peace and stability operations worldwide (e.g., in the former Yugoslavia and the 1991 Gulf War). Paradoxically, in the two years that followed the events of 9/11 (2001), it found itself more actively engaged in operations than at any time since the Korean War. Seventeen Canadian warships, representing every major vessel in the Navy, save two in refit, were deployed in support of the War on Terror, and a number of Canadian flag officers held command of the international coalition fleet supporting the war in Southwest Asia.[55]

Taken together this record reveals that since 1945 the RCN has played a key role in enabling Canada to be what political scientists have referred to as a Middle or Medium Power. This term describes a country that has "limited military and economic assets compared to the great powers" and that attempts "to play an active international role by relying on their diplomatic and technical skills to influence international affairs in favour of their interests."[56] It is not a surprise, therefore, that *Leadmark, the Navy's Strategy for 2020* (2001) similarly categorized the RCN as a Medium Global Force Protection Navy, "a navy that may not possess the full range of capabilities, but has a credible capability in certain of them and consistently demonstrates a determination to exercise them at some distance from home waters in cooperation with other Force Protection Navies."[57] *Canada's Ocean Frontiers* that followed four years later, added four "strategic imperatives" that the RCN should embody as it confronted the uncertain global security environment post-9/11 (1) it must be relevant to

53 Tracey, A Two-Edged Sword, pp. 104-105.
54 Richard A. Preston, "MARCOM Education: Is it a Break With Tradition" in W. A. B. Douglas, RCN in Transition 1910-1985 (University of British Columbia Press: Vancouver, 1988), p. 70.
55 Gimblett, "Royal Canadian Navy".
56 Martin Griffiths and Terry O'Callaghan, International Relations - The Key Concepts (Routledge: New York, 2002), p. 193.
57 Chief of the Maritime Staff, Leadmark - The Navy's Strategy for 2020 (Ottawa: 2001), p. 44.

Canadians; (2) it must be able to act; (3) it must have the right capabilities, and; (4) it must have critical mass.[58] Arguably, these qualities have informed Canadian naval force planning since 1945.

Not generally supportive of large peacetime defence expenditure, but nonetheless convinced of the legitimacy of upholding international obligations, the Canadian public has therefore accepted the idea of armed forces capable of undertaking missions associated with that of a Middle Power. This has meant that the RCN has frequently been viewed by the country's leaders as intended less to defend Canada's own vast ocean estate and more to underpin the country's diplomacy and contribute to coalitions of like-minded allies and partners that seek to advance the goal of a rules-based international order. Deployments in support of the International Commission of Control and Supervision in South Vietnam (1973), the contribution to NATO's Operation Sharp Guard in the Adriatic Sea (1993-1996), and the commitment of a Naval Task Group to the Persian Gulf following the Iraqi invasion of Kuwait (1990-1991) provide examples.

Following 9/11 and the onset of the War on Terror, and in the current security environment characterized by intensifying Great Power competition, the range of activities the RCN has been involved in has broadened. The commitment of a Naval Task Group and individual ships to Operation Apollo (2001 to 2003), and the deployment of warships on international counter-terrorism operations off the Horn of Africa, were intended to demonstrate support by engaging the threat overseas and working to keep the sea lines of communication safe from piracy. Following Russia's invasion and annexation of Crimea in March 2014, Canadian warships were dispatched to both the Black and Baltic seas to reassure NATO allies and to contribute to the alliance's deterrent. In recent years, the deployment of Canadian warships - in support of diplomacy, on multilateral exercises, and through independent deployments - has also demonstrated the government's awareness of the increased strategic significance of the Asia-Pacific, as well as support for the rules-based maritime order in the face of China's growing assertiveness in the international waters of the South China Sea and the Taiwan Strait. Since 1945, therefore, the RCN has traditionally acted as a "great enabler", a flexible instrument available to successive governments as they implemented a foreign policy rooted in a vision of the country as both a trusted ally and as a helpful fixer in global affairs. In the current era where global affairs have once again become confrontational, the latter function might seem less important. The RCN has, however, always endeavoured to provide a range of options as the government has sought to contribute in the most effective manner to international stability. Over the years, when showing the flag in foreign waters, RCN vessels have sought to protect Canadian interests, but at the same time to project Canadian values and perspectives, and that is unlikely to change.

Despite the Navy's many operations and achievements, historian Marc Milner has written that "sadly, because of the nature of the country, few Canadians ever see their navy, and few know much about it."[59] Canada is a Middle Power, but it is one which traditionally has a limited awareness or understanding of seapower. The lack of public awareness of what the navy has done or is doing is, in part, a consequence of the country's enormous size. That geography also undoubtedly contributes to the maritime blindness that can be defined, in a Canadian context, as the inability to recognize the importance of the maritime environment to the country's security and welfare. While the oceans are a central feature of life in much of Atlantic Canada and British Columbia, their relevance, other than as vacation destinations, is less self-evident in the Prairies or Central

58 Chief of the Maritime Staff, Securing Canada's Ocean Frontiers; Charting the Course from Leadmark (Ottawa: 2005), pp. 30-31.

59 Marc Milner, Canada's Navy – The First Century (University of Toronto Press, 2010), p. xiv.

Canada. This is despite the fact that most major cities in Canada - Vancouver, Toronto, Hamilton, Ottawa, Montreal, Quebec City, Halifax - and smaller urban centres further inland - Thunder Bay and Sault St. Marie - have direct access to the oceans, and the port of Churchill is able to export Prairie harvests to the world when Arctic ice recedes.

That most of Canada's population thinks in terms of continental relationships is a longstanding element of the Canadian 'operating environment' for the RCN. It has defined it in the past and it still contributes to the context within which the national discussion of the role of the navy takes place, and of government considerations regarding policy, resource allocation, and force planning. In acknowledging this influence but nonetheless qualifying it, *Leadmark 2050*, the RCN's current strategic concept, observed that:

> *Canadians tend understandably to think of their prosperity in terms of access to the world's richest economy - the United States - and to the network of bridges, roads and rail that move goods within North America. In reality, much like an iceberg that is supported unseen from below by a far greater mass than the one we can see above, these networks are but a part of an intricate global trading system made possible by maritime commerce.*[60]

Until the impact of supply chain disruption during the COVID health emergency that began in early-2020, it is possible that most Canadians were unaware of the degree to which globalization of the national economy is dependent on seaborne trade, not only for exports but also regarding the availability of goods for the domestic market. Canada's naval history and more recent accomplishments reinforce the public's deep respect for the RCN but they are often (though not always) seen as remote from more immediate concerns. This is perhaps unavoidable and, as a facet of national identity, it too is reflected in the type of navy that Canadians want.

60 Commander of the Royal Canadian Navy, Leadmark 2050 - A Strategic Maritime Concept for the Canadian Forces (Ottawa: no date), p. 3.

THE NAVY AND ACHIEVING STRATEGIC EFFECT

It is the Navy's inherent versatility as an instrument of national policy that enables it to achieve strategic effect. Canada is a maritime country, with three ocean borders and an economy that is dependent on the right of unrestricted ocean navigation. While such extensive access to the global maritime commons is an enormous asset, it leaves the country vulnerable to the use of the oceans by those who would engage in illicit activities that can challenge government regulatory authority or threaten public safety. Possessing modern combat-ready surface combatants, submarines, support ships, and maritime aircraft means that the RCN has generally been able to conduct a broad range of missions, from domestic-oriented operations and support to other government departments, to supporting coalitions engaged in coercive diplomacy and armed conflict. With at-sea support, its ships can be largely self-sustaining, are able to be forward deployed for long periods of time and can rapidly re-role from one type of mission to another (e.g., redeploying HMCS *Regina* from the Gulf of Aden to the Black Sea in 2014). Designed for and experienced at integrating with allies, the RCN has frequently proven itself able to exercise leadership in a multinational setting (e.g., during the Gulf War in 1991, Operation Apollo in 2001, to CTF150 in early-2015). These attributes are reflective of the strategic versatility of the RCN.

Given Canada's enormous ocean estate[61] monitoring the country's ocean approaches[62] was a key reason for the RCN's creation a century ago, and it is now a 24/7 commitment embodied by the pursuit of Maritime Domain Awareness (MDA) - the awareness of anything associated with the maritime domain that could impact domestic or international security and safety, the global economy or environment. Sovereignty protection, ISR (intelligence, surveillance and reconnaissance), and deterrence of those contemplating illegal or hostile activities, using RCN ships, submarines and air assets are routine tasks. Although Canadians have traditionally looked east and west across two great oceans, in recent decades they have begun also to look north, becoming increasingly aware of the vastness of Canada's northern reaches. The RCN provides presence and support in the Arctic through operations with the Canadian Coast Guard, providing search-and-rescue (SAR), and assisting other government departments. The acquisition of Arctic and Offshore Patrol Vessels is intended to bolster that effort. Additionally, the RCN supports civil authorities at all levels of government in pursuit of maritime security, aiding Canadians in distress, and contributing to the safety of major events in Canada.

From a strategic planning perspective, the defence of Canada and North America (captured in the idea of continental defence) are in many respects indistinguishable when viewed through a maritime lens. Canada's security perimeter extends well beyond the limits of its sovereign territory. The longstanding commitment of Canada and the US to joint continental defence found in the *Ogdensburg Agreement* (1940) and the *NORAD Agreement* (1958) was reinforced by *Beyond the Border: A Shared Vision for Perimeter Security and Economic Competitiveness* (2011). RCN support for *Beyond the Border* initiatives is underpinned by the Navy's daily pursuit of comprehensive Maritime Domain Awareness.

61 Ocean estate refers to an area that is the sum of a country's maritime zones over which it has full or partial authority or sovereign rights. Canada's ocean estate extends from the baseline to a distance of 200 nautical miles. For a more detailed description of this and other areas of the maritime domain, see: Commander Royal Canadian Navy, Royal Canadian Navy Strategic Lexicon (Ottawa: 2017), p. 27

62 Canada's ocean approaches are defined as those portions of the open ocean that lie outside Canada's ocean estate from which a seaborne or sea-launched threat could harm Canada's territory or ocean estate. For a more detailed description of this and other areas of the maritime domain, see: Commander Royal Canadian Navy, Royal Canadian Navy Strategic Lexicon (Ottawa: 2017), p. 28

MDA is the foundation to knowing what is going on in Canadian waters, including beneath the surface, but even more important, it is necessary to take action against potential threats before they enter Canadian jurisdiction. The RCN's longstanding effort has therefore focused on more than the surveillance of commercial ocean approaches. The RCN's Regional Joint Operation Centres (RJOCs) and Maritime Security Operation Centres (MSOCs) have the technological feeds required to fuse Canadian space-based ISR information with maritime operational intelligence and commercial shipping databases to provide responsible national authorities with decision-relevant information on a daily basis. In doing so, they work with all levels of government in Canada, as well as Canadian private sector stakeholders, but also the US Coast Guard, US Navy, NORAD, and international maritime organizations.

This MDA effort is fundamental to the effective and efficient use of the limited assets that the RCN possesses to take action at sea. This involves presence patrols and exercises in the Arctic during the navigable season, surface combatant sovereignty patrols off the Atlantic and Pacific coasts, or the tasking of RCN submarines to track unidentified submarines in the North Atlantic. These activities uphold Canadian sovereignty in the country's waters and Exclusive Economic Zone, and they demonstrate the country's reliability as an ally of the US in the joint defence of North America. In situations where advance warning comes late, whether involving the use of Canadian waters for illegal purposes or an unauthorized underwater incursion into Canadian or North American waters, MDA facilitates a timely response to national security challenges and threats.

Looking beyond North American defence and security, the RCN has long provided Canada with flexible combat-ready options with global reach. It has permitted the government to signal intent, through the RCN's mere presence, but it has also offered the ability to *press harder* politically or *walk back*, as the situation and government dictate, by having the Navy adjust its activities and geographical stationing. The Navy has shown itself able to respond rapidly and for sustained periods to a wide variety of tasks ranging from diplomacy, contributing to international humanitarian and disaster relief operations, and leading forces within a multinational mission. Moreover, after decades of integrating ships with the US, the RCN has attained a unique level of interoperability with the USN. That goal has, however, never been a stationary target. The near continuous technological change both increases the complexity of pursuing interoperability and the cost of doing so. These types of concerns that go to the heart of ensuring that a smaller-sized navy is an effective instrument of policy are a preoccupation of modern force planning.

CONCLUDING THOUGHTS

Many significant challenges that the RCN has faced in its past persist and new ones will emerge as it sails into an increasingly multipolar and thereby complex and potentially unstable world. Geoffrey Till recently wrote that what "the world the U.S. and other navies face is much more multipolar than it was in the 1990s." Alongside the more traditional understanding of the term, which refers to the relative distribution of economic and military capabilities among the Great Powers, there is also a second meaning that "deals with the much greater diversity of roles and tasks confronting all of the world's navies."[63] The range of issues that navies such as the RCN now confront has expanded in recent years to include environmental degradation and exploitation of the ocean's natural resources, not forgetting counter-proliferation and counter-terrorism. There is, however, considerable continuity alongside that change. The demands arising from maritime security

63 Geoffrey Till, "Multipolarity, navies and the post-Cold War world" in Paul Kennedy and Evan Wilson (Des.), Navies in Multipolar Worlds (Routledge: London, 2021), p. 213.

in an age where ocean politics are intensifying, from working with other government departments to ensure that Canadian law in the country's ocean estate is respected, and from defending against maritime-based national security threats, will also define the Navy's operating environment as the current century draws on - but, then, they always have.

In closing, this chapter comes full circle and returns to the discussion in its introduction. Seapower has been an integral element in Canada's development, from a colony to an independent country. Even if Canadians are not fully aware of the role of navies in that transformation, or indeed in the safety and preservation of what this country has so far achieved, including our social values and affluent way of life, the RCN has made substantive contributions. Created in response to growing national self-confidence and the need to defend national interests, it has been molded by Canada's distinct social conditions and by relationships with both the Royal Navy and the United States Navy that continue today. As long as it retains the ability to provide a range of options to government, to address effectively an unpredictable future, the RCN will be a valuable instrument of national policy, both at home and overseas.

CHAPTER 3: ATTRIBUTES OF NAVAL FORCES & ROLES OF THE RCN

Naval forces have distinctive attributes that, taken together, are the source of the inherent, often unique, strength of naval power. While these attributes also combine in powerfully synergistic ways, it must be understood that the RCN's ability to exploit them will vary, depending on the situation and the adversary in question. For example, the degree to which naval forces can freely operate in the global maritime commons (an attribute known as "access"); will depend on whether, and to what extent, the adversary possesses anti-access or area-denial capabilities.[64] Since the RCN does not simply act in static situations and upon passive adversaries, each of the following attributes will apply to a greater or lesser degree depending on the operation in question. Additionally, not all naval forces possess the same attributes or possess them to the same degree, depending on how they are structured, equipped, trained, and the nature of their doctrine, as well as the policies of their respective governments.

THE ATTRIBUTES OF CANADA'S NAVAL FORCE

ACCESS

The freedom of naval forces to operate on the open ocean[65] gives them access to much of the Earth's surface, most of its population, and the coastlines of over three quarters of all countries. The extent of this access can be expanded through embarked aircraft and covert submarine forces. Such access provides the opportunity for naval forces to intervene at a time and place of their choosing. Pre-deployed to areas of interest, covertly or overtly as circumstances require, naval forces are often the closest instruments of national policy to crises as they develop and are able to respond accordingly.

Furthermore, naval forces at sea do not create a "footprint" on other countries territories or in their airspace, and thus do not directly challenge sovereignty in the way that land forces and forward deployed or overflying air power do.[66] Restrictions on airspace and ground basing facilities and the associated costs (financial and political) can limit response options for both air and land forces, leaving, in some circumstances, naval forces as the only element of national power available to a government. The ability to influence and control crisis and conflict without physically committing troops on the ground is an important strategic advantage of naval forces.

64 Anti-access and area-denial are as old as warfare itself. In 2003, the Washington-based Center for Strategic and Budgetary Assessments defined anti-access as enemy actions which inhibit military movement into a theater of operations, and area-denial operations as activities that seek to deny freedom of action within areas under the enemy's control. See Andrew F. Krepinevich, Barry Watts and Robert Work, Meeting the Anti-Access and Area Denial Challenge, (Center for Strategic and Budgetary Assessments: Washington, D.C., 2003), p. ii.
65 The open ocean, often referred to as "international waters", is composed of those areas of the oceans that lie more than 12nm from shore – that is, outside the territorial seas. For a more detailed description of this and other areas of the maritime domain, see: Commander Royal Canadian Navy, Royal Canadian Navy Strategic Lexicon, p. 65 (Draft).
66 A country's sovereign waters include from the shore out to sea to a distance of 12 nautical miles, including the air space above.

MOBILITY

Naval forces can exploit the access afforded by the oceans because of their inherent mobility. Unlike other platforms, warships are continually mobile - under power and moving 24 hours a day - limited only by fuel and food. Thus, at even moderate speeds, naval forces can move hundreds of kilometres per day for many days. For example, even at a moderate transit speed of 15 knots (28km per hour), a naval task force can travel 360nm (more than 660km) in a day. When warships are combined with replenishment ships capable of providing fuel and supplies at sea, thereby forming a Naval Task Group (NTG)[67], this force has the ability to sustain its progress or presence for a considerable time.

In addition to their capacity for fuel and crew, warships possess considerable military capability in the form of onboard sensors, weapons, embarked uncrewed aircraft systems (UAS), and embarked helicopters. UAS provide near real-time intelligence, surveillance, target acquisition and reconnaissance information to extend a commander's situational awareness and increase interoperability with joint forces ashore while minimising risk to the ship and maritime helicopter. Embarked maritime helicopters extend the mobility of ships' sensors, weapons, and even logistics systems many-fold. For example, once within 150nm range of an objective (be it a combat target or the object of a rescue) a ship's embarked helicopter can launch and proceed to the objective, arriving "on scene" within an hour, nearly six hours in advance of the ship travelling at top speed. The combination of ship, UAS, and embarked helicopter mobility forges a potent combination of capability.

Submarines, inherently stealthy by design, add another dimension to the mobility of naval forces. In addition to their organic weapons and sensors, they possess the ability to transport, insert, support, and extract small special forces units. In addition, submarines can remain covert and unsupported in forward areas where air and surface forces might face excessive risk.

67 A Naval Task Group (NTG) is composed of up to four surface combatants and a joint support ship, and supplemented where warranted by a submarine, it brings with it the full breadth of combat capability, force enablers, specialized teams, maritime helicopters, remotely piloted systems, and its own command and control. From: Canada, Department of National Defence, Strong, Secure, Engaged Canada's Defence Policy (Ottawa: 2017). p. 35.

RESPONSIVENESS

A fully equipped, trained and maintained naval force can be deployed at very short notice. Since an NTG (and to a lesser extent even a single ship) is essentially self-sufficient, they do not need to establish initial forward operating bases or build up to an operational mass before being deployed. Despite their longer transit times, they can often be effective in a theatre before any other force. Being on scene early and with credible strength might help contain escalation in crisis situations and may prevent conflicts from widening. Importantly, naval forces can be deployed in the early stages of a potential conflict – well in advance of hostilities breaking out - establishing a presence able to support either diplomatic or coercive operations, and, just as important, providing crucial situational awareness.

REACH

Naval forces routinely conduct operations at long distances from home and for extended periods of time. This reach is optimized when individual units are supported by replenishment ships that can operate in the same threat environment as warships. Additionally, naval forces can be rotated into and out of theatre extending their reach in both distance and time.

VERSATILITY

Versatility in naval forces means having the ability to be prepared for and employed on a number of different missions, often in a single deployment. This versatility is rooted not only in the general-purpose design of Canadian warships, but also in the training of highly skilled ships' crews. Additionally, once deployed, naval forces are neither locked into a particular role or posture, nor do they have to broadcast their intent. Rather, naval forces can rapidly adapt to changing circumstances, shift from one role or task to another, and alter missions without having to return to home port to reconfigure the ship. Consequently, and unlike many other military platforms, versatility ensures the intent of any particular deployment will not be immediately obvious to observers or adversaries. This can be an important strategic consideration, affording flexibility in its use (and the message that use sends), particularly in the early and evolving stages of a conflict. Properly crewed, equipped, and trained naval forces can transition from peacetime to warfighting readiness very quickly and with few external indicators. Furthermore, their extensive array of communication and sensing systems combined with their mobility make them extremely adaptable as instruments of national policy. They can depart from a home port prepared to conduct humanitarian aid, transitioning to a surveillance or Search and Rescue (SAR) role shortly after arriving in theatre or, if the situation changes, shift into a combat role. Once on scene or in theatre, their extensive array of weapons and sensor systems below, on, and above the water, especially when maritime patrol aircraft, organic helicopters, UAS, and submarine forces are present, enables naval forces to quickly adapt to evolving conditions.

Furthermore, versatility means that naval forces can be used to send a wide range of signals to allies, partners, and adversaries alike, enabling a spectrum of political responses. They can gather intelligence and establish situational awareness; they can be deployed into an area covertly or overtly; they can demonstrate presence or remain just over the horizon, and they can be withdrawn at will yet remain ready to quickly reengage.

