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Globalization, Maritime Strategy, and the Survival of the Canadian Marine Industry

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Abstract

This paper looks at the linkage between Canada's national interests as a maritime nation and the need for a comprehensive policy supporting development of Canada's maritime industries. The current effects of globalization on the international shipping and shipbuilding industries are reviewed relative to Canada's national maritime interests and the development of related national industries,. The paper argues that a broad systems consideration of the grand/national strategic concerns of security and stable economic prosperity would allow for wider assessment of the cost-benefit relationship of involvement in the marine industries than does narrow relative cost-benefit assessment of direct acquisition costs of particular marine platforms on an individual program basis. Indeed, a broad and comprehensive articulation and implementation of a maritime strategy (with an integral industrial component) would contribute to the stable long term economic health of the country while also mitigating the premium necessary for domestic marine construction to that acceptably commensurate with safeguarding a vital element of the defence industrial base.

Introduction

Many Canadians believe Canada is a 'Maritime Nation'. Less clear is what this title or label actually means, whether it refers to a nation that mostly borders on the oceans or to a nation that is in some way dependent on the oceans. From the very choice of the national motto, *A Mari Usque Ad Mare*, one could question whether this suggests that Canada is fundamentally oriented towards the sea (whether the presence of the sea on three of four sides is a central feature of national identity and activity, the sea being our highway to the world), or whether this motto implies the bounds of a continental perspective (suggesting the sea as the brackets of national existence, as our 'moat' around a continental fortress). To many, it is even less clear what the implications are of being a 'maritime nation', whether this description is an historical or a present fact, and whether it implies opportunities, obligations or even imperatives with respect to the conduct of national affairs.

This paper examines one aspect of these questions from the point of view of national interests and the development of a national maritime industrial strategy. Specifically, does Canada need to maintain a national shipbuilding and repair capacity? If so, what type of marine industry should Canada have, to what end, and what policy options are open to government to encourage the development and prosperity of such an industry? What, exactly, are the linkages and tensions between national interests, the influence of the global marketplace, and the determination of a viable national policy regarding Canadian marine industries?

The geographic scale of Canada's maritime interests is significant: with one of the longest coastlines in the world (243,792 km), a Canadian Exclusive Economic Zone (EEZ) covering 3.7 million square kilometres, the world's largest archipelago (the Arctic islands covering 1.4 million square kilometres) and an inland waterways system stretching 3,700 kilometres from the Gulf of St. Lawrence to Lake Superior, the oceans and waterways have been historically and continue to be an inescapable factor in the approach and access to the continental resources of Canada.[1] For example, the Port of Churchill is the same distance to northern European and Baltic ports as is Montreal, is closer to Prairie producers than Vancouver, and is consequently a growing grain export port.[2]

Overall, a considerable volume of Canadian trade depends on marine transport. In 2002, over 340 million tons of cargo passed through Canadian ports, about 18% of it domestic, 33% with the US and the remainder overseas.[3] The marine share of international (US and overseas) trade was valued at $103.2B. In terms of overall domestic economic impact, the marine transportation industry contributed $9.1B to the

[1