PERSISTENCE

Once in theatre, and with necessary afloat support, naval forces can remain for as long as required. However, their persistence need not always be visible – they can also stage over the horizon in international waters, at some distance from the potential conflict, and out of visual range. Consequently, there is no requirement for a footprint ashore while the ships remain ready to intervene quickly if necessary. As such, the political complications and military risks of committing land and air forces and their logistic support on land can be minimized or eliminated. Persistence exploits mobility, reach, and versatility to enable both military and political choice.

RESILIENCE

Modern, combat-ready naval forces are designed to operate forward in high threat environments. Warships are designed such that they can incur some degree of damage without complete loss of operational effectiveness. While a loss of capability through damage will degrade operational performance, a ship's company is trained to restore systems to use, or to operate in an alternative mode, as quickly as possible. Moreover, all ships possess a degree of redundancy in both equipment and personnel to ensure that they can remain engaged without needing to withdraw from an operation prior to its conclusion.

SOVEREIGN IMMUNITY[68]

Under UNCLOS Article 95, "Warships on the high seas have complete immunity from the jurisdiction of any State other than the flag State."[69] In addition, as a matter of customary international law, warships also enjoy sovereign immunity in the territorial waters of other coastal states, including while at anchor, in harbour, or in port. This means that the ship's Commanding Officer is not required to consent to an onboard search or

68 Material for this section was sourced from PowerPoint presentation Legal Status of a Warship, prepared for and delivered to RCN Command Development Course by LCdr Heather Fogo, Directorate of International & Operational Law, Office of the Judge Advocate General.

69 UNCLOS, Part VII – High Seas, Section 1 - General Provisions, Article 95.

inspection, nor fly the flag of the host country. Warships are also immune from arrest and seizure, and are exempt from foreign taxes, customs, and regulation. Finally, the warship exercises exclusive control over all passengers and crew with respect to acts performed onboard the ship. The concept of sovereign immunity is based on the premise that all states are equally sovereign and consequently anything under the mark of the sovereign, including their ships, cannot be subject to the commands of another. The view was taken that sovereigns made an implied contract to respect each other's independence. It is important to note, however, that Canadian warships are not Canadian territory when they are overseas, as the common misconception holds.

THE DOCTRINAL ROLES OF THE RCN

The Government of Canada calls upon its armed forces to defend Canada, to help defend North America and to support global stability.[70] From these enduring missions the RCN's fundamental purpose is derived. The crux of RCN strategic doctrine is the "Trident of Canadian Naval Power" (see Figure 1). The symbol of the Trident illustrates the RCN's three major doctrinal roles – Warfighting, Maritime Security, and Diplomacy. It demonstrates how the three roles form a coherent strategic design for the employment of Canada's naval forces. The Trident also allows a better understanding of the escalating degree of force required for the different types of missions associated with each role, as the spectrum of operations progresses from protect to secure to defend.[71]

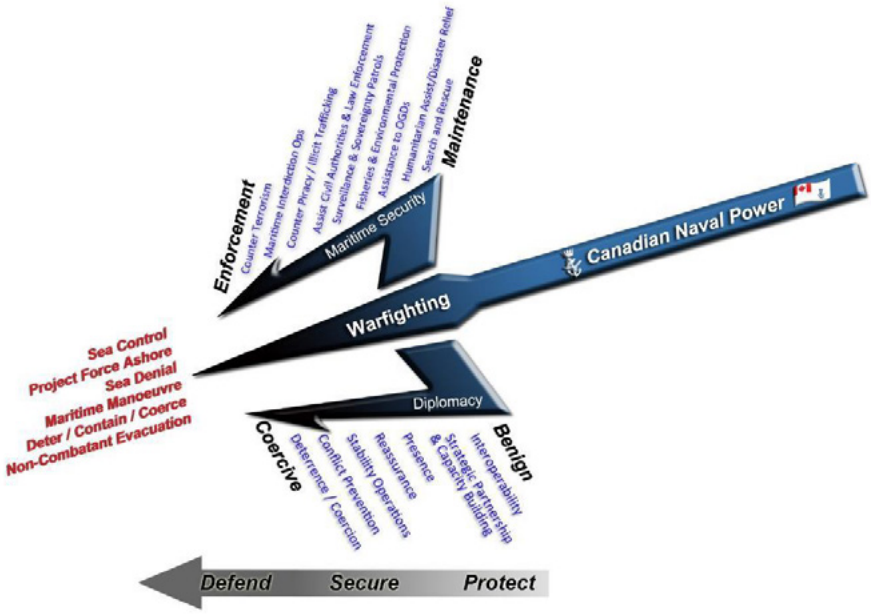


Figure 1 - The Trident of Canadian Naval Power[72]

70 See "Canadian Armed Forces Core Missions", Canada, Department of National Defence, Strong, Secure, Engaged Canada's Defence Policy (Ottawa: 2017), p. 17.

71 See Strong, Secure, Engaged Canada's Defence Policy p. 82 for a discussion of the protect-secure-defend spectrum.

72 The "Trident" was developed by Major J.C.W. (Bill) Ansell, Directorate of Naval Strategy. It combines the Booth/Grove models with Canadian doctrine. The trident was the weapon of Poseidon and Neptune, gods of the sea in classical mythology, who were said to have the power of control over the ocean.

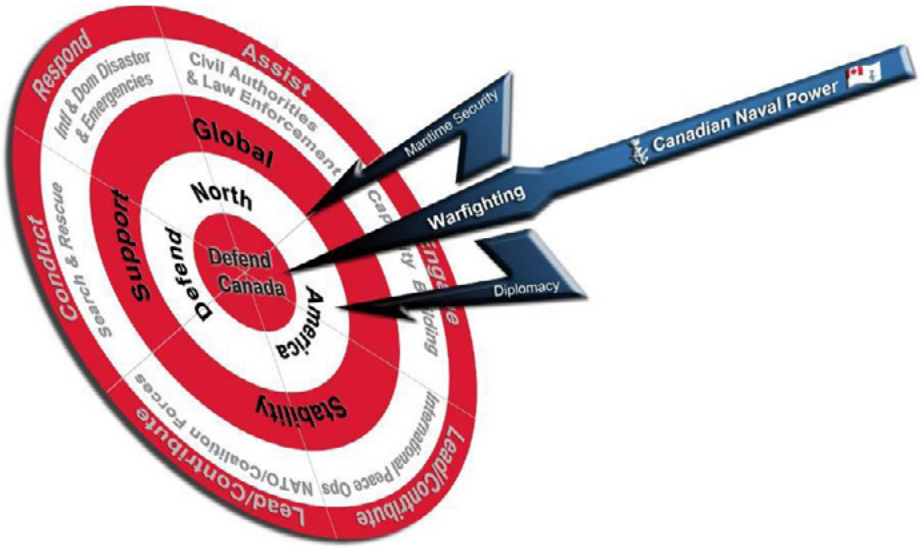


Figure 2 - The Trident of Canadian Naval Power as an Instrument of National Defence Policy

THE APPLICATION OF CANADIAN NAVAL POWER

The interaction between the three doctrinal roles of the RCN (warfighting, maritime security, and diplomacy) and the eight core missions of *Strong, Secure, Engaged* is depicted in Figure 2. Government direction determines the thrust of the Trident of Canadian Naval Power, such that the spearheads - representing the three RCN roles - may be employed individually or together in various combinations to achieve the outcome predetermined by policy. In practice, most operations undertaken by the RCN will incorporate aspects of each of the three naval roles. They are inter-related and might be conducted concurrently or consecutively with little or no physical change to the force structure required because of the versatility (i.e., range of capabilities) associated with modern naval platforms. The difference between maritime security and low-intensity warfighting, for example, could, on occasion, be difficult to distinguish and will likely also involve global engagement and diplomatic efforts as well. As mentioned previously this inherent versatility is one of the most valuable features of naval forces, for it offers options to decision-makers for escalation or de-escalation simply by altering their posture.

Each of the RCN's three major doctrinal roles is the subject of a separate following chapter.

CHAPTER 4: RCN ROLE 1 - WARFIGHTING

The fundamental role of the RCN is to conduct warfighting in support of national objectives.[73] Sound warfighting capability underwrites the navy's ability to perform its maritime security and naval diplomacy roles. Even if lethal combat power is not applied, the ability to project a credible threat of its use to friends and foes alike is the basis of the efficacy of all military action – from deterrence and containment, to coercion and combat. Importantly, it is the RCN's range of capabilities that provide it with an ability to threaten or actually apply force; but it is important to note that the RCN's warfighting role encompasses more than just high-end major combat operations. It contributes to the country's ability to deter adversaries, as well as to a range of operations from peace support up to major combat.

Ultimately, all naval action, in peace or in war, links back to influencing events ashore. This is because humans live, and political power and governments are centred, on land. Even a mid-ocean fleet engagement is conducted with the aim of influencing events ashore. Such an engagement may be conducted with the aim of destroying an enemy fleet so that logistics convoys can cross the ocean to supply a theatre of operations, free from the threat of enemy attack and the subsequent loss of supplies. This aim of influence is equally true in times of peace as well, and as such, provides an example of one of the many ways in which the RCN's warfighting role overlaps with the provision of maritime security. Routine patrols conducted to uphold and enforce global order at sea and freedom of navigation are conducted in support of maritime economies through the guarantee of secure global shipping – with the ultimate success being felt and measured ashore.

This ultimate aim of navies influencing events ashore is the reason RCN Strategic Doctrine does not draw a distinction between warfighting *at* sea and warfighting *from* the sea. This doctrinal approach is additionally supported by the natural overlap of, and the difficulty of distinguishing between, fighting at sea and fighting from the sea. Furthermore, in today's maritime domain it is likely that both would be fought simultaneously, particularly in the congested littorals. As such, all naval action is considered both "at sea" (because that's where navies operate) as well as "from the sea" (because the ultimate effect is felt ashore).

73 Chief of the Defence Staff, Canadian Military Doctrine - Canadian Forces Joint Publication CFJP 01, p.2-2

THE USE OF NAVAL POWER

The ability to project national power in the maritime domain requires that the RCN be able to exploit the sea to its own advantage, while at the same time denying its use to a potential rival or enemy.

SEA CONTROL

Sea control is the condition that exists when a naval force enjoys freedom of action to use an area of the sea for its own purpose for a period of time and, if necessary, deny its use to an opponent. Sea control must necessarily include the airspace above the sea's surface, together with the water mass and seabed below along with the electromagnetic and acoustic spectrums.

Sea control is, however, not an end in itself. It is instead a necessary condition to allow use of the sea for further purposes, including protection of the Sea Lines of Communication (SLOCs) and to enable maritime manoeuvre – both described below.

At the lower end of the conflict spectrum, naval forces may be used to achieve sea control to uphold freedom of manoeuvre in the face of attempted constraints by criminals or other armed non-state actors. At the highest end it might include a coalition using its naval power to eliminate an enemy's freedom of manoeuvre throughout significant areas of ocean. The need for sea control is not dependent upon the existence of a substantial threat - if there is any risk to freedom of action, sea control is necessary.

The geographic extent of the area over which sea control must be gained and maintained can vary. It may be as localized as control of a strategic chokepoint[74] or narrow waterway[75], or it may reach to domination of very large ocean areas. Sea control in littoral regions presents more complexities than in the open ocean due to congestion, sea land interface and, in some cases, maritime geography such as a bay between two headlands.[76] The naval forces required to exercise sea control will depend upon the geographic extent, the threat, the mission, and the duration for which control is required. There is never complete protection from attack at sea, particularly in the face of a submarine threat or in the congested littorals. As such, the degree to which

74 A chokepoint is a narrow channel along widely used global sea routes – a place where shipping traffic converges to pass through tight or restricted natural or man-made areas. Some of the most significant include: the Straits of Malacca (the world's busiest shipping lane), the Strait of Hormuz (the most strategic passage for seaborne global crude oil transportation), the Strait of Gibraltar (the gateway to the Mediterranean), and the Panama and Suez Canals.

75 Examples of this are the Northwest Passage, the Gulf of St. Lawrence, and the Strait of Juan de Fuca.

76 There is no single, internationally accepted definition of what constitutes the littoral region. The Defence Terminology Bank definition for littoral is "…a coastal region consisting of the coastal sea areas and that portion of the land that is susceptible to influence or support from the sea." (See Record #3369) Trident expands upon this definition such that the littorals are defined as coastal sea areas and that portion of the land which is susceptible to influence or support from the sea, generally recognised as the region which horizontally encompasses the land-water interface from 100 kilometres (km) ashore to 200 nautical miles (nm) at sea, and extending vertically into space from the bottom of the ocean and the land surface.

a naval force must be able to control the sea is related directly to the risk of losses or damage that a force is willing to accept before operational success is compromised. Thus, if a high degree of risk is operationally acceptable, a high level of control need not be attained. Conversely, if very low risk is deemed essential, due perhaps to available resources or the significance of a specific operation, a correspondingly high degree of sea control must be achieved and maintained. The level of risk will in turn influence the resources required to achieve and maintain the level of sea control necessary to provide sufficient freedom of action.

Sea control, once achieved, provides naval forces with the freedom of action, through operational manoeuvre, to shape, influence, and control events. This includes the ability to:

- gain access to the theatre of operation for the joint or combined force[77];
- protect the SLOCs that provide the flow of materiel into the theatre;
- project naval power ashore, from the covert insertion of special forces to full-scale amphibious operations against a prepared adversary[78];
- contribute to land operations through the provision of command and control afloat, intelligence, surveillance and reconnaissance, joint fires[79], and force protection[80]; and,
- establish a seabase from which follow-on forces can be introduced into theatre and supported thereafter.

SEA LINES OF COMMUNICATION

Sea Lines of Communication (SLOCs) describe the primary maritime routes between ports used by commercial, naval, and private shipping. Like highways of the sea, SLOCs carry commerce, trade, tourism, logistics, science and research, and naval vessels around the world. Generally chosen as the most economical, safest, or fastest routes, they have been established through decades, even centuries, of use based on navigation, fuel economy, weather, and currents. Many SLOCs transit significant maritime chokepoints. As they do not exist physically, their defence must be considered in terms of both the geographical areas comprising their chokepoints, ports, and harbours, as well as the ships that use the routes. That is, the ships themselves are part of the SLOCs, and therefore to defend a SLOC is to defend both its geographic features as well as the ships that ply it.

Currently 90 percent of all trade is seaborne, making maritime SLOC's the foundation of the global supply chain which relies on "just in time delivery" for most goods. Any disruption at maritime chokepoints has the potential to significantly disrupt the flow of shipping traffic through those passages, potentially disrupting

77 Combined refers to activities, operations and organizations, in which elements of more than one nation participate.
78 As the RCN possesses neither amphibious forces nor amphibious doctrine, this scenario would obviously only occur in a coalition environment.
79 The term "joint fires" refers to the employment of forces from two or more components in coordinated action to produce desired effects in support of a common objective. Joint fires link weapons effects to maritime, land, air and special operations forces. Joint Fires are usually executed within the boundaries of the maritime, land, or air forces. Therefore, joint fires are conducted in accordance with the priority, timing, and intent established by the supported commander. The concept of joint fires describes how tactical, operational, and strategic fires including non-lethal capabilities, will be synchronized to meet and support the commander's objectives.
80 Force protection refers to measures and means to minimize the vulnerability of personnel, facilities, equipment and operations to any threat and in all situations, to preserve freedom of action and the operational effectiveness of the force.

regional and global economies.[81] Militarily, SLOCs are critical for transporting and sustaining a force in theatre, even when that theatre is a land-locked country. In times of conflict, it is not unusual to find SLOCs being blocked by naval powers seeking to deny an enemy critical seaborne supplies.

By virtue of their tremendous strategic importance and geopolitical value, protection of SLOCs is essential during both peacetime and conflict. Protecting these sea-routes is a specialized type of sea control and is a mission that generally only naval forces with associated air, space, and cyber support can fulfill.

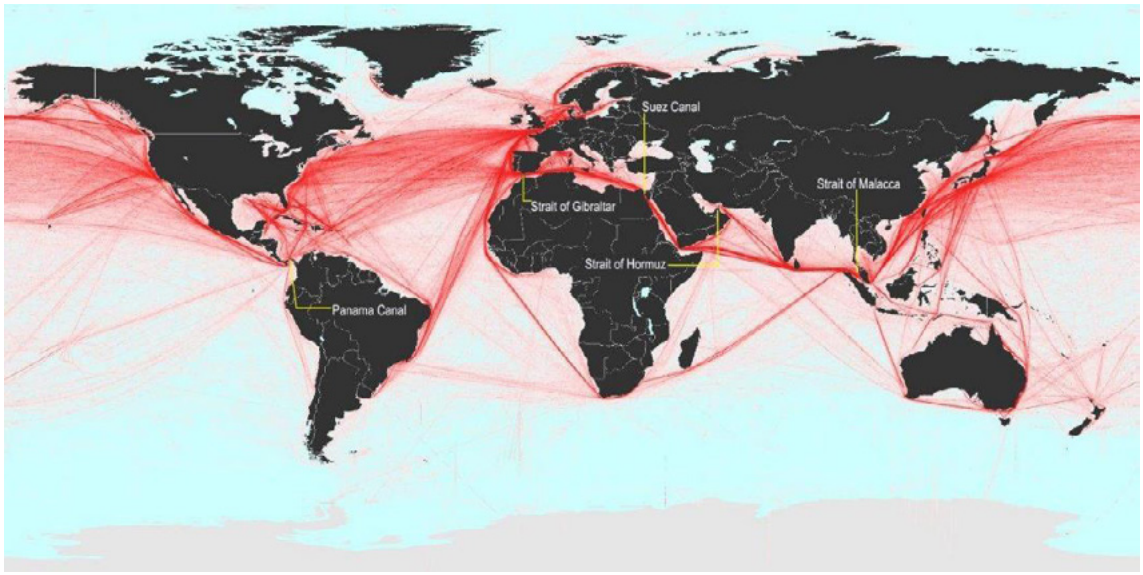


Figure 3 - Sea Lines of Communication (i.e., Global Shipping Routes)[82]

SEA DENIAL

Sea denial is exercised when naval forces prevent an adversary from making effective use of a maritime area without being able to control that area themselves. Classic means of achieving sea denial include laying a minefield or deploying submarines to threaten enemy surface forces. A more recent method, particularly appropriate in littoral operations in the age of precision missiles, is to mount surface-to-surface missile batteries along the coast to pose an unacceptable level of risk to enemy surface units. Other types of sea denial include blockades, the enforcement of exclusion zones (similar to a "no-fly" zone, but on or under the sea), and campaigns against an adversary's trade or logistic systems.

Like sea control, sea denial is limited to place and time. Moreover, sea denial and sea control operations may be conducted simultaneously – naval forces may conduct sea denial operations in one area, while undertaking sea control in another. Ultimately, the denial of the enemy's freedom of action is a consequence of effective sea control and sea denial operations in the maritime battle space.

81 For example, located between Indonesia and Malaysia, the Strait of Malacca (SOM) is the shortest route between the Pacific Ocean and the Indian Ocean. Approximately 550 miles long and varying from 126 to just 9 miles wide, it has been a vital sea lane for centuries. It has been estimated that one-third of global trade passes through the SOM annually, along with 90 percent of Japan's and 70 to 80 percent of China's energy imports. (See Ina Storey, "Securing Southeast Asia's Sea Lanes: A Work in Progress", Asia Policy No. 6, July 2008.) Clearly, a disruption of any length of time in this SLOC would be economically disastrous for the global economy.

82 Map by Maj JCW (Bill) Ansell, based on previous work by (B.S. Halpern;T. Hengl; D. Groll) used with permission under the terms of the Creative Commons Licence: CC-BY-SA-3.0.

FORCE-IN-BEING

A specialized form of sea denial is the concept of the "force-in-being". A country that is unable to exert maritime superiority or widespread sea control may, instead of directly confronting its adversary, hold its naval forces back "in being". Thus, by avoiding a head-on confrontation with a larger force, adopting a doctrine of force-in-being preserves naval forces whilst using their existence and capabilities to threaten and thereby constrain the independent action of an adversary. The threat of attack from a force-in-being is intended to complicate an opponent's planning and prevent it from taking the initiative elsewhere. The threat posed by a force-in-being can sometimes be sufficient to prevent superior opposing forces from establishing a desired level of sea control by forcing the latter to divert resources to other tasks, such as blockade or containment of the opponent's force, or protection of a valuable area or units. It might also be used to compel an adversary to adopt a disadvantageous passage or otherwise amend operational plans. A force-in-being does not have to remain in port but might be forward deployed although not within range of the enemy's forces.

A force-in-being need not be larger than the opponent it confronts. To be successful it only has to possess the capabilities to pose a credible threat or to act as a constraint in an adversary's operational planning. In addition, a force-in-being can benefit from the advantage bestowed by technological advancement. For example, submarines and armed uncrewed systems (surface, sub-surface, and air) may be employed as a contemporary version of a force-in-being.

COVER

Another specialized form of sea denial is the concept of cover. Cover is an important function for elements of a naval force to provide; it is the provision of support and protection, when and where required, to vulnerable units or detached elements of the main force that are engaged in operations of their own. Examples of cover include the escort provided to convoys, anti-submarine warfare patrols, and providing air defence for mine countermeasure units that are operating independently.[83]

MANOEUVRE WARFARE AND MARITIME MANOEUVRE

Manoeuvre warfare is key to the employment of naval power in wartime. It seeks to take advantage of a fleet's inherent manoeuvrability at sea to defeat an enemy force by shattering moral and physical cohesion – that is, the ability to fight as an effective, co-ordinated whole. The Battle of Trafalgar (1805) is a case-in-point. Lord Nelson deployed his fleet to break the Franco-Spanish line of battle and thereby reducing the engagement to a series

83 During Op. APOLLO (October 2001 to October 2003), the Canadian Naval Task Group was assigned to the defence of a US Amphibious Ready Group whose embarked Marine Expeditionary Unit was about to deploy into Afghanistan.

of piecemeal encounters in which the more aggressive and better-trained British held the advantage. In terms of strategic and operational planning, manoeuvre warfare relies on the ability to move decisively in order to strike at a time and place of one's own choosing. This approach can be contrasted with that of a purely attrition-based approach that seeks battle primarily with the intent of degrading or destroying an enemy's forces.

Today, underpinned by expectations arising from seven decades free from the horrors of large-scale global warfare, and driven by ever advancing technology, such as long-range, precision-guided munitions and uncrewed systems, warfare will almost never be a matter of simple attrition. Instead, in modern manoeuvre warfare, planning is focussed on getting inside the enemy's decision-making cycle (strategically and operationally), and forces are rapidly manoeuvred and concentrated to strike at the enemy's centre of gravity[84], to bring rapid victory with minimum losses, while avoiding long and costly battles of attrition.

In the maritime context, the ability to manoeuvre rapidly, taking advantage of the attributes of naval forces, is known as maritime manoeuvre. The mobility, access, reach, endurance, and versatility of naval forces permit them to gain the initiative and allow an adversary's vulnerabilities to be attacked. Naval forces that possess sufficient freedom of action are able to maneuver to the locations that can achieve the greatest possible advantage over the adversary. By seizing, retaining and exploiting the initiative, the terms and place of confrontation can be selected to exploit weaknesses in an adversary's will or capacity to resist.

Unlike the land environment which has fixed geographical constraints, the sea is an environment in which naval forces enjoy a wide-ranging ability to manoeuvre. Moreover, the sea (from surface to ocean floor) is a three-dimensional space - largely opaque to most sensors – from which naval forces such as submarines and special forces can manoeuvre and strike. Finally, UAS and embarked organic maritime helicopters extend the ability of naval forces to use the airspace above the sea and adjacent land – dramatically enhancing both defensive and offensive capabilities at range.

Manoeuvre warfare, however, does not imply that manoeuvre completely avoids attrition of the attacking force. Once battle is joined at the tactical level, it will almost certainly have an element of attrition on both sides. Successful maneuver warfare resulting in victory is rarely achieved without damage to the attacking force resulting in attrition of some sort. Even so, at the tactical level, creating the conditions that allow devastating attrition of the enemy is more a matter of manoeuvre than it was in the past. This is because technical innovations in surveillance and precision weaponry have increased the ranges at which battles occur, greatly broadening the scope for manoeuvre. The object of naval warfare at sea is the use of maritime manoeuvre to establish sea control. When circumstance or capabilities do not allow that goal to be achieved, a naval force can also disrupt or cripple an adversary's manoeuvre by conducting sea denial. In the event that opposing forces engage and fight to a definite conclusion, victory will normally go to the side that, through the effective

84 DTB 324 defines "centre of gravity" as: "Characteristics, capabilities or localities from which a nation, an alliance, a military force or other grouping derives its freedom of action, physical strength or will to fight."

use of ISR capabilities to develop superior battlespace awareness, can make the first accurate attacks.

DETERRENCE

The purpose of deterrence is to dissuade an adversary from doing something by encouraging the belief that the likely costs of their actions will outweigh the benefits. It is based upon the threat of force rather than its actual use. Naval forces, as well as land and air forces, provide capability that underpin a national deterrent. Such deterrence can be employed at both the national/strategic level as well as the operational level. At the national/strategic level the existence of modern and capable armed forces necessarily introduces a measure of uncertainty into a putative adversary's strategic calculations. Operationally, naval forces are also particularly well suited to conventional deterrence by exploiting their unique attributes such as reach and access. A naval force might deter an aggressor by deploying into a region during the early stages of a conflict, at relatively low political risk and, if necessary, in considerable strength.

CONTAINMENT

Containment is the geographical restriction of the freedom of action of enemy forces. It uses military force to inhibit some activity and thus prevent access, egress, or expansion. By threatening an adversary's vulnerabilities from the sea, it is possible to contain their military forces and force the diversion of their maritime forces into defensive roles, in turn preventing their use for the offensive. The primary activity associated with containment is a naval blockade. A blockade is an effort to cut off supplies, war material or communications from a particular area by force, either in part or totally. The US Navy's operation against Cuba during the Missile Crisis is perhaps the best-known example of a blockade. The NATO-led Operation Sharp Guard (1993 to 1996), that enforced an arms embargo on the former Yugoslavia, is a more recent one. The laying of sea mines in the approaches to a specific port (e.g., US mining of Haiphong harbour in 1962) to prevent access to repairs and resupply is also an example of containment. Although the RCN does not conduct such mining operations, it may nevertheless have to contend with an adversary that has done so.

COERCION

Coercion involves inducing an action that would otherwise not occur - either forcing an adversary away from one course of action or compelling another. Coercion will only be successful if a combination of threats and/or incentives are credible and communicated unequivocally. Naval forces can conduct coercion by using discrete amounts of actual force against key enemy targets, to prevent or impede a potential aggressor from escalating its use of force, while maintaining some measure of control over escalation of a crisis. Publicly announcing the deployment of submarines in an attempt to keep an adversary's surface fleet from sailing is one example of coercion. Perhaps the most common form of maritime coercion is an embargo on specific items of trade in order to compel a state to follow a specific course of action. In such a case, naval forces can be employed to board and inspect merchant traffic to ensure contraband cargo is not being smuggled.

FORCE PROJECTION ASHORE

Projecting force ashore entails the use of naval power to shape the battlespace, disrupt the enemy, support friendly forces ashore, and eventually recover personnel and equipment.

Canadian and allied maritime strategic interests[85] are most often focussed around the periphery of land

85 National Interests are political, economic and military objectives directly related to the prosperity and security of the Cana-

masses, where centres of population, resources, industrial production, political control, and trade are concentrated.[86] The ability to operate in these littoral areas is of crucial importance, either as the main effort or as the staging area for deploying and sustaining ground forces. Despite a more confined area of operations than that of the high seas, the difficulties of projecting power ashore should not be underestimated.[87] Certain types of vessels cannot easily operate in littoral waters, and, in most cases, the shore will not be a permissive environment. The littoral presents naval forces with an intense threat environment densely packed with traditional adversaries, civilian maritime traffic, and potentially non-state actors. Moreover, the littoral presents one of the most challenging sensor environments that can impose limitations on ISR sensors in all domains of warfare.

Influencing events ashore exploits maritime manoeuvre to threaten or project force from the sea, including landing of special forces, the delivery of seaborne land and air forces, or bombardment by guided or unguided weapons from warships and aircraft using a combination of embarked aircraft, land attack weapons and special forces. Force projection ashore also includes the dynamic application of persistent intelligence, surveillance, and reconnaissance; as well as cyber, space, and information operations conducted against land objectives. There are numerous ways in which naval force projection ashore contributes to a joint operation.

SHAPING THE BATTLESPACE

Shaping the battlespace ashore means utilizing naval capabilities prior to the commencement of combat, to provide a theatre of operations that is advantageous to the joint force. By exploiting their access, mobility, sustained reach, endurance, and versatility, in preparation for subsequent joint operations, naval forces can be employed to gather intelligence and/or mount non-combatant evacuation operations, withdrawing civilians from within a potential combat zone. If seaborne evacuation is to be employed the preferred method of evacuating civilians is to employ commercial vessels with the capacity to embark large numbers of personnel. Naval forces are employed both as escort to the commercial vessel and as a means to provide security

dian people. Strategic Interests are a subset of national interests that, should they be threatened, the use of armed force to protects or advance them is either captured in existing policy or could reasonably be expected. Maritime strategic interests are those strategic interests that exist in the maritime domain. For a more detailed description of national and strategic interests, see: Commander Royal Canadian Navy, Royal Canadian Navy Strategic Lexicon, pp. 22-23 (Draft).

86 According to the UN, "(h)alf the world's population lives within 60 km of the sea, and three-quarters of all large cities are located on the coast." See United Nations Environmental Programme, Cities and Coastal Areas (online), (accessed on 26 November 2015 at www.unep.org/urban_environment/issues/coastal_zones.asp).

87 "(T)hese regions are where the effects of massive change along every human axis – social, demographic, cultural, technological and climatological – are increasingly being concentrated." Vice Admiral Dean McFadden, "The Navy and Canada's National Interests in this Maritime Century", Canadian Naval Review, Vol. 6, No. 1, Spring 2010, p. 6.

whilst embarkation occurs.[88] If possible, commercial vessels will enter a seaport and embark evacuees directly onboard. However, the political climate or situation on the ground may not allow for this. Just as in humanitarian crises, the flexibility of a warship with its boats and helicopters allows it to provide considerable assistance in evacuations under a variety of circumstances, be it civil unrest, environmental catastrophe, or an armed conflict in progress. Furthermore, surface combatants have the communications and sensors to coordinate an evacuation and have the ability to offer some protection should the operation transition from a permissive to a non-permissive environment. Evacuations serve the national interest by protecting Canadian citizens, but they can also promote Canada's diplomatic interests by securing the safety of other country's citizens. Finally, the RCN, exploiting their flexibility and adaptability, may also be used to shape the battlespace by inserting special forces or conducting other covert operations.

DISRUPT

Naval forces can use sea to shore effects to disrupt an adversary's plans and movement, shifting the balance of the initiative in favour of friendly forces by compelling the opponent to adopt a defensive posture. This permits the friendly force to emphasize offensive operations, further disrupting enemy activity. Exploiting their inherent maneuverability, naval forces might be used to launch a feint designed to draw the enemy's attention from the location of the actual allied main effort. For example, during the opening stages of the US-led ground campaign in the First Gulf War (1991), the US Navy bombarded the Kuwait coast to mislead Iraqi forces while the main offensive was launched far inshore. Another example of disruption is the insertion of special forces to conduct raids as happened during the NATO-led campaign in Libya (2011).

SUPPORT

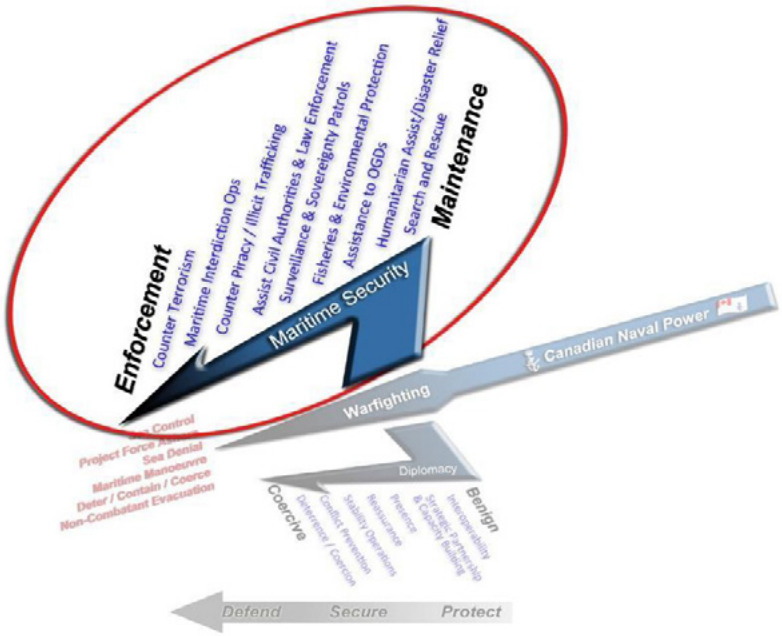
During the main combat phase of an operation, a naval force's full range of capabilities, in particular its ability to provide secure command and control and engage in precision attack, can support friendly forces ashore or in the air. Whilst land manoeuvre seeks a position of advantage with respect to the enemy, naval power can provide manoeuvre *from the sea* to enable a position of advantage for the projection of force ashore. In doing so, naval forces can capitalize on their speed of manoeuvre which is often superior to that of forces ashore – at 25 knots a naval force can move 600 nautical miles, or 1100 km, in 24 hours. With advanced sensors, systems, and communications, modern warships also possess sophisticated battlespace management and force networking systems. These allow warships to better develop and disseminate situational awareness, and thus support the land, air, and land-air battles by providing command, control, and integrated ISR. Lastly, support to forces ashore can be provided in the form of medical facilities aboard specialised joint support ships, flexibly and securely hold a reserve force, serve as a command platform, or provide vital logistic support.

RECOVER

Naval forces are capable of extracting large numbers of personnel and volumes of equipment from the theatre. However, doing so is predicated on the possession of the right kinds of ships that can provide dedicated sea-lift capability. Once the RCN places the JSS in service, it will have a limited capability in this regard. However, much like for NEO operations, RCN ships can provide security and escort for contracted commercial vessels employed to recover CAF personnel and equipment from theatre and transport back to Canada.

88 RCN Naval Security Teams (NST), composed primarily of naval reservists with a regular force command and team designed to support specific missions with capabilities such as security or 'force protection' section, a tactical boat section, a mobile repair team and intelligence support, are particularly well suited to such a task.

CHAPTER 5: RCN ROLE 2 – MARITIME SECURITY



Maritime security can be defined as "freedom from the risk of serious incursions against a nation's sovereignty launched from the maritime domain, and from the risk of successful attack against a nation's maritime interests."[89] More broadly, the concept also includes a global maritime commons free from disruption, crime, terrorism, and deliberate or accidental misuse or damage.

CANADA'S OCEAN ESTATE

Canada borders three disparate oceans; the Atlantic, Pacific and Arctic. The RCN's most fundamental maritime security responsibility is to protect this country, including its territorial waters, from a broad range of security threats that may attempt to gain improper access to Canadian territory, or cause Canada harm, directly from the sea or through its ports and marine infrastructure. Understanding the significant challenges demands an appreciation of Canada's ocean estate, one of the world's most challenging operating environments:

- Canada's coastline is 202,080 km long.
- Canada's total ocean estate covers a surface area of approximately 7.1 million square kilometres. This represents an area equivalent to about 70 percent of Canada's land mass.[90]
- Canada's territorial waters, also known as the "territorial sea", are an area of the sea extending to an outer limit 12 nautical miles seaward, measured from the shore. Canada has sovereignty over the airspace, water, seafloor and subsoil in this zone.[91]

89 D. Hodges, "What is International Maritime Security?", Strategic Outlook (Center for International Maritime Security: Washington D.C., 8 September 2012), (accessed on 31 May 2016 at http://cimsec.org/what-is-international-maritime-security).
90 Fisheries and Oceans Canada, Defining Canada's Maritime Zones (accessed on 01 Aug 2017 at http://publications.gc.ca/collections/collection_2012/mpo-dfo/Fs23-571-2011-eng.pdf).
91 For a more detailed description of this and other areas of the maritime domain, see: Commander Royal Canadian Navy, Royal Canadian Navy Strategic Lexicon, p. 65 (Draft).

- Severity of weather is a defining feature of waters in northern latitudes. Extreme conditions of temperature, wind, and ice complicate and endanger all aspects of shipboard life and naval operations. In arctic waters, personal survival for those exposed to the elements and in need of rescue will often be measured in mere minutes.
- The Arctic is further characterized by extremes of climate and distance from the populated south. It is noteworthy that the entrances to the Northwest Passage are respectively further from the homes of the RCN's east and west coast fleets, Halifax and Victoria, than are London and Tokyo respectively.
- With the exception of Churchill, Manitoba (which is far removed from most marine corridors), there are no major ports in the Arctic from which operations can be supported.
- The Canadian Arctic Archipelago remains inaccessible by sea for all but a short season in the late summer and early fall. Even then, the sea ice within the archipelago is only partially navigable by vessels that are specially designed to operate within it, or by vessels supported by icebreakers and tugs.
- From both the Canadian Arctic Archipelago and Greenland icebergs are projected southwards to the Grand Banks of Newfoundland by the Labrador Current.
- Climate change will allow for more ice-free days but dangers to shipping will remain due to poor charting and free-floating ice. Increased activity will place increased demands on the RCN from both a SAR and sovereignty perspective.

CHALLENGES TO MARITIME SECURITY

Countries are now confronted with an expanding array of challenges in the maritime realm. On one hand, non-state actors, such as traffickers, pirates, and terrorists exploit the vast global maritime commons with its many access points for illicit and/or dangerous activities. On the other hand, the policies of some countries threaten serious geopolitical and economic consequences by challenging the traditional rights to freedom of

navigation, especially along some of the world's most important trade routes. While challenges to good order at sea have existed since the earliest seafarers, their scope and scale today is new. Having emerged in recent decades, they challenge the ability of nation-states to regulate domestic and international maritime activity and can range from relatively benign to adversarial and potentially violent conflicts.

Maritime security challenges are also the product of some countries' poor or inadequate capacity for governance. Much of the world's oceans remain safe for lawful commerce, and many of the world's coastal states are able to regulate their waters effectively. However, some states lack the capacity to exercise legal authority in their ocean estates and, in coming decades, it is likely that a growing number of them will not be able to secure their ocean approaches from the challenges that currently exist or are emerging. Two important consequences flow from this:

- the prosperity, stability, and governance capacity of affected coastal states could be undermined, with a cascading effect on inland regions and other issues, such as significantly increased human migration; and
- adjacent littorals and ocean spaces could be placed at risk from a range of criminals, terrorists, non-state actors, and irregular forces that would use the oceans as a springboard for their operations and as a superhighway to support the flows of information, money, weapons, and personnel that sustain them.

For the RCN the importance of its maritime security role has grown significantly in the past four decades and will continue to do so. As a result of the *United Nations Convention on Law of the Sea* (UNCLOS), Canada has one of the world's most expansive and richest ocean estates.[92] One component of the security and protection of that ocean estate is the RCN's maritime security role.

MARITIME SECURITY OPERATIONS

The RCN's maritime security role encompasses operations at home and abroad to defend Canada and the global maritime order from threats and challenges. Doing so is fundamental to Canada's security and prosperity. They encompass the broadest range of naval missions, from the conduct of Search and Rescue (as part

92 The United Nations Convention on the Law of the Sea (UNCLOS), also called the Law of the Sea Convention or the Law of the Sea treaty, is the international agreement that resulted from the third United Nations Conference on the Law of the Sea (UNCLOS III), which took place between 1973 and 1982.

of safety and security at sea), to the provision of assistance to other government departments and agencies to the conduct of maritime interdiction and counter-terrorism operations. Maritime security operations are found on a continuum that spans a wide range of activities that can be grouped in three categories. Due to the dynamic and fluid environment in which military operations take place, there is significant overlap between the categories. In escalating order of the degree of force normally applied, the categories are:

1. Assistance Operations – generally not involving the use of armed force, focused on rendering assistance and contributing to safety and security at sea:

2. Support to Other Government Departments and Agencies (OGDA) – RCN support provided to other government departments conducting operations in accordance with their own legal domestic mandates, including the possible use of armed force; and,

3. Naval Security Operations – security operations at sea that are distinctly naval in character and conduct, not engaging the legal mandates of OGDAs, undertaken in the national interest, and while the threat or use of armed force is not inevitable, it is presumed to be likely.

Again, it is important to understand that these are not exclusive categories and that some overlap between them can occur, as it can between the high end of Naval Security Operations and the low-end of RCN warfighting.

ASSISTANCE OPERATIONS

The safety of vessels and persons at sea is an important attribute of a regulated ocean commons and of good order at sea. As such, the rendering of assistance to those in distress is not only an obligation under the International Convention for the Safety of Life at Sea (SOLAS) and UNCLOS, but also serves to reinforce the common bond formed between mariners of all maritime nations.[93] Such bonds help build confidence and mutual respect which leads to greater stability and security. Thus, the conduct of search and rescue (SAR) by the RCN is not only a humanitarian activity but very much a maritime security activity as well.

The conduct of search and rescue at or from the sea, can involve the use of aircraft, surface vessels, submarines, specialised rescue teams and equipment to assist personnel in distress on land or at sea. It is an important national responsibility for the RCN as part of a complete CAF capability, as well as a longstanding international obligation.

93 UNCLOS Part VII, Section 1, Article 98 (1) states that every signatory to the convention must require the master of a ship flying its flag to render assistance to any person found at sea in danger of being lost and to proceed to the rescue of persons in distress. SOLAS Chapter V (Regulations), Article 33 sets out the obligation on ships' masters to render assistance thus: "... the master of a ship at sea which is in a position to be able to provide assistance, on receiving a signal from any source that persons are in distress at sea, is bound to proceed with all speed to their assistance, if possible informing them or the search and rescue service that the ship is doing so."

Humanitarian assistance and disaster relief (HADR) is an important contribution to the maintenance of global maritime security. A coastal nation (particularly a developing, impoverished, or weakly governed nation) experiencing disorder as a result of natural or man-made disasters can degrade to the point that it may then threaten regional and global maritime security. The provision of assistance to those in need is also a core Canadian value. HADR comprises activities undertaken by military forces, in cooperation with civil authorities, to provide aid in the wake of natural or human-induced disasters, such as hurricanes, floods, forest fires, chemical spills or nuclear accidents.

Navies can provide unique and value-added contributions to HADR operations, whether led by the military, other government departments or non-governmental and international organizations. The logistics and personnel capabilities resident in RCN warships can facilitate the early restoration of rudimentary services necessary to support second and third wave relief efforts.

SUPPORT TO OTHER GOVERNMENT DEPARTMENTS AND AGENCIES

In Canada, no federal department is solely responsible for dealing with maritime security issues. The Government of Canada uses an integrated, multi-departmental approach that harnesses various mandates, capabilities, and expertise to address maritime security priorities. Transport Canada is tasked with responsibility for marine safety, security policy coordination, and regulatory leadership. Public Safety Canada is charged with law enforcement and policing. As a core partner in addressing Canada's maritime security requirements, the RCN collaborates with Other Government Departments (OGDAs) in various interdepartmental working groups as part of the larger whole of government effort.

The legitimacy of RCN support to OGDA is derived from the legal mandate of the department or agency being supported. The Navy provides unique capabilities (up to and including the threat or use of force) to support those federal government departments in the exercise of their mandates. Although frequently conducted in Canada's territorial waters, they may also take place in North American waters or even further abroad. Examples include:

- assistance to the Department of Fisheries and Oceans (DFO) in regulating and protecting Canada's fisheries. Such operations are known as fisheries patrols;
- assistance to the DFO, Environment Canada, Transport Canada, and the Royal Canadian Mounted Police (RCMP) for the prevention, monitoring, and possible collection of evidence against vessels polluting in Canadian waters or otherwise illicitly damaging the maritime environment;
- assistance to the RCMP and the Canada Border Services Agency (CBSA) in countering transnational crime such as the illicit trafficking of drugs, weapons, or people;
- assistance to Citizenship and Immigration Canada, RCMP, and CBSA in countering illegal migration;
- assistance to various OGDA for the surveillance and protection of offshore industries, the monitoring of the natural environment and activities within it, and the protection of the quality of Canada's maritime environment and the economic interests that rely on it;
- assistance to various OGDA, as part of a whole-of-government approach, to provide security for major international events in Canada such as the Olympics or G7/G20 meetings; and

- Aid of the Civil Power under the *National Defence Act.* The attorney general of a province may request the CAF be called out for service in aid of the civil power in any case in which a riot or disturbance of the peace, beyond the powers of the civil authorities to suppress, prevent or deal with and requiring that service, occurs or is, in the opinion of the attorney general, considered as likely to occur.[94]

NAVAL SECURITY OPERATIONS

RCN naval security operations are generally military in nature, conducted by the RCN either alone, or with allies or partners, but not in support of other Canadian government departments. They also involve a greater likelihood of the use of force and/or a greater level of force required. Therefore, this type of operation resembles those at the lower end of the RCN's warfighting role. Unlike the warfighting role, that is conducted in response to a specific situation, crisis, or conflict, naval security operations might be conducted on a routine and on-going basis. Surveillance and sovereignty patrols are examples of ongoing naval security operations, conducted as part of the RCN's maritime security role but not considered even low-end warfighting. Naval security operations are similar to operations conducted in support of OGDAs, in that they might occur either in territorial waters or in international waters. There is, however, a fundamental distinction between the two categories. Whereas support to OGDA derives its legitimacy from domestic law and the mandates of various government departments, naval security operations are undertaken in support of strategic interests, including Canadian support for UN or NATO missions.

Naval Security Operations are conducted via three major, overlapping lines of effort: maritime domain awareness (MDA), presence, and control.

MARITIME DOMAIN AWARENESS

It is impossible to counter challenges at sea, or to defend against a threat, without first being aware of their existence. The understanding and knowledge of anything associated with the maritime domain that could impact domestic or international security and safety, the global economy or environment is referred to as Maritime Domain Awareness (MDA).[95] This includes the effective knowledge of maritime-related activities, infrastructure, people, cargo, vessels, or other conveyances on,

94 National Defence Act, Part VI - Aid of the Civil Power, Sections 274-278

95 Maritime domain awareness means having true and timely information about everything on, under, related to, adjacent to, or bordering a sea, ocean or other navigable waterway. This includes all related activities, infrastructure, people, cargo, vessels, or other means of transport. Marine security refers to being aware of anything in the marine domain that could threaten Canada's national security. See Transport Canada, Maritime Domain Awareness (accessed on 31 May 2016 at www.tc.gc.ca/eng/marinesecurity/initiatives-235.htm).

under, related to, adjacent to, or bordering a sea, ocean, or other navigable waterway. MDA is of fundamental importance to sovereignty in Canadian territorial waters and Canadian legal rights, under UNCLOS, in the country's EEZ. It is crucial for the RCN to possess an awareness of the maritime domain – an understanding of *who* is operating above, on, and under Canadian waters, *what* they are doing and *why*. Domestically, understanding what is taking place in Canada's maritime domain is vital to the management of Canadian waters and the protection of Canada's national interests. Such knowledge is necessary if Canada is to take action as early as possible against potential threats and, ideally, before they enter Canada's ocean approaches.

MDA is enabled by a number of capabilities including intelligence, surveillance, and reconnaissance, and is an integrated effort conducted by many different platforms including ships, submarines, UAS, maritime helicopters, maritime patrol aircraft, and space-based systems. Each is a part of a coordinated effort to build a comprehensible picture of Canada's maritime zones and interest areas – both domestic and international. This picture further contributes to global awareness throughout all domains (air, land, maritime, space, and cyber) by means of shared information with partners and allies.

MDA, in the waters under Canadian jurisdiction as well as globally, requires a coordinated effort among federal government departments and agencies, as well as with allies and trusted partners, other levels of government and key stakeholders. Its effectiveness results from an ability to collect, fuse, and analyze data; flag any abnormalities or concerns; bring together the right decision-making authorities; and present to them actionable information in a timely manner. The RCN is the lead agency for the federal government's Regional Joint Operation Centres (RJOC) and a member of the Marine Security Operation Centres (MSOC)[96]. These facilities have the technological feeds to fuse Canadian space-based ISR information, with maritime operational intelligence and commercial shipping databases to provide national authorities with necessary information in a timely manner, on a daily basis. Importantly, the MSOCs are staffed not just with military personnel but also with necessary representation from other government departments and agencies, including the Canada Border Services Agency, Department of Fisheries and Oceans/Canadian Coast Guard, Department of National Defence, Royal Canadian Mounted Police and Transport Canada. Even more important, the MSOCs are the hubs that support and exercise the multitude of relationships that are necessary for effective multi-jurisdictional incident response. In doing so, they work hand-in-glove with Canadian federal, provincial and local government authorities, as well as Canadian private sector stakeholders, the US Coast Guard, the USN, and the International Maritime Organization (IMO).[97]

PRESENCE AND SOVEREIGNTY PATROLS

Often, the mere presence of naval forces, particularly with their many organic capabilities, is sufficient to head

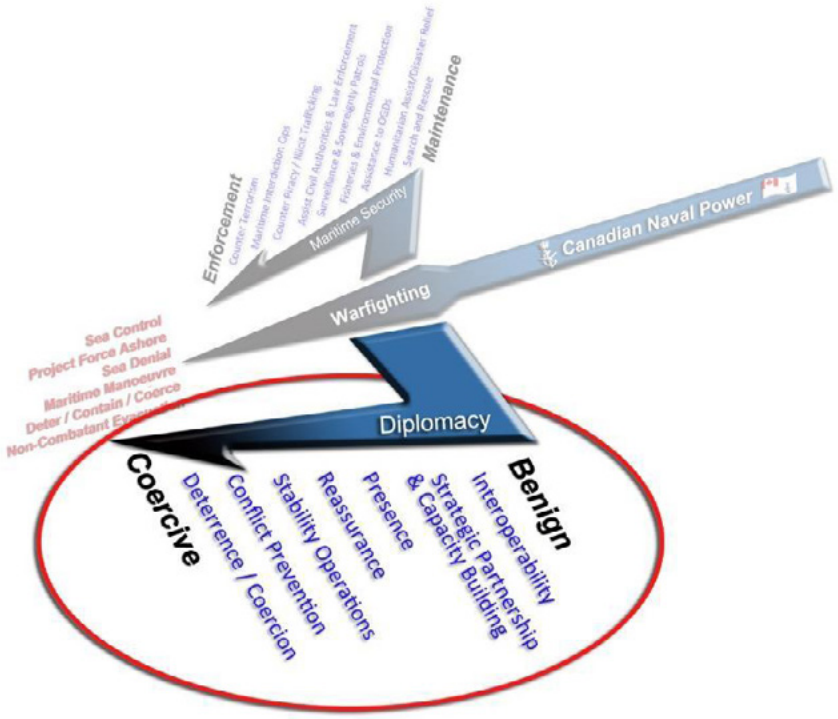
96 East and West Coast MSOCs are located in Halifax and Victoria respectively, and the Great Lakes St. Lawrence Seaway MSOC is located in Niagara. The MSOCs are staffed by federal government departments and agencies responsible for marine security, asset support or maritime expertise, including the Department of National Defence, Royal Canadian Mounted Police, Department of Fisheries and Oceans-Canadian Coast Guard, Canada Border Services Agency, and Transport Canada. The MSOCs enable their partner government departments and agencies to work together and share intelligence, surveillance and reconnaissance information (within the legal mandate of agencies / departments) through interagency staffing and collaboration, which in turn allow the MSOCs to support an organized response to potential marine threats and avoid duplication to both efforts and resources; See Transport Canada website, Marine Security Operations Centres (Ottawa: 2013) [accessed on 31 May 2016 at www.tc.gc.ca/eng/marinesecurity/operations-269.html].

97 The International Maritime Organization (IMO), known as the Inter-Governmental Maritime Consultative Organization (IMCO) until 1982, is a specialised agency of the United Nations responsible for regulating shipping.

off maritime security challenges – similar to the way in which a police presence may be sufficient to address crime – and to deter threats. Sovereignty is a state's right to jurisdictional control within recognised borders and implies non-interference by outside states. The RCN, whether deployed internationally or in home waters, provides a clear demonstration of Canada's commitment to maritime security and upholding good order at sea. Its ability to apply military force provides a potent backup to its national presence. The most important and prevalent form of presence exercised by the RCN as part of domestic maritime security is the sovereignty patrol. Within Canada's area of maritime jurisdiction, these patrols are conducted in order to demonstrate Canada's sovereignty, to reinforce its claims in contested waters, and to otherwise "show the flag".

CONTROL

Control is the ability for the RCN, independent of other agencies/actors, to more forcefully exert its presence precisely where and when needed, including the latent or actual use of force to control events at sea and compel others to respect Canadian or allied interests. Control operations execute the national will to take military action to prevent harm from imminent threats. It includes all efforts to monitor, deter, and if necessary, intercept and successfully confront threats posed by terrorists, and the challenges associated with criminals and other non-state actors. It is very similar to Sea Control and might be conducted as part of warfighting (as described in a previous chapter). However, this type of activity occurs without the onset of actual hostilities and is most often on a much smaller scale than the type of sea control associated with warfighting. Control includes operations to ensure the physical security of maritime infrastructure, including ports and vessels, as well as other critical infrastructure in or around areas of maritime responsibility, such as offshore platforms. Such operations may be conducted in order to create an environment that precludes terrorist or criminal activity and prevents potentially threatening persons or devices from entering a country or any part of its maritime system.



CHAPTER 6: RCN ROLE 3 – DIPLOMACY

The third doctrinal role, diplomacy, is the use of the RCN to support foreign policy but without resorting to deadly force. The aim is to influence the policies and actions of other countries, including allies and partners, as well as potential adversaries. The RCN conducts a variety of missions in this role, ranging from engagement with allies to coercive efforts to prevent conflict or deter adversaries. As always, overlap can occur between these activities and those of the maritime security and warfighting roles. This is particularly the case with regard to the coercive end of the diplomatic spectrum. There, the success of RCN naval diplomacy missions relies upon the credibility of naval forces to apply or threaten the use of military power, and pointedly the ability to adjust the level of force required to a specific situation. At the other end of the diplomatic role are activities such as contributing to interoperability with allies and international partners, as well as strategic partnerships and capacity building.

GLOBAL ENGAGEMENT

The versatility and mobility of naval forces, along with the status and immunity of a warship, positions them as useful tools for foreign policy. Any such influence nonetheless requires sustained investment in global engagement (GE) that creates worthwhile relationships and develops trust. When executed effectively, GE promotes the development and maintenance of stable relationships between the engaged states and encourages co-operation and conciliation in the management of these relationships. It is a gradual and deliberate process that takes time, effort and persistence. Through global engagement, the RCN demonstrates national intent and resolve, ranging from goodwill port visits, to participation in multilateral military exercises, to the provision of training support to the armed forces of other countries.

INTEROPERABILITY

An important component of GE is regularly operating with allies and partners not only to achieve a level of familiarity and trust, but also in order facilitate degrees of interoperability that will enable a quick transition to combined operations during times of crisis. This interoperability encompasses not only technical and equipment compatibility, but also shared and mutually supportive approaches to generate, develop, and employ naval forces. While the foundation of naval interoperability rests on the conduct of multinational, complex, and realistic exercises at sea, it is further enhanced through exchanges of personnel, information, and intelligence sharing, and collaborating on the development of future tactics, maritime research and capability acquisition.

STRATEGIC PARTNERSHIPS & CAPACITY BUILDING

The RCN helps maintain Canada's ties with its traditional allies and trusted partners by sharing the burden for securing the global maritime commons, and by contributing collectively when responding to crises that have a maritime dimension. Capacity building focuses on assisting the development of naval and maritime exper-

tise in other coastal states. Assisting in the development of an effective navy can enhance the security of the partner-country, and also contribute to improving regional stability by encouraging economic growth through local ocean resource exploitation and increased maritime trade.

Enhancing the maritime security capacity of other coastal states and the defence of good order at sea build and reinforce Canada's influence and leadership abroad.

Effective partnership and capacity building sets the stage for information sharing, coordination, cooperation, and unified action for the resolution of common security problems. It entails horizontal sharing of information between government departments, intelligence, and law enforcement agencies as well as vertical sharing between first responders, regional agencies, federal agencies, and international organisations. Such collaboration is a critical piece of the national and maritime security system in that shared knowledge and information are integral to conflict prevention.

OPERATIONAL ENGAGEMENT

For the RCN, operational engagement is the primary tool for conducting GE. Canada's participation in the Five Eyes Community[98] is a case-in-point, for membership confers advantages in a number of areas including intelligence-sharing, as well as regular exchanges of operationally-significant information and experience. Resource and burden-sharing with the four other like-minded navies is highly valued because it works to the mutual benefit of all and, over several decades, has created a community of trust. Regional exercises such as UNITAS[99] and the TRADEWIND[100] series, are intended to expand Canadian influence in South America as well as providing new opportunities for training. These efforts are reinforced by Defence Outreach which schedules port visits to countries where increased input is being sought in support of Government of Canada diplomatic objectives. Furthermore, there are standing operational commitments in the Caribbean to participate in the Joint Interagency Task Force – South's (JIATF South) efforts to combat illicit narcotics trafficking. The RCN has participated in these efforts for almost a decade under Operation CARIBBE.

NAVAL DIPLOMACY

While GE primarily focuses on developing relationships, cultivating communities of interest, and capacity building, Naval Diplomacy can be defined as the use of naval power to advance national interests or achieve specific foreign policy objectives. Such activities are designed to directly influence specific policies of, and induce actions by, other countries.

Naval Diplomacy is an on-going activity that can occur throughout the continuum of operations. When one

98 The Five-Eyes Community refers to Australia, Canada, New Zealand, the United Kingdom, and the United States.
99 UNITAS is a multinational maritime exercise conducted to enhance security cooperation and improve coalition operations. UNITAS trains forces from the Western Hemisphere in a variety of maritime scenarios.
100 Exercise TRADEWINDS is a multinational maritime interdiction, ground security and interagency exercise led by the U.S. Southern Command (USSOUTHCOM). It focuses on countering transnational organized crime and practicing humanitarian assistance and disaster relief (HADR) to promote regional security cooperation.

portion of a force is involved in operations, other elements may be engaged in dialogue, outreach and coordination with allies, partners and other international players, both inside and outside the zone of conflict.

Specific activities encompassed by naval diplomacy include presence, messaging, reassurance, stability operations, conflict prevention, deterrence and coercion. In many cases, there is overlap between these activities and those conducted to enhance maritime security and at the lower end of the warfighting role. For example, use of the RCN to demonstrate presence can occur in Canadian waters via a sovereignty patrol, making it also a component of maritime security, or it might take place in international waters far from Canada as part of Naval Diplomacy, as explained below.

PRESENCE & MESSAGING

In terms of naval diplomacy, Presence refers to the use of naval forces to convey an interest in a particular region of strategic significance. Presence operations can range from calculated, strategic port visits to a transit through particular waters (especially strategically significant or contested waters), to stationing in the vicinity of a country's coast or territorial waters. Presence is not itself a threat of force, but a demonstration of capability that can be used to reassure, to impress or even to warn, as circumstances dictate. As a visible indication of Canada's interest, commitment and resolve, presence assists in gaining influence and/or preventing conflict.

A country's foreign policy consists of strategies chosen by the state to safeguard its national interests and to achieve goals within its international relations. A key approach to achieving its goals takes the form of messaging, or using various policy instruments to indicate strategic intent. The simple presence of an armed force can present a significant message, communicating intent and resolve to both adversaries and allies. The deployment of a naval force such as an NTG with the inherent ability to self-sustain itself in a region sends a powerful message. Once deployed, the message can be changed by modifying the profile and posture of the force. Of equal importance is a navy's ability to easily disengage, deescalating a confrontation and/or conflict, yet remaining ready to quickly reengage. As one study notes,

> *(t)he fact that naval forces can 'loiter' and be minimally intrusive is an important and unique contribution to deterrence. The Army can loiter, but it cannot be minimally intrusive; the Air Force can be minimally intrusive (although, because it still needs some land-based infrastructure, it is more intrusive than maritime forces), but it cannot loiter. Only naval forces can do both simultaneously.*[101]

101 M. Gerson and D. Whiteneck. Deterrence and Influence: The Navy's Role in Preventing War (Center for Naval Analyses: Alexandria, Virginia, 2009), p. 5.

The versatility of a naval force provides the government with more options in terms of greater subtlety of message content than any other military force.

REASSURANCE

Reassurance entails the provision of support to foreign governments. It seeks to work both on the minds of allies and partners, as well as on potential or actual adversaries. Such support may well dissuade third parties from aggression, and lessen the circumstance under which armed conflict might occur. On the other hand, reassurance can reinforce ongoing diplomatic efforts or negotiations. In the case of an international crisis, before hostilities commence, the presence of naval forces can be used to signal interest in a country and/or region while simultaneously demonstrating support to a foreign Power. An example of this use of naval power in which Canadian ships participated is the Standing NATO Maritime Group One (SNMG1) operating in the Baltic Sea in 2017 during Operation REASSURANCE. A country reassured by the presence of naval forces is more likely to provide access, basing, and overflight permission for the joint force. Reassurance using naval assets need not occur only at times of crisis. It can occur under a more formal mandate as evidenced by the maritime peace-keeping Task Force of the United Nations Interim Force in Lebanon (UNIFIL) which monitors the maritime boundary between Lebanon and Israel, and assists Lebanese naval forces in interdicting arms shipments to armed factions such as Hezbollah.

STABILITY OPERATIONS

Stability operations are conducted in the wake of conflict after violence has ceased. The goal of such operations is to stabilise a fragile state and society and to create the security conditions that allow rebuilding, development and governance measures to be implemented.[102]

Canada's naval forces can contribute in myriad ways to stability operations. In the early stages, they can provide facilities to assist with stability and security development such as mine clearance, the opening of ports, ordnance disposal and salvage, the provision of a neutral venue for talks, and, particularly with embarked maritime helicopters, the provision of logistic support to efforts ashore. Moreover, specialist naval personnel can be employed as military observers, liaison officers, headquarters staff officers, disarmament inspectors or in medical or communications teams. As stability is achieved, the RCN can be employed in providing the security conditions in the littoral that allows other government departments and non-governmental organisations to conduct rebuilding and development activities.

102 Stability is achieved through the process of stabilization through the balanced application of the instruments of national power in partnership with the host nation (HN) and local communities. Stabilization is the process by which military and non-military actors collectively apply various instruments of national power to address drivers of conflict, foster HN resiliencies, and create conditions that enable sustainable peace and security; Chairman of the Joint Chiefs of Staff, Joint Publication 3-07, Stability (Washington, D.C., 2016), p. I-1.

CONFLICT PREVENTION / DETERRENCE

The aim of this form of naval diplomacy is to prevent disputes and other crises from developing, and of existing ones from escalating. Conflict prevention is intended to create space for a diplomatic effort to resolve international conflicts peacefully before hostilities erupt into armed clashes. Conflict prevention overseas can shield Canadians from possible economic and humanitarian shocks that accompany armed struggles. Effective conflict prevention promotes economic and social development, fosters stable relationships between states and encourages cooperation in the conduct of international affairs. Furthermore, conflict prevention appears under the umbrella of naval diplomacy because there must be an on-going dialogue both amongst states and between militaries in order to gain the mutual understanding necessary for the effective conduct of operations, and the proper allocation of limited defence resources to confront collective security challenges.

The RCN is well suited to contribute to conflict prevention through unobtrusive and cost-effective early engagement with other states. Examples of this include its at-sea support (i.e., upholding an arms embargo) after the Dayton Peace Agreement (1995) was signed and its contribution to the UN mission for East Timor (INTERFET 15 Sept 1999 – 10 April 2000). Backed by the attributes of naval forces such as access, mobility, and persistence, and employing a wide range of naval roles and missions (presence, reassurance, deterrence and coercion), the RCN is a flexible tool that can be employed to contribute to global stability while at the same time increasing strategic MDA. The inherent flexibility of a navy is no better displayed than in the unfortunate circumstances following the failure of conflict prevention efforts. At that point, naval forces by their very nature, can adapt quickly to provide immediate military support.

COERCION

When other diplomatic methods have not produced the desired outcome, the RCN might be called upon to provide coercion. Coercive diplomacy overlaps with the low-end of the Navy's warfighting role as discussed in Chapter 5.

CHAPTER 7: THE THOUGHT BEHIND THE FIGHT (THE COGNITIVE COMPONENT OF CANADIAN NAVAL POWER)

The military capabilities and the reputation of its naval forces are important elements in any calculation of a country's naval power. Canadian naval power is characterized by three inter-related components - the cognitive, the moral and the physical - that together constitute the means by which the RCN operates and fights. This chapter examines the first. As previously noted, since there is often overlap between the three naval roles, these components apply, depending on circumstances, to a lesser or greater extent, to Warfighting, Maritime Security, and Diplomacy.

THE COGNITIVE COMPONENT

The cognitive component is the thought process that provides the intellectual basis and theoretical reasoning required to develop, generate, and employ naval power. Doctrine, concept development, capability based planning, and the structure and organization of naval fleets and their component parts, are all parts of the cognitive component.[103]

This component provides the intellectual basis, legal justifications, and organizational thought required to train, equip, and lead naval forces to fight and ultimately, win. The cognitive component combines insights derived from history (both one's own and the experience of others)[104] with the reasoned analysis of an unpredictable strategic environment in order to decide how naval forces can most effectively be employed today. It also provides insights to address the challenge of thinking about the future. The elements of the cognitive component, applied with imagination and initiative by operational commanders, empowered by understanding, leadership, and decision making, are the intellectual foundation of Canada's naval power.

MARITIME LAW AND THE LAW OF ARMED CONFLICT (THE LEGAL DIMENSION OF MARITIME OPERATIONS)

Over 90 percent of global trade is moved by maritime transportation underpinning the global economy. Regulatory stability and security within the global maritime commons is therefore key to economic stability. International legal regimes, maritime law in this case, reduce uncertainty and therefore the transactional

103 The cognitive component is known as the "conceptual component" in Canadian Joint and some allied naval doctrine. However, RCN strategic doctrine uses the term "cognitive" as the word "concept" carries the connotation of an unproven idea, and to avoid confusion with "concept" development which is but an element of the cognitive component.

104 In the CAF, these insights are formally captured as part of a lessons learned process, as directed by DAOD 8010-0. The DTB (record 27843) defines lessons learned as: "[t]he adding of value to an existing body of knowledge, or seeking to correct deficiencies, in areas of concepts, policy, doctrine, training, equipment or organizations, by providing feedback and follow-on action. DAOD 8010-0 states, in part: "[a]ll major staff activities can benefit from, and contribute to, a lessons learned (LL) process. The implementation of a vigorous DND and CAF LL program ensures accountability of DND managers and CAF commanders at all levels through the use of a feedback loop, thereby minimizing the repetition of errors. As the operational component of the LL program, the LL process results in tangible changes in attitudes, capabilities and behaviours."

costs of global commercial networks and thereby promote stability for the global economy. Furthermore they regulate the use of the world's oceans in order to minimize conflict and promote environmental sustainability.

International law is intended to provide a framework to channel state behaviour in predictable ways, constrain the resort to armed conflict, and, should it nonetheless occur, regulate the use of deadly force. There are two principal legal regimes that govern the operations of warships in international waters. The first is the *United Nations Convention on the Law of the Sea* (UNCLOS) which dictates the conduct of all sea-going vessels. The second is the *Law of Armed Conflict* (LOAC), which is a body of laws that provide for the conduct of combat operations, the treatment of prisoners, and the legality of the use of armed force. Both international legal streams are equally important to the conduct of naval operations because the fluid nature of the maritime operating environment can quickly see peacetime maritime operations transform into armed confrontation. This is particularly noteworthy when transiting contested waters or when confronted by tense situations arising from conflicting interpretations of maritime law.

THE UNITED NATIONS CONVENTION ON THE LAW OF THE SEA[105]

UNCLOS, which is sometimes referred to as the constitution of the world's oceans, is the normative/legal framework within which many maritime issues will continue to be addressed by coastal and user states.[106] It applies both in peacetime and during times of armed conflict.[107] In effect since 1994,[108] UNCLOS seeks to reconcile the traditional emphasis on the freedom of the seas, to which all states have access, with more recent claims made by countries to control their maritime estates. To accomplish this goal, UNCLOS recognises the

105 See the discussion of UNCLOS in See Ben Lombardi, The Future Maritime Operating Environment and the Role of Naval Power, DRDC-RDDC-2016-R085 (Defence Research and Development Canada: Ottawa, May 2016), pp. 13 & 32-35.

106 For the idea that UNCLOS represents a balance between exclusive and inclusive approaches to the oceans, see Natalie Klein, Maritime Security and the Law of the Sea (Oxford University Press, 2011), pp. 3-18. A coastal state is the state that would have jurisdiction over a specific portion of the ocean. User states are all other states transiting or operating within these waters.

107 B-GJ-005-104/FP-024 – Operational Law Manual (CAF: ver 4-1a 2007). p. 20-2

108 UNCLOS III was not received into Canadian Law until 7 December 2003.

demand by coastal states for exclusive control over the resources found in adjacent waters, hence the creation of the 200 nautical mile wide Exclusive Economic Zones (EEZ) alongside a 12 nautical mile territorial sea in which states enjoy exclusive sovereignty (see Figure 4 below). In doing so, UNCLOS reasserts the principle of a regulated ocean commons where all vessels may transit unimpeded.

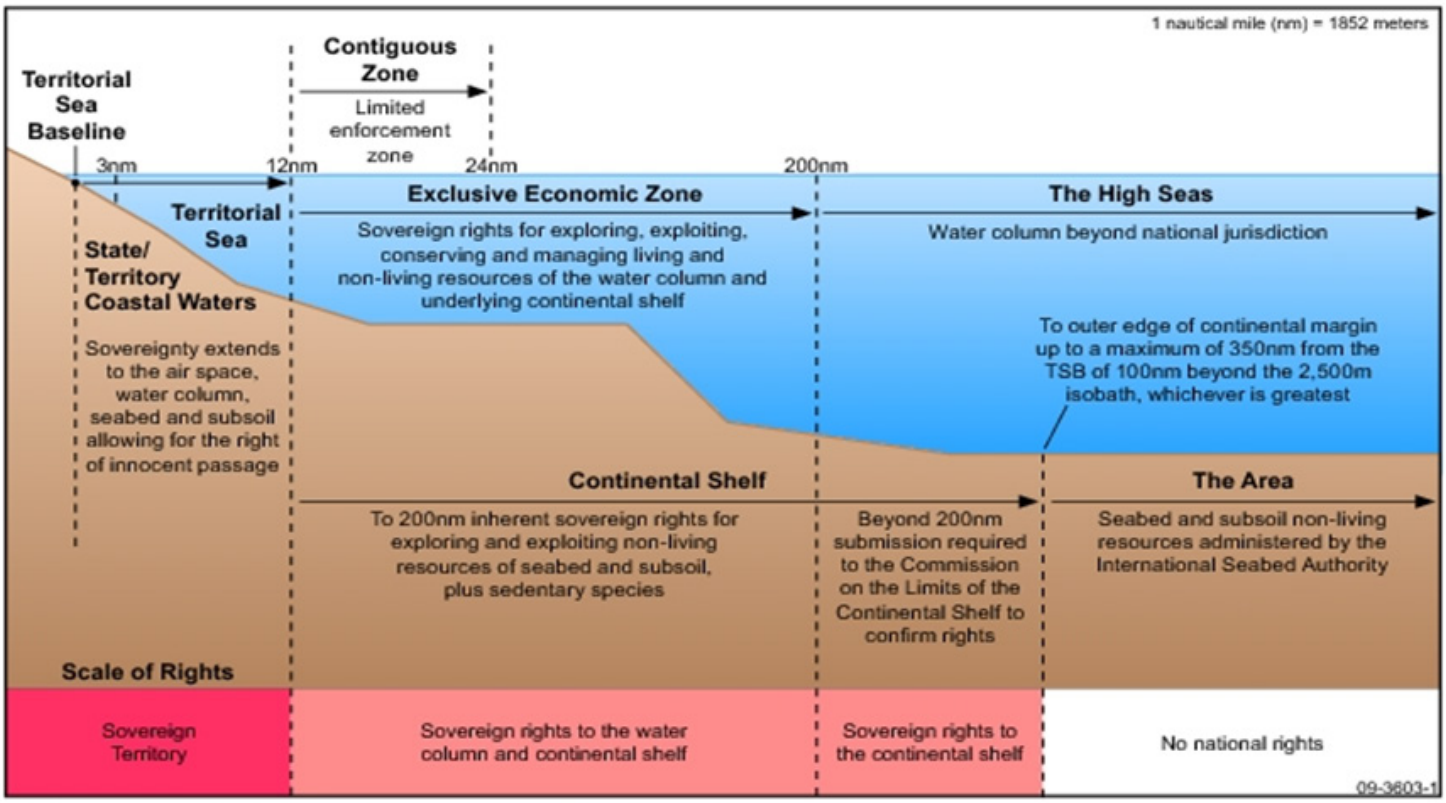


Figure 4 - Offshore Maritime Zones Recognised under International Law Source.[109]

Although a coastal state is recognized as having sovereignty over its territorial waters, it is also recognized that ships, including foreign warships, have the formal right of *innocent passage*.[110] So long as a vessel's passage is "continuous and expeditious", and it does not commit any provocative act or violate the coastal state's laws, the transit of the vessel should not be interfered with. It is important to note that innocent passage concedes a coastal state's sovereignty whilst freedom of navigation contests it. Warships enjoy additional immunities, in so far as they are not subject to a coastal state's laws in either the territorial sea or EEZ.[111] While coastal states do not hold exclusive jurisdiction over their EEZ, they do enjoy sovereign rights over the resources found within the water column and along its seabed.[112]

109 Figure 4 is taken from the website of the National Oceanic and Atmospheric Administration, Office of Coastal Survey www.nauticalcharts.noaa.gov/nsd/xml2html.php?xml=coastpilot/files/cp7/CPB7_E47_C01_20150112_0913_WEB.xml.
110 UNCLOS, Arts 17-32.
111 UNCLOS, Art 32.
112 UNCLOS, Art 56.

Figure 5 – Canadian EEZ[113]

In this zone, coastal states have the right to determine who can exploit these resources, how the exploitation can be done, and how much of any given resource may be taken. This jurisdiction gives the coastal state the right to board, inspect and detain foreign vessels and their crews that are found violating environmental and fisheries laws in the EEZ.[114] Apart from regulatory limitations, all ships may transit, loiter and operate in an EEZ without interference by the coastal state or any other vessel. Aircraft can also operate subject to any air traffic control restrictions.

As with any treaty, tensions have arisen over the interpretation of UNCLOS, largely as a result of competing claims over natural resources, and in some instances historical right. One need look no further than the on-going dispute over the Spratly Islands in the South China Sea to see how varying interpretations could lead to conflict.[115] The competition for resources has even sparked crisis in Canadian waters as evidenced by the so-called "Turbot War" (1994 to 1996) between Canada and Spain over fishing and adjacent to Canada's Atlantic EEZ along the edge of the Grand Banks.

Beyond the EEZs lies the High Seas, where all ships enjoy freedom of navigation, freedom to fish IAW international regulations, and aircraft enjoy freedom of overflight.[116] UNCLOS sets out duties that are imposed upon warships. There is a general duty for all mariners to render assistance to persons in danger of being lost at

113 Map by Maj JCW (Bill) Ansell, created using Google Earth Pro combined with the Flanders Marine Institute EEZ shapefile database including two global GIS-layers: one contains polylines that represent the maritime boundaries of the world countries, the other one is a polygon layer representing the Exclusive Economic Zone of countries, copyright Flanders Marine Institute (2016) Maritime Boundaries Geodatabase, version 8. Available online at http://www.marineregions.org/. Accessed 03 Oct 2016 and used with permission.
114 UNCLOS, Art 73. Once the crew reaches port, they are to be released and are free to return to their country of origin.
115 The South China Sea disputes involved both island and maritime claims among several sovereign states within the region, namely Brunei, The People's Republic of China, The Republic of China, Malaysia, Indonesia the Philippines, and Vietnam.
116 UNCLOS, Art 87.

sea.[117] Beyond this, UNCLOS requires states to prevent piracy and the trafficking in persons at sea, and this duty falls primarily to the armed coast guards and navies of the world.[118]

For Canada, the importance of UNCLOS is twofold. First, and most important, UNCLOS endows Canada with a vast ocean estate and the associated resources therein, as well as the obligation to protect and conserve those resources. Second, UNCLOS provides an international regime that defines national jurisdictions under which its maritime vessels, including those of the RCN, are bound to operate. Given the enormity of the country's ocean estate, this will lead to possible challenges to Canada in its exercise of effective national authority. The RCN will continue to be a key instrument available to the Government of Canada to do just that. More broadly, as humanity's exploitation of the oceans intensifies the likelihood of significant international disputes (some of which are already evident) will likely grow in the coming decades. In seeking to uphold the international order at sea that UNCLOS represents, the RCN is likely to be regarded by Canadian decision-makers as a "first responder".

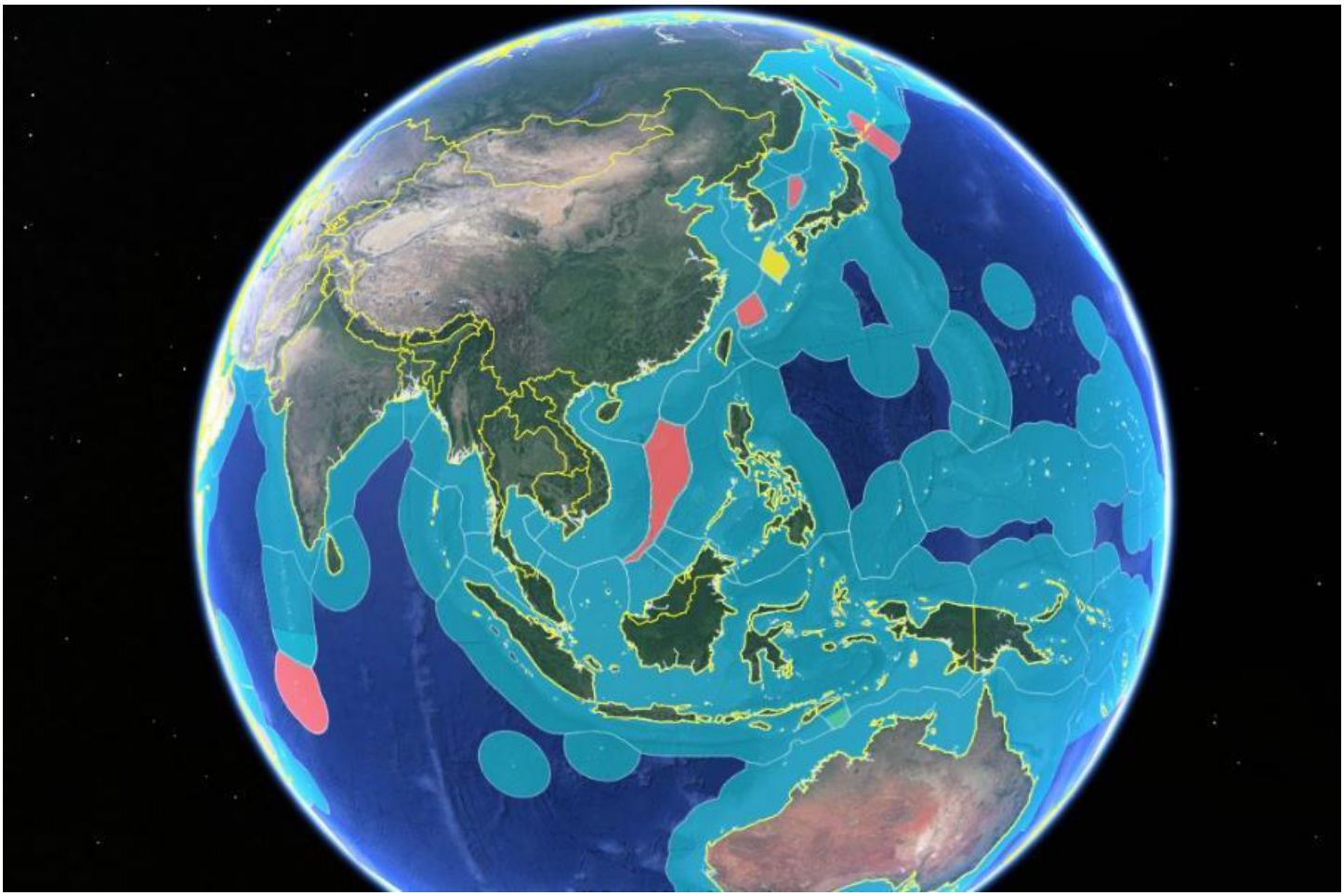


Figure 6 - Ocean Space within Exclusive Economic Zones[119]

117 UNCLOS, Art 98.

118 UNCLOS, Arts 99, 100, 101, 103, 105, 106, and 107.

119 Map by Maj JCW (Bill) Ansell, created using Google Earth Pro combined with the Flanders Marine Institute EEZ shapefile, copyright Flanders Marine Institute (2016) Maritime Boundaries Geodatabase, version 8. Available online at http://www.marineregions.org/. Accessed 03 Oct 2016 and used with permission.

THE LAW OF ARMED CONFLICT

The Law of Armed Conflict (LOAC) governs the conduct of hostilities. In the broadest sense, it determines when states may legally use armed force. The use of force against the territorial integrity of another state is illegal under Customary International Law (CIL) and the *Charter of the United Nations*.[120] The only exceptions to this prohibition are the right to act in national or collective self-defence, or when force is sanctioned by the UN Security Council to restore international peace and security.[121] The following principles have become the defining elements of the modern legal regime concerning the use of force during armed conflict:

- Military necessity - the requirement that force be used only to achieve a legitimate military objective;
- Proportionality - the suffering and damage inflicted should not be excessive in comparison to the military objective to be attained;
- Distinction - the requirement that civilians and protected objects be distinguished from military objectives for the purposes of targeting; and
- Humanity - a prohibition against weapons that are unduly cruel or cause unnecessary suffering.

THE LAW OF ARMED CONFLICT AND NAVAL OPERATIONS

In reflecting a long-standing Canadian commitment, the RCN conducts operations in accordance with the LOAC. There are particular rules within the LOAC that govern conduct of hostilities at sea. They include rules governing hostile actions from or in neutral waters, regulation of passage through neutral waters, regard for the rights of coastal states, enemy vessels exempt from attack, rules for the use of sea mines, capture of or attack on merchant vessels, lawful and unlawful tactics, capture of enemy vessels and goods, and treatment of the wounded, sick and shipwrecked, among much else. These rules, based on the *San Remo Manual on International Law Applicable to Armed Conflicts at Sea*[122] are discussed in detail in *CFJP 3-0.1 Law of Armed Conflict at the Operational and Tactical Levels*.[123]

RULES OF ENGAGEMENT

The LOAC Rules of Engagement (ROE) establish the circumstances and limitations under which armed force may be applied.[124] They provide the limits within which specific types of force may be exercised. In Canada, ROE are approved by the Chief of the Defence Staff and are subsequently delegated downwards to operational commanders, through the Commander Canadian Joint Operations Command. When operating with Allies or in a coalition of likeminded partners, care must be taken to ensure that ROE are harmonised to the greatest extent possible. It is important to note that nothing contained in approved ROE negates the inherent right of members of the CAF to act in self-defence.

120 Charter of the United Nations, Art 2 (4).
121 Charter of the United Nations, Arts 51 & 42.
122 International Institute of Humanitarian Law, San Remo Manual on International Law Applicable to Armed Conflicts at Sea (Cambridge: 1995).
123 Chief of the Defence Staff, Canadian Forces Joint Publication 3-0.1 Law of Armed Conflict at the Operational and Tactical Levels (Ottawa: 2001), Chapters 8 and 9.
124 Canadian Forces Joint Publication 01 - Canadian Military Doctrine (CFJP-01), p. 2-16.

STRATEGY, DOCTRINE, CAPABILITY AND CONCEPTS

Naval power has three components, as described previously. Its expression or manifestation, its use, involves a cognitive, a moral, and a physical component. However, taken as a whole, naval power has three important constituent elements, each of which must be present for naval power to be an effective instrument of national policy. Those necessary elements are: naval strategy, naval doctrine, and naval capabilities, as illustrated in Figure 7. In terms of the Trident of Canadian Naval Power, if the Navy's Doctrinal Roles (Diplomacy, Maritime Security, Warfighting) are the spear-points of the trident, doctrine, capability, and strategy are the elements from which the trident is forged. Naval capabilities are discussed in Chapter 10, this section examines naval strategy and naval doctrine, along with the closely related but distinctly different construct of military concepts.

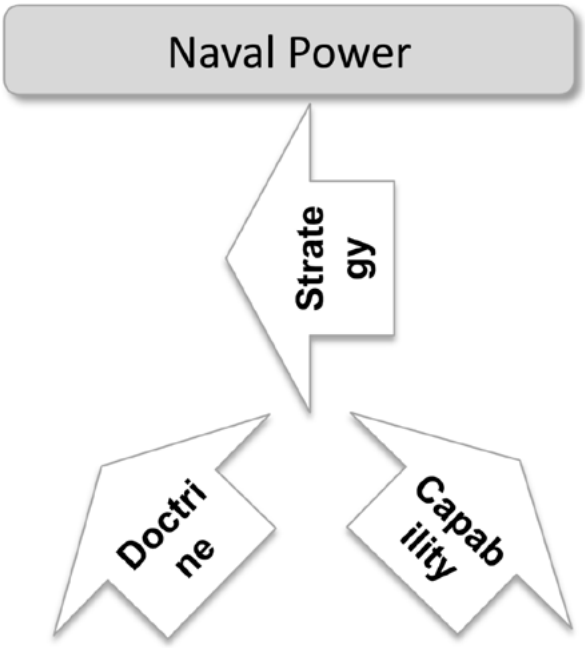


Figure 7 – The Essential Elements of Naval Power

NAVAL STRATEGY

Naval Strategy defines how and under what circumstances the naval element of national military power will be used to defend/advance national interests. It is the art and science of employing naval forces to advance a country's strategic interests and can involve the application or the threat of the use of deadly force.

Ultimately, strategies are plans, or *ways*, of achieving desired *ends*, utilizing defined *means*. The identification of a clear and unambiguous objective, or end-state, is the core issue in strategic planning and is called the ends. The ends are driven by policy. The plan that determines the best course of action for the use of naval force, given the objectives, available capabilities, environment (i.e., time and place), and the adversary to be confronted, is called the ways. The ways, including the manner by which military assets are employed, are influenced by doctrine. Naval resources and capabilities assigned to achieve the ends, including platforms, weapons, systems, sensors, support, and trained personnel, comprise the means. In tying national policy and strategy together, Colin S. Gray has written that "…policy should not ask of its military instrument accom-

plishments that are beyond its means. Similarly, military plans must be developed and executed only if they advance the goals of policy."[125] At its heart, therefore, strategy is about **reconciling** the ends with the ways and means. For Gray, strategy can best be understood by the metaphor of a bridge that encourages two-way traffic, linking policy-makers and strategists.

Strategy is an essential component for the development, generation (training), and employment of naval forces. For the employment of naval forces, strategy is necessary to ensure the most effective use of relatively scarce military resources. Strategy should also inform force development decisions, because the isolation of procurement decisions from the likely context in which those systems might be employed increases the risk that a program will deliver materiel that is poorly suited for its intended role. And last, strategy should assist the generation of naval forces by matching organisation, training, and concepts to an understanding of the modern threat environment, combat conditions and, in wartime, to take advantage of an adversary's vulnerabilities.[126]

NAVAL DOCTRINE

The role of doctrine within the cognitive component of naval power is to educate, inform, and guide military professionals in order to shape their thinking and actions such that they stand the greatest chance of success. The purposes of doctrine include:

- *the education and training of military personnel;*
- *a common approach to the conduct of operations, across the levels of conflict, based upon methodical and analytical thinking; and*
- *consistent, predictable behaviour that inspires mutual confidence, and enables effective collective action.*

The availability of doctrine for all three levels of conflict (strategic, operational, and tactical) is a necessary contribution to the effectiveness of the RCN as an instrument of national policy. It is important to always bear in mind that doctrine should never be regarded as dogmatic but instead must be viewed as an essential (but not the sole) source of guidance to the exercise of military responsibilities/command. Thus, doctrine provides both a critical input to strategy development as well as a framework from within which operations are planned, executed, and evaluated. In addition, this framework is measured against trends in the international security environment in order to inform concept development.[127]

CONCEPTS

A concept is defined as "(a) notion or statement of an idea, expressing how something might be done or

125 Colin S. Gray, Fighting Talk: Forty Maxims on War, Peace, and Strategy (Praeger Security International: Westport, Connecticut, 2007), p. 48.
126 See the two articles by Col. Michael W. Pietrucha, USAF, "Capability-Based Planning and the Death of Military Strategy", USNI News (online), 5 August 2005 (accessed on 14 June 2017 at https://news.usni.org/2015/08/05/essay-capability-based-planning-and-the-death-of-military-strategy) and "Strategies That Matter - One Size Fits None", USNI News (online) 28 October 28 2015 (accessed on 14 June 2017 at https://news.usni.org/2015/10/28/essay-strategies-that-matter-one-size-fits-none).
127 For a detailed discussion of the interrelationships between policy, strategy, doctrine, and concept development see: Commander Royal Canadian Navy, Royal Canadian Navy Strategic Lexicon (Ottawa: 2017), p. 22 (Draft).

accomplished, that may lead to an accepted procedure."[128] As such, a concept is an idea, notion, theory or hypothesis that is formulated in the mind about the way in which to conduct operations or employ specific capabilities in the future. It seeks to inform or influence future doctrine, force development, and ultimately future capabilities. As one writer has written in this regard,

> *(w)hether it resides in the mind or is revealed verbally, (a concept) is speculative, tentative, and usually malleable. This mental image or concept … is a hypothesis--a conjectural conception to be proved true or false by trial and error. Concepts spring from creative imagination…the concept or hypothesis had to be tried in practice to confirm or confute the inference drawn by the reflective observer.*[129]

Concept development involves robust research by the military and defence science communities, as well as civilian academe. Concepts contain a combination of innovative thinking and informed judgement, and are subjected to rigorous analysis, experimentation, systematic evaluation, and practical testing. The intention is to inform or influence future doctrine development by translating creative, informed thought into credible, effective ways of operating or into well-defined capability requirements. In practical terms, concepts are about developing new and/or adapting existing capability in order to maintain a military advantage. Whereas doctrine deals with the here and now, concept development deals with what methods and capabilities might be needed in the future.

Despite their close relation, it is important to remember that concepts are not doctrinal, nor is doctrine a collection of concepts. A US writer captured the difference when he wrote that, "(w)hereas a concept is a hypothesis or an inference which suggests that a proposed pattern of behavior may possibly lead to a desired result, a doctrine is a generalization based on sufficient evidence to suggest that a given pattern of behavior will probably lead to the desired result."[130] Concepts may range from broad to narrow, from describing the employment of military forces in the broadest terms and at the highest levels, to specifying the employment of a particular technology system or the application of a particular training system.[131] Their key attributes are that they are intentionally speculative and forward-looking. Thus, concept development is an essential input for naval force development as well as future naval strategy.

CONCEPT OF EMPLOYMENT (CONEMP)[132]

A CONEMP articulates, before it is actually acquired, how a capability or platform will be employed. It provides the rationale for, and expectations of, new platforms and major equipment. This necessarily includes details regarding what missions/tasks the new platforms and equipment will be expected to execute or contribute to, which capabilities will likely need to be included to accomplish those missions, and how in a general sense the platform and equipment will be employed. CONEMPs provide guidance as to the desired capabilities required in each new platform or equipment so as to enable development of detailed Statements of Requirement

128 DTB 3861

129 Major General I. B. Holley, Jr., "Concepts, Doctrines, Principles: Are You Sure You Understand These Terms?", USAF Air University Review, July-August 1984 (accessed on 13 June 2017 at www.airpower.maxwell.af.mil/airchronicles/aureview/1984/jul-aug/holley.html).

130 Holley, "Concepts, Doctrines, Principles: Are You Sure You Understand These Terms?".

131 John F. Schmitt, "A Practical Guide for Developing and Writing Military Concepts. Defense Adaptive Red Team", Working Paper #02-4, (Hicks & Associates, Inc.: McLean, Virginia, December 2002), p. 3.

132 These definitions are drawn from Director General Naval Force Development, Maritime Concept Development Guide, (Ottawa, September 2015), p. 3.

(SORs). A CONEMP is normally written by or on behalf of the operational user to enable the acquisition sponsor to develop the key requirements for that capability prior to higher level approval.

CONCEPT OF USE (CONUSE)

Once a specific design and capabilities have been agreed upon, a CONUSE furnishes additional detail with regards to the plan for the introduction and operation of the new platform or equipment.

THE NAVAL FLEET

The organisation and employment of naval forces is a function of doctrine. The reliance on Naval Task Groups and Task Forces, despite the frequency with which it is done, is also a doctrinal choice. Although it has been common practice amongst many Western navies for decades, reliance on Naval Task Groups or Task Forces is not the only way to employ naval forces. Such a choice and its rationale form part of the cognitive component because it is a conscious decision based on thinking about how naval forces should operate and fight, requirements arising from specific circumstances, and a navy's overall ability to generate ready forces.

TASK FORCES

A Task Force (TF) is defined as a temporary assembly of units, under one Commander, that is formed for the purpose of carrying out a specific operation or mission.[133] For the CAF, the TF concept applies to all elements of the CAF including army, navy, and air force. The concept provides a generic descriptor for a force of any size and composition ranging from a sub-unit to a formation. It can be employed across the continuum of operations. If the TF is multi-environment in composition, then it is designated as a Joint Task Force (JTF).

NAVAL TASK GROUPS

The Naval Task Group (NTG) is the fundamental precept of the operational employment of the RCN. As one well-known Canadian naval thinker has written, "a naval task group provides an effective self-contained force

133 DTB Record 1457.

for national and international operations. It is also a realistic upper limit of commitment that Canada can make to an international operation short of major war."[134] As it has for the past two decades, the concept of the NTG remains central to strategic thinking about the future fleet. It will almost certainly shape, influence, and inform capabilities that are to be developed and acquired in the near- to mid-term. As such, it will play an important role as fleet recapitalisation moves forward.

In an NTG, various ships, submarines and aircraft with unique capabilities act in combination, depending upon the mission, to create a synergistic effect multiplying their individual effectiveness. As such, the modern NTG is a "system of systems" - a network of ships, aircraft and submarines whose sensors and weapons are integrated through information technologies and maritime and space-based communications into a highly cohesive and self-sustained warfighting whole. While individual platforms are the most visible part of the NTG, it is the NTG's battle network that is the key to its collective combat power. The battle network knits together platforms that are often separated by dozens, and sometimes hundreds, of kilometers to permit them collectively to "see" what each of them sees individually, from the ocean depths to near space, and throughout the electromagnetic and acoustic spectrums. All of this allows the capabilities of the individual platforms to be integrated in ways that greatly exceed the sum of their individual contributions. This creates extended defence-in-depth for the NTG and any escorted force as well as the capacity for offensive maritime and joint action.

A WHOLE-OF-GOVERNMENT APPROACH TO OPERATIONS

Crisis management - the process of preventing, containing or resolving situations of high tensions portending armed conflict - often requires a whole-of-government (WoG) approach, using all instruments of national power – diplomatic, information, military, and economic - in order to succeed. In such cases, where strategic success requires more than just the application of military power, military activities across the continuum of operations will often support, or be supported by, other agencies. Such a comprehensive approach requires proactive engagement, shared understanding, thinking based on the outcome rather than the input, and inter-agency collaboration. This approach also requires the active engagement of other actors beyond government, such as non-governmental and/or international organizations, local populations, humanitarian groups, private military and security companies, contractors, and others who conduct activities and pursue objectives that will likely have a bearing on the overall outcome.

A WoG approach aims to ensure the levers of all instruments of national power are operated in concert, at levels appropriate to the nature of environment. The key military role in this is usually to create the conditions, principally the provision of security, for the other instruments to have space to work, or to work better. Naval forces can make a particularly useful contribution to a whole-of-government approach, especially in the early stages of an operation, because of their ability to provide command and control platforms, self-contained logistics, and advanced Identification, Surveillance, and Reconnaissance (ISR) in addition to clean, secure medical and maintenance facilities.

COOPERATION – MULTINATIONAL ALLIANCES AND COALITIONS

Cooperation is vital for success in any type of operation, in peaceful conditions or otherwise. Only through

134 Peter T. Haydon, "The Real Canadian Defence Priority is the Task Group", Canadian Naval Review, Vol. 2, No. 1, Spring 2006, p. 38.

cooperation and coordination can the necessary resources, skills, and knowledge be amassed and most effectively utilised.

MILITARY ALLIANCE

The most formal of all forms of cooperation is the alliance. An alliance is a formal political agreement, normally signified by the signing of a treaty, between two or more parties, made in order to advance common security goals and to secure common security interests. The most important bilateral military alliance to which Canada belongs is the alliance with the US for continental defence. The most important multilateral military alliance to which Canada belongs is the North Atlantic Treaty Organization (NATO). NATO constitutes a system of collective defence whereby its member states agree to provide assistance (e.g., as specified under Article V of the North Atlantic Treaty) in response to an attack by any external party. Canada is a founding member of NATO and continues to support the goals and aspirations of the organization. As a member of NATO, Canada is both obliged to follow NATO doctrine during NATO operations and is involved in the continual development and ratification of NATO doctrine. Standing NATO Maritime Groups One and Two are NATO's standing maritime Immediate Reaction Forces, to which the RCN routinely contributes.

COALITIONS

Countries often form coalitions to resist or carry out aggression, to deter potential adversaries, and to transform common goals into positive action. Unlike a formal alliance like NATO, where the member-states are obliged to one another, coalitions tend to be more ad hoc. The political demands in creating a coalition tend to be far less than that of an alliance, if only because there is an expectation that a coalition will have a shorter life-span. For example, peacekeeping missions, fashioned to deal with highly specific crises, are cases in point. While NATO has endured for nearly seven decades, the NATO-led coalition generated in response to the 2013 Libyan crisis lasted only a few months. While an alliance has a precise set of obligations, coalitions are often formed in response to more immediate developments. Coalitions are normally formed for reasons of:

LEGITIMACY

To help justify the use of force in a globalized world conscious of the norms of international law. This often occurs through international organizations such as the UN, as happened in the First Gulf War (1991) or through a regional body such as NATO as occurred with regard to the war with Serbia over Kosovo (1999);

ADVANTAGES

A coalition provides members with a voice and a vote; the ability to be heard and to influence internationally, not only to pursue a campaign but also to shape that campaign in a way that is consistent with strategic interests. This benefit particularly applies should Canada lead a coalition or command a multinational formation within it. Membership also confers representation in the coalition chain of command; unity and economy of effort and a common purpose which adds to legitimacy and provides access to capability and mass; a sharing of risks, and a share of the benefits of a successful outcome from the campaign. Coalitions concentrate resources and provide flexibility which most nations could not generate independently.

RISKS

Membership in a coalition means bearing a share of additional risks. One such risk is uncertainty about the

level of interoperability between members and the subsequent challenge limited interoperability poses to mission success. Coalition membership can also dilute national and military priorities. Other costs include the need for consensus and a consequent reduction in freedoms. If a campaign goes badly, it is difficult to disengage from collective responsibility. The commitment of resources to a coalition reduces the freedom to conduct other tasks. Economy of effort across a coalition can undermine the arguments for national military capabilities and versatile forces.

The risks associated with coalitions cannot ever be eliminated, but they can be mitigated. As coalitions respond to specific requirements, their membership cannot always be predetermined. Nevertheless, the RCN's international activities, such as continuing participation in multinational exercises (e.g., RIMPAC) and the exchange of personnel reduce the inevitable uncertainties about possible partner navies. This includes areas such as interoperability and ROE. The RCN is well placed to minimize these challenges by means of continuing participation in multinational exercises and the exchange of personnel. Naval coalition forces can also achieve economies of scale in critical logistic support such as the provision of spares, ammunition, stores, and fuel. Embarked maritime helicopters, for example, are frequently used to transfer personnel and material from shore to ship and ship to ship in a coalition force.

INTEROPERABILITY

Interoperability is defined as "(t)he ability to act together coherently, effectively and efficiently to achieve common objectives."[135] The high-intensity, multi-threat environment that characterises contemporary naval operations demands a range of capabilities beyond that which most modern navies possess or can afford to acquire on their own. As such, interoperability at sea with allies and trusted international partners will continue to be a key enabler for operational and strategic success in naval operations. It can be achieved through the compatibility of doctrine, processes and materiel.

Interoperability is about empowering cooperation. Strong military-to-military relationships between the RCN

135 DTB Record 32228.

and its principal allies will assist in effective operational integration in future operations. Achieving the necessary level of operational integration stems from the following principles:

Rapport *Established relationships between commanders influences multinational cooperation at all levels and ultimately facilitate the ease with which forces integrate;*

Respect *Mutual understanding and respect for the professional ability, culture, history, customs and values of participants will enhance the cohesion of the force;*

Knowledge *Time taken to understand the doctrine, capabilities and aspirations of partners pays dividends. It is important that commanders assign to national contingents roles that are commensurate with their aspirations, while tempered by their capabilities; and*

Patience *Differences of opinion, perspective and understanding, whilst natural, will generate friction, and therefore patience and respect are key ingredients for both optimal and strategic success.*

For the RCN, interoperability is not simply an issue of operational and tactical efficiency – it is a strategic asset. Being able to work closely with the USN is of particular strategic importance to the RCN, as the defence of Canada and the defence of the United States are inextricably linked in the defence of North America. The security of the two countries' territorial waters are obviously essential to continental and national defence. Likewise, the RCN contributes to and participates in various multinational interoperability initiatives, including NATO standardisation programmes. RCN training and education, particularly at senior levels, emphasizes the strategic importance of interoperability in order to prepare personnel for differences in staff processes, operating procedures, doctrine, and culture that may be encountered in joint and combined operations.

COMMUNICATIONS / PUBLIC RELATIONS

Communications activities occur at the strategic, operational and tactical levels, as they all directly contribute to the credibility of the institution. Today's 24/7 information/news cycle also requires that public affairs considerations be integrated into operational planning processes early. Most naval activities, in fact, will have inherent communications nodes that will need to be identified and considered. A failure to properly anticipate and plan for the public affairs nexus of an operation / activity may result in lost opportunities or may result in a crisis communication scenario that could contribute to overall mission failure. Public communications activities, when done

well, build trust, confidence, and foster relationships that are vital to the successful completion of missions today and enable preparation for the missions of tomorrow.

The RCN is a national institution and is an instrument of national policy, but it is more than that. It also draws its personnel from Canadian society. It therefore as a fundamental duty to ensure that Canadians are aware of what it does; are confident that it does it well; and that the country's decision makers fully understand what the RCN can provide in support of Canadian national interests. Doing so ensures that the Navy's many ties with Canadians are maintained and strengthened, and it also acknowledges the importance of the people at home in the daily lives (at sea or ashore) of the women and men in uniform. Communications also has an impact on what the RCN does and how well it does it. Within naval lines, clear, timely, accurate, and transparent communication activities are crucial to developing internal and external stakeholder understanding and perceptions of the 'who', 'what', 'where,' 'when' and 'why' of the RCN.

In addition to media relations, issues management, and crisis communications, effective public affairs activities commonly include community relations, active stakeholder engagement / outreach, branding oversight, imagery management, and content generation for use in various mediums. It also requires the RCN maintain an up-to-date public information repository that is compliant with national laws and the Government of Canada Communications Policy.

CHAPTER 8: THE WILL TO FIGHT AND WIN (THE MORAL COMPONENT OF CANADIAN NAVAL POWER)

The moral component of Canadian naval power describes those factors and characteristics of naval service that culminate in the ability to motivate people to serve, to endure personal hardships, and ultimately to collectively fight and win. Emphasis on the moral component acknowledges that ultimately it is people who put naval power into action. It encompasses aspects of naval service such as life at sea, morale, leadership, and command.

LIFE AT SEA

Life at sea can vary between excitement, monotony, hardship, and danger. The transition between these states of being can be very sudden and unexpected. Regardless of whether or not a ship is conducting an ocean transit or immersed in multinational multi-ship operations in a hostile environment, it serves as home for the crew, often for many months at a time. The traditions, practices, processes, and procedures of the RCN enable the reactions of every ship's company to become second nature, ensuring the ship is ready for every task and mission.

For millennia, those who go to sea in ships have been a special type of person...courageous, resilient, and agile. The sea, often beautiful, can be a cruel and unrelenting place, terribly unforgiving of error and this has forged the culture, ethos, language, traditions, folklore, myths, and legends, across centuries and continents, that bond together all sailors and mariners at sea, from the earliest explorers to today's high-tech forces. RCN culture incorporates timeless expectations of its members, founded in the accomplishments and sacrifices of preceding generations who have served their nation at sea in both peace and war, inspiring those who serve today.

ETHOS

The profession of arms embodied by the RCN is distinguished by the concept of respecting the dignity of all persons, serving Canada before self, and obeying and supporting lawful authority. This military ethos embodies the spirit that binds the profession together. It is underpinned by our military values of loyalty, integrity, courage, excellence, inclusion, and accountability. These three ethical principles and six values clarify how members view their responsibilities, apply their expertise and express their unique military identity. It identifies and explains military values and defines the relationship between the armed forces and civilian control as defined in the rule of law.

Military ethos is derived from, and should be a reflection of, fundamental Canadian values. Members of the RCN are representatives of the society they serve. Legitimacy in the eyes of the government and Canadian society is largely contingent upon the application of the military ethos and the structure it gives the other

attributes of the military profession. Beyond directly supporting the profession's ability to meet its core responsibilities, the military ethos serves to shape and guide conduct, especially in the face of ethical dilemmas.

THE MILITARY PROFESSIONAL

Separating the military profession from any other in Canada is the concept of unlimited liability. This concept holds that all CAF military members accept and understand that they are subject to being lawfully ordered into harm's way under conditions that could lead to the loss of their lives. What this means for the RCN is that any of its members might be ordered into, or otherwise find themselves placed in mortal danger to protect shipmates, its ships, or even the less tangible national interests; whether that means executing force protection in a tight passage, carrying out an advanced boarding, or donning firefighting equipment to enter the scene of an engine room fire. The explosion and resulting fire aboard HMCS KOOTENAY in October 1969 is the worst peacetime accident in the history of the RCN. Nevertheless, it was the skills and the bravery of the ship's company that allowed a rapid response that saved the ship, limited the loss of life (seven dead and 53 injured), and prevented an even greater calamity. More recently in 2015, the crew of HMCS PROTECTEUR battled an engine room fire for over four hours off the coast of Hawaii with the result that the ship was not lost, there were no fatalities, and only eighteen crew members suffered injuries. These two examples, while they were extremely regrettable, nonetheless testify to the high-level of training and professional dedication of RCN personnel across many decades.

TRAINING AND EDUCATION

The RCN recognises the need to have educated and trained personnel at all rank levels. The responsibility for delivering the necessary training within the RCN rests with the Naval Training Group, headquartered in Esquimalt, and with training establishments there, in Halifax, and Quebec City. The core elements of the development of RCN personnel are training, education, and professional development through ongoing experience and on-the-job training. The RCN seeks timely delivery of each of these for all its personnel with the objective of having the right person at the right place, with the right training at the right time. To accomplish this, the RCN invests heavily in its personnel, their occupational and leadership training, professional development, and education. This creates a continuous learning culture at all ranks.

Implementing ready and relevant learning programs; further developing critical thinking skills at all levels; and exploiting new learning techniques and technologies are all things that the RCN considers when examining and challenging its training and education systems while fostering a culture of lifelong learning.

Beyond individual training & education, collective training takes groups of trained personnel and generates effective operational specialist sub-teams. Together, they form the operational unit. Operational training brings these sub-teams together and trains them as a cohesive whole, the result of which is a unit generated to a specified level of readiness, trained, prepared, and ready for employment.

MORALE

Morale is an integral part of a ship's war fighting ability. It is the capacity of its personnel to believe in the institution and its goals, particularly in the face of opposition, hardship or danger. Strong morale promotes teamwork and establishes a sense of belonging to something bigger than oneself, thus contributing to a cohesive unit. Personnel must also have confidence that they, their comrades and commanders have the right training, so that when the time comes they know they will carry out their assigned tasks with resolve in accomplishing the mission. Morale is nurtured through inclusive leadership, sound discipline, realistic training, confidence in equipment, and a sense of purpose.

Morale is also a function of institutional support, binding personnel and families together to ensure quality of life. Knowing that support systems are in place for a member and a member's family at home can go a long way towards enhancing one's motivation and focus. The maintenance of morale, and the consequential effectiveness of the team and the willingness of individuals to serve, requires medical, dental, spiritual, and family support be available to service personnel, regardless of their location.

RCN CODE OF CONDUCT[136]

Personnel employed in the RCN are expected to maintain the highest standard of personal conduct at all times. The Naval Order (NAVORD) on the Code of Conduct reinforces the DND and CAF Code of Values and Ethics found in the Canadian Armed Forces Ethos[137], thereby guiding personnel in their daily duties and activities, and outlining what is expected of them. It is imperative that all members are familiar with both references and act as examples of these essential values.

136 For the latest direction and in-depth details, refer to the current version of NAVORD 1001-0 Code of Conduct, found here: https://www.canada.ca/en/navy/corporate/who-we-are/our-culture/code-of-conduct.html

137 Canadian Armed Forces Ethos: Trusted to Serve, found here: https://www.canada.ca/en/department-national-defence/corporate/reports-publications/canadian-armed-forces-ethos-trusted-to-serve.html

CHAPTER 9: THE MEANS TO FIGHT (THE PHYSICAL COMPONENT OF CANADIAN NAVAL POWER)

THE PHYSICAL COMPONENT

The physical component of Canadian naval power is the means to fight – balanced, combat-ready, multi-purpose, globally deployable, agile, and resilient naval forces that are well trained, supported, interoperable, and ready. The physical component includes elements such as command & control, weapon systems, platforms, capabilities, and logistics support.

THE PHYSICAL MEANS TO FIGHT - A BALANCED, COMBAT-READY,MULTI-PURPOSE FLEET

The fundamental purpose of the Canadian profession of arms is the ordered, lawful application of military force pursuant to government direction. The fundamental building blocks of today's RCN are its platforms. They are either singular, tactically self-contained ships, most often with embarked helicopter detachments, or submarines incorporating integrated sensor, communications and weapon systems. Implicit in this employment is the requirement that they must be effective in combat, and are therefore principally designed and equipped to prevail in an armed engagement with an adversary of similar or lesser capabilities.

While naval platforms and their crews are primarily trained for warfighting at sea, they participate across the entire spectrum of operations. A range of different platform types – surface combatants, submarines, patrol ships and support vessels, together with maritime aircraft – ensure that the fleet is balanced and multipurpose, capable of operating across a broad range of scenarios and organized so as to provide a range of options to the government in a scalable and proportionate manner in Canada's three oceans, as well as internationally.

In their design, naval platforms, and their inherent systems, need to be both survivable and resilient, able to absorb and minimize the effects of a loss of capability, including battle damage. They must be able to continue to operate effectively despite hostile action, natural disaster, or any other severe calamity, including any long-term ineffectiveness arising from equipment failure, software failure or human error.

RCN PLATFORMS

SURFACE COMBATANTS

Surface combatants possess the sensors and weapons systems effective across multiple maritime warfare disciplines (anti-air warfare, surface warfare, undersea warfare, and information warfare) to both defend themselves and allow an NTG to operate against a range of threats. Many of today's surface combatants also have the long-range weapons and sensors to conduct offensive operations against surface and subsurface threats, and provide defence to an escorted force in these two maritime warfare dimensions.

SUBMARINES

Submarines are weapons platforms whose presence at sea, or indeed even their inferred presence, can alter an adversary's decision making in an entire theatre of operations. Their unrivalled stealth, persistence and lethality permit them to place an enemy's maritime forces at risk anywhere in a given theatre of operations. Submarines excel in the early stages of a joint and/or maritime campaign—able to operate with less risk in high threat environments than surface combatants, where they can be used to deter an adversary or deny the use of the sea. Furthermore, they can collect intelligence in covert surveillance and reconnaissance missions, using their own sensors, as well as through their ability to host, insert, support and extract special operations forces in a highly covert manner. Equipped with a comprehensive suite of acoustic, electro-optic and electromagnetic sensors, submarines can monitor large undersea volumes for other submarines and detect and track surface vessels at great distances, making them suitable not only for their classic combat role, but also for domestic surveillance and patrol mission

MARITIME HELICOPTERS

Maritime helicopters are an integral component of the fleet. Operated and supported from the decks of surface combatants and support ships, modern maritime helicopters are a powerful and flexible platform in their own right. Equipped with a range of passive and active acoustic, electromagnetic and electro-optical sensors, tactical information systems and weapons to conduct wide-area surface and undersea surveillance, they are able to operate at range from an NTG to greatly extend against surface and subsurface threats. An NTG embarks a number of helicopters to ensure that that defence in depth, time on task and offensive reach are maximized.

LONG RANGE PATROL AIRCRAFT

Long Range Patrol Aircraft[138] are an indispensable component of maritime operations. LRPA have extended endurance and sufficient speed to transit the breadth of a theatre of operations to an assigned mission and remain on task for significant periods of time. They are equipped with active and passive sensors that can fully exploit the electromagnetic, acoustic and optical/infrared spectrums in wide-area surveillance and reconnaissance

138 The current RCAF fleet of CP-140 Aurora aircraft that provide maritime patrol support to the RCN are known as Long Range Patrol Aircraft, or LRPA. However, allied forces use the term Maritime Patrol Aircraft (MPA). For our purposes here, the two may be seen as interchangeable.

missions at sea and over land, and they are equipped with communications, tactical information systems and weapons to detect, track, identify and prosecute surface and subsurface threats independently or in cooperation with other maritime forces

SUPPORT SHIPS

Support ships provide core replenishment, defined sealift capabilities, and support to operations ashore. By providing vital logistics, support ships increase the range and endurance of an NTG, permitting it to remain at sea for significant periods of time without going to port for replenishment. As such, they permit an NTG to deploy around the globe, and to keep it operating at sea for extended periods of time once in a theatre of operations. The core capabilities of a support ship include provision of fuel, ammunition, spare parts, food, water, and other supplies; modern medical and dental care facilities, including an operating room; and, repair facilities and expertise to keep helicopters and other equipment functioning. Critically, they are capable of providing underway support - the transfer of liquids and solids between ships at sea – as well as a flight deck/hangar from which to independently operate aircraft.

PATROL VESSELS

In comparison to the RCN's surface combatants, patrol vessels are modestly equipped for their primary maritime security role, particularly SAR, support to other government departments, and naval security operations such as Maritime Domain Awareness and sovereignty patrols.

The *Kingston*-class Maritime Coastal Defence Vessels (MCDVs) are multi-role vessels with a primary mission of coastal surveillance and patrol, including general naval operations and exercises, search and rescue, law enforcement, support to defence research projects, resource protection and fisheries patrols, and naval mine countermeasures. Several types of mission specific payloads can be added to allow for rapid role change from one mission type to another such as the remote mine disposal system (RMDS), route survey systems, and various uncrewed underwater vehicles.

The *Harry DeWolf*-class Arctic and Offshore Patrol Ships (AOPS) are first year ice-capable ships designed and equipped for armed sea-borne surveillance of Canada's waters, including the Arctic; providing government situational awareness of activities and events in these regions; and cooperating with other partners in the Canadian Armed Forces and other government departments to assert Canadian sovereignty, when and where necessary.

An envisioned future light surface combatant, would be an all-ocean capable ship, bridging the gap between patrol vessels and the Canadian Surface Combatant (CSC). This ship will be able to operate independently supporting Canadian interests, or as a force multiplier in support of the CSC.

TRAINING VESSELS

In addition to the primary training role for junior officers, the Orca class also provides an intrinsic capacity for establishing presence and for conducting surveillance on inshore waters.

THE IMPORTANCE OF FLEET SIZE[139]

Fleet size is always of strategic importance, even for a medium-sized navy such as the RCN. As ocean politics intensify in the coming decades, the demands placed on the RCN will increase. In such an environment, it is entirely appropriate to note that "quantity is a quality of its own" and is therefore highly relevant to considerations of the physical component of naval power.[140] A warship can only be in one place at a time and a smaller fleet means fewer places to which a navy can simultaneously deploy its ships. A smaller fleet not only implies reduced capabilities – quantity being an inescapable measure of capability – it diminishes the strategic agility of a navy as well as reduces its resilience, defined as the ability to absorb losses and still achieve operational objectives. It is, therefore, incontrovertible that fleet size is linked to a navy's utility as an instrument of national policy.

One argument frequently voiced in opposition to the need to maintain fleet size is that advanced weapons and sensors reduce the number of naval platforms needed to achieve the same military effect. This holds in certain instances, particularly those missions requiring only a single ship deployment. The argument nonetheless overlooks missions where operational effectiveness requires a multi-ship deployment. An example of this is anti-submarine operations where maritime air assets from more than one ship, often from ships distant to one another, are required to effectively counter the submarine threat. Advanced capabilities on fewer ships cannot alter the fundamental requirements of the task. Additionally, modern security challenges, such as China, show a rapid and prolific build-up of naval power on a scale not seen in recent years, which threatens to have a significant impact on regional and international power and politics. While advance ships can somewhat offset such a prolific build up of forces, it is negated by volume alone, and certainly when considering the volume and technical capabilities of their developing platforms.

Last, it is not only the reduction of capabilities available for operations that smaller navies must confront, for the administrative challenge of maintaining a reduced fleet becomes ever more difficult for naval planners. Longer deployments, a possible consequence of fewer ships, will generate extenuated maintenance cycles that could negatively affect the performance of vessels and their crews. Unexpected repairs to ships or even scheduled maintenance will, therefore, have a proportionally greater (and cascading) impact on a smaller navy that might prove difficult or impossible to redress in the event of a national emergency. The danger is that when a navy has lost critical mass (an assessment that will necessarily be unique to each country), the rationale for the maintenance of what remains could become increasingly difficult to sustain and the cost of recovery politically untenable.

139 See the discussion of attrition and the strategic implications of fleet size in Lombardi, The Future Maritime Operating Environment and the Role of Naval Power, pp. 86-89.
140 This argument is found in Ashley J. Tellis, Janice Bially, Christopher Layne and Melissa McPherson, Measuring National Power in the Postindustrial Age (RAND Corporation: 2000), p. 138.

The current defence policy – *Strong, Secure, Engaged* – acknowledges many of these arguments. It unequivocally endorses the view that "Canada requires a Navy that is organized and sized to project power responsively and effectively far from Canada's shores." But it also notes that a carefully considered mix of platforms and capabilities ensures that fleet size meets strategic and operational planning requirements: "[t]his Blue Water Navy requires a balanced mix of platforms, including submarines, surface combatants, support ships and patrol vessels, in sufficient quantities to meet our domestic and international needs."[141]

RCN WARFARE CAPABILITIES

ABOVE WATER WARFARE

Above Water Warfare (AWW) encompasses both defensive and offensive measures designed to counter space, air, and surface-based threats, including those launched from submarines, surface combatants, aircraft, uncrewed or space-based systems, and asymmetric actors. Central to the effective conduct of AWW is the identification and tracking of air and surface contacts, through the fusion of sensors and all-source intelligence to create recognized air and surface pictures. Maritime aircraft, both helicopters organic to the ship and LRPA, as well as uncrewed aircraft and space-based systems are critical enablers in this task.

SPACE

The RCN employs space-based assets to provide and exploit surveillance, reconnaissance, communications, navigation and meteorological information. Without the secure use of space, both for Canadian and Allied systems, RCN operations would be impaired.

HMC ships and submarines are also prepared to use their organic hard and soft-kill capabilities to assist in protecting allied space infrastructure. This activity could include intercepting kinetic threats as they are launched or engaging launch and control facilities ashore.

ANTI-AIR WARFARE

Anti-Air Warfare (AAW) is designed to provide protection against threats from the air to an individual unit, an NTG, or assets ashore. Naturally, the scope of the defence that can be provided depends on the numbers and characteristics of the defensive weapons systems employed, and the nature of the threat that is being countered. The primary air threat in modern naval warfare is the anti-ship missile (ASM), with hypersonic variants anticipated in the near future. These weapons represent a significant threat to Canadian warships in that they can be launched from the air, other ships, submarines, and from ashore. In addition, fighter aircraft can launch stand-off precision guided munitions (PGMs) which can have a destructive effect equivalent to, or even greater than, many ASMs. Furthermore, fire from aircraft cannons can do significant damage.

141 Department of National Defence, Strong, Secure, Engaged Canada's Defence Policy (Ottawa: 2017), p. 34.

All major surface combatants have, at a minimum, a self-defence capability consisting of hard-kill measures such as point defence missile systems and close-in air defence weapons systems such as Phalanx. These measures are augmented by soft-kill systems combined with manoeuvre, to either seduce the missile away from the ship or interfere with the proper functioning of a missile's seeker head. Ships with point-defence missile systems, such as the Evolved Sea-Sparrow, can provide defence for other ships in company lacking this capability, though this is not their primary purpose. By acting as a "goal keeper" along a threat axis, these ships can intercept missiles headed for unprotected units.

Beyond this self-defence capability, some units can contribute to air defence over a wider area. Detection range is extended by the networking and systems-level integration of all sensors of a fleet's ships along with those based ashore and in the air. The resulting improved Recognized Air Picture provides more time to plan and react as a potential engagement situation evolves.

ANTI-SURFACE WARFARE

Anti-Surface Warfare (ASuW) is the application of surface, sub-surface and air launched combat power against hostile surface units, both conventional and asymmetric in nature. It is conducted both in the open ocean and in littoral waters. It requires a high degree of battlespace awareness, target discrimination and weapon coordination, especially in the traffic dense areas of coastal waterways and strategic choke points. The most common weapon is the anti-ship missile which can be launched by ships, aircraft, and submarines, as well as from ashore. Modern, advanced torpedoes represent the most potent ASuW weapon. They are difficult to detect and track, can acquire targets independently, or they can be steered towards a ship via wire guidance, even in traffic-dense waters. Furthermore, their destructive effect is several orders of magnitude greater than a missile.

When warships are in sight of each other, guns or missiles may be used depending on range. The advantage of naval gunnery is that it is useful in ROE situations where collateral damage must be avoided or when escalation control is a requirement. A ship's main gun is an effective tool: warning shots can be used to gain a merchant vessel's compliance with a Commanding Officer's direction (often referred to as a "shot across the bow"), or it may be used to warn off small craft that might be approaching in a suspect fashion. While ramming attacks employing an Improvised Explosive Device (IED) are a viable tactic, non-state actors could also deploy portable missile systems or crew-served weapons on boats to either harass or inflict damage at a distance outside the range of small arms fire. Swarm attacks are a particularly vexing problem for surface combatants because often there are not enough short-range weapons systems to cover multiple axes of approach. However, adding to the challenge is ASuW occurring in a harbour setting, where the twin shields of manoeuvrability and speed cannot be used, and there is a significant risk of collateral damage and non-combatant injury.

NAVAL FIRE SUPPORT

Naval Fire Support (NFS), the application of force from sea to land, is a rapidly evolving element of the physical component of Canadian naval power. The surface environment of the ocean is being repeatedly extended inland as modern maritime weapon systems evolve to be able to deliver effects from the sea. The following related definitions are drawn from the DTB:

Fires: Actions that seek to create a first-order physical effect against a target's capabilities. Fires include lethal and non-lethal means;[142]

Joint Fires: Fires delivered during the employment of forces from two or more components in coordinated action to produce desired effects in support of a common objective;[143] and

Naval Fire Support: A coordinated seaborne attack using heavy guns, surface-to-surface or subsurface-to-surface missile systems intended to achieve physical effects in support of joint objectives.[144]

The DTB definition of NFS only provides a generic description of the types of weapons it applies to. It does not specifically take into account the ability to deliver effects ashore through the use of precision guided weapons from the sea. Technology and innovation have permitted the RCN to begin to develop a limited shore attack capability with a view towards more advanced land attack capability in the future. Although still relatively nascent, in 2016 the RCN proved this capability with the successful engagement of a shore target using the Block II HARPOON anti-ship missile in a land attack mode. Based on this, emerging RCN NFS capability involves precision guided weapons originating from surface units and delivering effects ashore in a precise manner. NFS is intended to achieve the campaign objectives of a supported Joint Task Force Commander (JTFC) and enable ground forces to prepare and secure a littoral battlespace.

UNDER WATER WARFARE

Under Water Warfare (UWW) is arguably the most difficult of the naval warfare disciplines. Adverse acoustic conditions (especially in the littorals), stealthy threats and exceptionally large volumes of water relative to the objects being searched for, make target acquisition and general underwater situational awareness a daunting, time-consuming and resource intensive task. Effective UWW requires close coordination between multiple units and a very high degree of understanding of the ocean environment. UWW exists to counter two main threats: submarines and sea mines. Sea mines are of concern because they can indiscriminately damage or sink all forms of shipping, can be laid covertly, are very inexpensive, can be developed by low-tech actors, and the simple threat of mines can bring a port or on-water operation to a halt. Submarines can be equally destructive, but they also pose different threats to national security and Canadian sovereignty. The stealthy nature of the submarine allows it to travel through territorial waters, or loiter just outside them, virtually undetected. Submarines can, therefore, be used as covert delivery platforms for ballistic and cruise missiles,

142 DTB record 33777.
143 DTB record 33777.
144 DTB Record 993.

as well for the insertion of special forces. They can also act as passive intelligence collectors, exploiting the electro-magnetic and acoustic spectrums to intercept communications and reveal national secrets.

ANTI-SUBMARINE WARFARE

An axiom of Anti-Submarine Warfare (ASW) is that offence is the best defence. Locating and destroying a submarine at distance is the best means of protecting Canadian and allied shipping from a submarine threat. Even if a submarine is not engaged, localizing it with air assets allows surface units to avoid contact. LRPA are the most effective means of prosecuting a submarine due to their relatively long on-station time and large weapons carrying capacity. These aircraft use a combination of sensors including RADAR and sonobuoys (both active and passive) to localize a submarine and then attack it. Torpedo-armed ASW helicopters launched from ships use similar methods, but they also have "dipping" sonars that can search for a submarine. Helicopters are normally sent to investigate a submarine contact while a warship remains outside the submarine's firing range. Even though ships have sonars, both passive and active, the nature of acoustic propagation in the ocean ensures that the advantage will always remain with the submarine. Therefore, warships themselves as a general rule *do not* deliberately prosecute submarines, except as a last resort in self-defence when a submarine is found in close proximity with little or no notice.

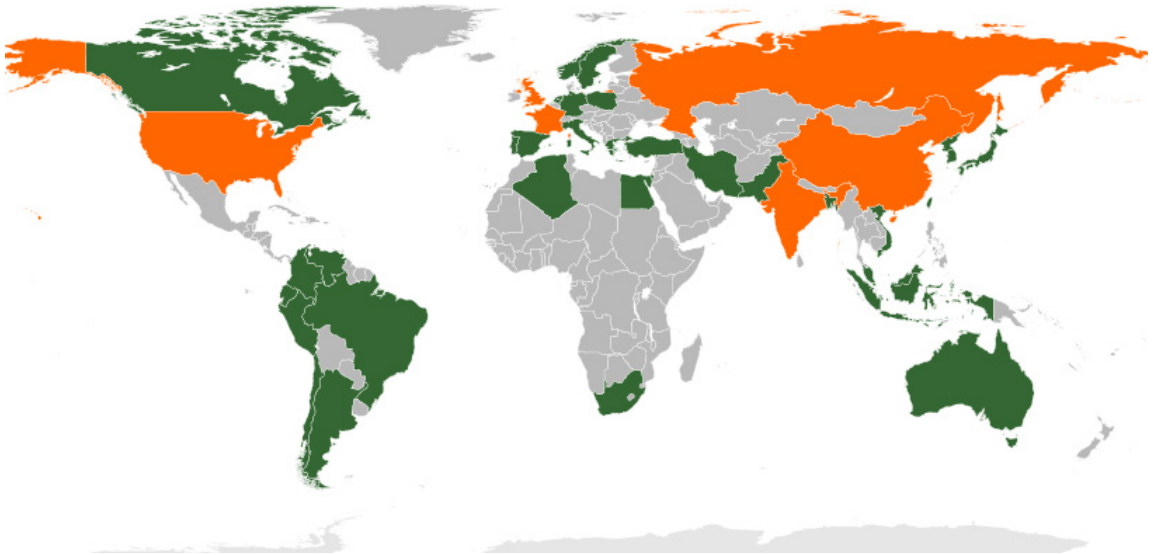


Figure 8 – attack Submarine operators (green) and attack and ballistic missile submarine operators (orange).[145]

Working together, ships, LRPA and helicopters can be an effective submarine hunting team. Acting on direction of a Surface Action Unit Commander, LRPA and helicopters can detect, localize and attack enemy submarine without being exposed to the same degree of risk as a large surface platform The one drawback of attacking from the air is the size of airborne torpedoes. Weight restrictions require them to have a smaller warhead and less fuel than those weapons carried onboard a submarine.

Another advantage held by a submarine is being immersed in the underwater environment, which generally supports superior underwater situational awareness. However, there are limitations to even a submarine's

145 Image courtesy of users: Silver Spoon / Nirvik 12 / Wikimedia Commons / Public Domain 2016. [Accessed online July 11 2017 at: https://upload.wikimedia.org/wikipedia/commons/e/e1/Worldmap_Submarines.svg]

ASW effectiveness. First, speed can be a limiting factor. If another submarine is detected at range, a nuclear-powered submarine (SSN) may be able to pursue but doing so at high speed will impair its sensors and could reveal its position. Conventional (diesel-electric) submarines (SSK) are much slower than an SSN both

on the surface and submerged and cannot be used to cover wide swaths of ocean. Submarines are optimally employed when they patrol in the vicinity of choke points and restricted waters where an adversary is likely to transit.

NAVAL MINE COUNTERMEASURES

Sea mines can be used as an area denial weapon to close ports, or they can be used offensively to destroy shipping. The sowing of a single mine, or indeed the belief that a mine threat might exist in a given body of water, can have a disproportionate effect, making an area off-limits for weeks while Naval Mine Countermeasures (NMCM) units conduct search and clearance operations. Many states have the ability to lay mines from surface vessels, aircraft and submarines. The low cost, ease of use, ability to be deployed from military or civilian vessels, and effectiveness of sea mines makes them an especially attractive option for non-state actors and less developed navies. The threat posed by water-borne improvised explosive devices creates additional challenges for commercial shipping and navies operating in choke points and littoral regions. The ease of acquisition and use of simple IEDs and unsophisticated sea mines make them an increasingly likely threat.

The level of sophistication of modern sea mines makes them highly reliable weapon systems capable of

being employed discretely with a high degree of precision against particular classes of ship. Modern mine warfare systems incorporate powerful passive sonars that can discriminate between ships, and selectively choose their targets based on the parameters programmed prior to deployment or even once in the water. More advanced mine systems are now deployed in a networked fashion which can allow them to be programmed and controlled, turned off and on as required, from facilities ashore. Certain systems allow for engagements at distance, by incorporating torpedoes into their design, making the mine the equivalent of a static submarine. Such systems are just as likely to be found hiding on the ocean floor as they are floating in the water column, and some are even semi-autonomous in so far as they can be deployed from a ship or specific location ashore, transport themselves to a specific "patrol" location, and then return to the deployment point based on the instructions programmed into them.

While the RCN does not use sea mines, it nonetheless conducts NMCM to counter this threat. When naval forces are deployed, the primary MCM focus is on detection, identification, avoidance, and neutralization. Domestically, the RCN has responsibility for conducting baseline route surveys of strategic sea lines of communication (SLOCs) and for clearing mines or WBIEDs in major Canadian ports such as Vancouver, Montreal and Halifax. The primary means of establishing an understanding of the ocean floor is through towed or autonomous vehicles with sonar and video systems operated from the Kingston Class and other vessels of opportunity. If a mine-like object is detected, electronic dive systems such as remotely operated vehicles (ROVs) or Mine Clearance Divers will identify and, if necessary, neutralize the threat. When deployed, the RCN uses on and off board uncrewed, autonomous sensors to locate and dispose of mines. The use of uncrewed underwater vehicles (UUVs) will increase the RCN's ability to conduct NMCM operations, whether in Canada, North America, or on deployed operations.

MARITIME INFORMATION WARFARE

IW is about protecting own-force information and exploiting that of adversaries. IW encompasses all facets of information creation, collection, dissemination, and use. It includes network-centric warfare, electronic warfare, and cyber warfare. The importance of information to modern navies is illustrated in the Five Eyes Maritime Concept for Information Warfare (IW), which states that IW is, "the provision, assured use and protection of information processes, systems and networks, and the limiting, degrading and denying of that of our adversaries, to achieve operational advantage across the battlespace."[146]

146 AUSCANUKUS Working Group, Five Eyes Maritime Concept for Information Warfare, 2014, p. 3.

NETWORK-CENTRIC WARFARE

Network Centric Warfare (NCW) is an information superiority-enabled doctrine of operations that generates increased combat power by networking sensors, decision makers, and shooters (the warfare system) to achieve shared awareness, increased speed of command, higher tempo of operations, greater lethality, and increased survivability. In essence, NCW translates information superiority into combat power by effectively linking knowledgeable entities in the battlespace.

NCW proposes that the application of information age concepts to speed communications and increase situational awareness through networking improves both the efficiency and effectiveness of military operations. Exploiting high-speed networks that permit real-time, error-free transmission of large amounts of data in a fraction of the time required for voice transmission accelerates engagement cycles and operational tempo at all levels of a warfighting system. Such rapid gathering and distribution of situational awareness and targeting information increases the rate at which effective decisions and engagements can occur and allows combat units to be smaller in size, operate more independently and effectively, and undertake a different range of missions than non-networked forces.

ELECTRONIC WARFARE

Electronic Warfare is the military use of the electromagnetic spectrum to deny its use by an adversary, especially against friendly forces. It is divided into three activities, Electronic Attack, Electronic Protection Measures (EPM), and Electronic Warfare Support (EWS). Electronic Attack involves the use of electromagnetic energy to attack personnel, facilities, or equipment with the intent of degrading, neutralizing, or destroying enemy combat capability, including radio and radar jamming to interfere with other vessels communications systems and/or the targeting capabilities of certain adversary weapons systems. EPM protects a warship's sensors and communications from jamming that might interfere with signal processing. EWS includes Electronic Support Measures, which assist warfare operators in identifying other surface ships, aircraft and missiles based on their electronic emissions. Communications Intercept and Direction Finding are other EWS measures employed by the RCN.

CYBER WARFARE

Cyber Warfare is warfare that takes place in or through the cyber domain. In a world where advanced technology is available to the average citizen, from the web to the cloud, from the smart phone to satellite navigation, there exists a threat to the control systems governing the sensors, weapons and propulsion aboard modern warships. Alongside in a foreign port or perhaps even operating in the littorals, it is conceivable that a sufficiently advanced adversary could impair a ship's operations. The requirements of modern intelligence systems are also creating vulnerabilities. "Data fusion" is necessary to achieve an intelligence advantage, but there are risks associated with integrating networks. These risks can only be mitigated by developing the means and procedures to monitor and detect intrusions into military networks. Therefore, the RCN will continue to develop the equipment and personnel so it can fully participate in both the

national and Five Eyes joint cyber architectures. This will include the ability for HMC Ships to act as nodes for cyber reconnaissance and if required, cyber-attack.

AUTONOMOUS UNCREWED SYSTEMS, QUANTUM COMPUTING, BIG DATA ANALYTICS AND ARTIFICIAL INTELLIGENCE

The fielding of (potentially lethal) autonomous systems paired with the refinement of targeting aided through the leveraging of big data analytics and Artificial Intelligence will radically impact the conduct of future operations. AI-enabled drone swarms designed to overwhelm shipboard defences or to defend against anti-ship missile threats, are on the horizon. Big data analytics likewise offers immense potential to naval powers in the maritime environment, particularly in targeting, especially in the underwater domain. The advantage is obvious in an era when whoever successfully identifies enemy combatants first survives.[147]

OPERATIONAL SUPPORT

Operational Support is a vital component of a combat effective naval force. Flexible and effective sustainment provides a full range of logistics functions, as well as the engineering and maintenance necessary to sustain a fully operational fleet. The RCN has the ability to maintain and regenerate operational capabilities through comprehensive sustainment, which is comprised of three components – personnel, equipment, and infrastructure. To sustain these components at the various readiness levels requires cooperation amongst various contributors: DND, CAF, allies, agencies, and industry (both at the national and international levels).

NAVAL OPERATIONAL READINESS CYCLES

Behind all RCN operations is an operational cycle that takes an individual ship or submarine from periodic and intensive maintenance periods and refits through technical trials, readiness training and warfare certifications all of which are necessary for deployed operations. For every combatant deployed, there are several others at various points in the cycle, moving in and out of facilities run by Canada's maritime industry, as well as through the RCN's materiel, technical, and individual and collective training systems.

CONCEPT OF SUSTAINMENT

As the scale of RCN deployments varies from single ships to multiple ships and aircraft, support will be task tailored to the operation. In all cases, they draw upon the CAF support framework that stretches from national resources, such as infrastructure and industry, to the individual war fighter at sea. Support capabilities along this continuum are organized into layers that are commonly referred to as lines of support.[148] The allocation of set capabilities within each line of support conforms to the level of need, the perceived threat and the requirement for mobility and protection. Based on the principle of centralized control and decentralized execution, the lines of support enable flexibility in the distribution process while also facilitating

147 The Oceans and Great Power Competition in our Era, May 2023, p. xviii.
148 CFJP 4-0 – Support, 1st Edition, p. 2-4, para. 0207.

rapid redistribution. As a result, CAF doctrine organizes Operational Support within four lines of capabilities as outlined further in CFJP 4-0 Support.[149] In order to more closely align CAF doctrine to the realities of a ship underway and that of naval logistics doctrine, all four lines can be grouped into the following three categories:

- **Integral Support,** or First Line support, is the integral support capability referring to the self-sufficiency of a Canadian warship in onboard spares, provisions embarked, maintenance capabilities, human resources, financial administration, contracting services, and food services;
- **Afloat Support**, or Second Line support, consists of one or more support ships to provide petroleum, oil, and lubricants, ammunition, dry cargo (including provisions and supplies), repair parts, medical facilities and repair capabilities to operating forces either underway or at anchor. It includes pooling of capabilities and resources among the ships of the NTG to aid one another, including spare parts for urgent repairs. Afloat support consists of those capabilities allocated to an NTG or a TF, and can be provided through national or international assets, as laid out in NATO doctrine and other support agreements; and

- **Shore Support** includes the logistics activities conducted ashore in direct support of an NTG, and ranges from solely national support to bi-lateral or multi-lateral support arrangements, Host Nation Support agreements and commercial contracts. The Forward Logistics Site is the primary source of Shore Support and must be sufficiently robust and flexible enough to support the requirements and movements of the NTG or TF. Composed of Third and Fourth lines of support, it encompasses the logistics activities conducted ashore in direct support of an NTG or TF.[150] Within a NATO context, support is coordinated through the Advanced Logistics Support Sites and through a central hub of the Multinational Maritime Forces as required. Other national support organizations can be deployed, such as the CF Joint Task Force Support Element, depending on the size of the operations.

Enhanced by NTG resource pooling, the presence of support ships and a small shore-based organization, the robust, self-sufficient nature of HMC Ships ensures that the fleet is able to be deployed globally and sustained with a modest investment in operational support capabilities.[151] To have even greater sustainment capabilities, either military or commercial options for sealift and seabasing can be considered and configured into existing approaches to Operational Support.

149 Concept of Naval Log Support, para. 7 p. 6, para. 7, and CFJP 4-0 para 0210 p. 2-5, fn.5.
150 Concept of Naval Log Support, p. 7, para. 8.
151 Concept of Naval Log Support, p. 7, para. 8.

MATERIEL SUPPORT

Sustaining CAF capabilities depends on military equipment being kept in good working condition and at a specific level of readiness. The planning, support, and execution of maintenance and repair activities are therefore crucial to the RCN's ability to meet its core missions. Maintaining and repairing all this equipment involves thousands of civilian and military personnel, as well as many private sector firms in a diverse and often complex set of activities.

In the RCN, maintenance is a preventive, scheduled activity that is intended to reduce the probability of equipment failure and extend the life of assets. Failure to follow this approach could lead to breakdowns of varying severity, including those that might significantly reduce operational readiness. Preventive maintenance is therefore intended to reduce uncertainty. Repair, on the other hand, is an activity that restores an item to serviceable condition by correcting faults or replacing unserviceable pieces with new, overhauled, rebuilt, or reconditioned components.[152] The need for repairs is inherently unpredictable and are thus more difficult to plan for and forecast than maintenance activities.

The useful life of military equipment can sometimes extend more than 40 years from initial acquisition to final disposal. Maintenance and repair activities are categorized in the RCN into three different lines of work, based on their level of complexity and the time required to complete them. These activities can be performed by RCN technicians, Department of National Defence civilians, or by private sector firms, and includes:

simple and short-term preventive maintenance and minor repair activities (first- and second-line) are carried out relatively frequently by ship's staff and the Fleet Maintenance Facility; and,

lengthier and more complex inspection, major repair, or complete equipment overhaul activities (third-line) are centrally managed by the Assistant Deputy Minister (Materiel) (ADM(Mat)), and are executed by the Department or by the private sector in specialized facilities, and can take days, weeks, or months to complete.

These maintenance and repair activities are supported by the Maritime Equipment Programme Management division that reports to ADM(Mat). This division is responsible for the life-cycle management of ships, and their systems. They identify maintenance and repair needs for each class, provide engineering and technical support, manage upgrade programs, and ensure that sufficient stocks of spare parts are purchased and made available to maintenance and repair technicians on a timely basis.

152 DTB record 15795

TECHNICAL READINESS

The technical readiness of Fleet platforms (ships and submarines) is a function of the serviceability of shipboard systems. Fluctuation occurs due to the introduction of new equipment, removal of old systems, overhaul of existing systems, routine maintenance, and corrective repair of materiel. In order to ensure the technical readiness of its fleet, the RCN conducts the following types of Engineering and Maintenance (E&M) activities:

Cyclical-Based. E&M support is delivered to the fleet in a process-oriented, cyclical fashion. Preventative Maintenance, modifications, fitting of new equipment, inspections, and minor and major overhauls are conducted as part of a carefully managed programme scheduled around the operational cycles of the various ships and submarines. In this manner, platforms receive the maintenance and upgrades they need while sufficient assets remain ready for operational use at any given time.

Mission-Specific. In order to support the responsiveness, reach, and versatility of naval forces, E&M capabilities include the ability to provide short-notice, specialized, and specific support to operational units that are scheduled, sometimes at very short notice, for operational deployment. Additionally, integrated engineering teams are able to provide the necessary support to deployed units in cases of unforeseen or mission-specific requirements.

CONCLUSION

The last decade has witnessed several examples of maritime power projection. The campaign against Libya in 2011 that toppled Muammar Ghadaffi involved a multinational coalition deploying an array of air and maritime assets, including naval air, sea-based land attack missiles (launched from ships and submarines), and special forces.[153] Three years later, in March 2014, the Russian invasion of Crimea included amphibious and surface ships: the former seized harbours and landed heavy equipment, while the latter closed ports (including by means of blockships) and captured much of the Ukrainian fleet.[154] These examples go to the heart of what a navy's purpose is – to be an effective instrument of national policy able to project power (alone or as part of a coalition) to advance and/or achieve a government's strategic objectives.

As the RCN's strategic doctrine, this publication has been designed to inform and guide the application of naval force in pursuit of Canada's strategic objectives. As the foundation for operational and tactical levels of doctrine, it establishes a framework for the effective use of naval power. Specifically, this capstone doctrine is intended to:

- Provide the principles, including sea control and sea denial, that influence the use of naval forces;
- Explain the fundamental roles of the RCN;
- Explain how the RCN fights and operates;
- Document RCN service culture;
- Deliver professional military education to service members in and outside the Navy;
- Serve to educate and motivate personnel and improve their understanding of the roles and functions of the RCN;
- Frame operational conduct and shape operational thinking;
- Influence national strategic level thought concerning the Navy in areas such as policy development, strategy formulation, and acquisition decisions;
- Inform those within government and the wider community of the ways in which naval force can be applied by the nation in the pursuit and protection of its national interests;
- Provide military allies (joint and combined) and civilian (government, industry, and non-governmental organization) partners with an understanding of the strategic utility, capabilities, and military ethos of the RCN; and ultimately
- Form the foundation for all other naval doctrine and training.

153 See Lee Willett, "The Maritime Contribution" in Saqeb Mueen and Grant Turnbull (eds.), Accidental Heroes: Britain, France and the Libya Question (RUSI: London, September 2011), pp. 8–9.

154 See, for example, Tom Waldwyn, "Ukraine's navy – one year after the seizure of Crimea," Military Balance Blog, 7 April 2015 (International Institute of Strategic Studies), [accessed on 26 April 2016 at www.iiss.org/en/militarybalanceblog/blogsections/2015-090c/april-6dca/ukraines] and "Russia Sinks Ship to Block Ukrainian Navy Ships", Naval Today (online), 6 March 2014 [accessed on 25 April 2017 at http://navaltoday.com/2014/03/06/russia-sinks-ship-to-block-ukrainian-navy-ships/].

It is nonetheless important to bear in mind that this is a living document. It will need to be updated, refreshed, and re-written as part of an ongoing cycle. Intended "to educate, inform and guide military professionals in order to shape their thinking and actions based on the insights and practical experience of their predecessors,"[155] it should not be viewed as rigid or dogmatic thought. On the contrary, the framework thus established by *Trident* should serve as guidance and as a foundation for innovative thought about the development and application of naval power.

Nor is this doctrine comprehensive in its coverage. There are areas of naval activity / responsibility for which current thinking is very obviously only developmental. One of the areas where naval power will need to adapt is in meeting demands arising from the opening of the Arctic region. The Arctic represents an important international crossroads where issues of climate change, environmental responsibility, indigenous rights, international trade, and global security intersect. Eight states – Canada, Denmark, Finland, Iceland, Norway, Russia, Sweden, and the United States – have territory north of 60 degrees of latitude, and five of these states border the Arctic Ocean. Arctic states have long cooperated on economic, environmental, and safety issues, particularly through the Arctic Council, the premier body for cooperation in the region. While all Arctic states have declared an interest in continuing this collaboration, climate change, combined with advances in technology that are making resource exploitation more commercially viable, is transforming the region's strategic importance. That change is putting new pressures on that regime. Alongside an increase in research and tourism in and around Canada's northern territory, this rise in activity will also create safety and security demands related to search and rescue and natural or man-made disasters to which Canada must be ready to respond.

Even as this document is published, RCN strategic thinking and strategic doctrine development can, will, and must continue to benefit from insights derived from history, contemporary affairs, as well as assessments of the future security environment. A number of recent publications produced in Canada and by other governments describe an international security environment characterised by enormous uncertainty. The diffusion of power and emerging multi-polarity, globalization of trade and information, and the proliferation of advanced technology (including military technology), are all contributing to that. Given the widely acknowledged significance of the oceans in international relations, in coming decades the demand for naval power in an age of uncertainty will almost certainly increase – as will the importance of sound, evolved naval strategic doctrine.

155 See "The purposes of Doctrine", A Strategic Lexicon for the Royal Canadian Navy (draft), p. 13.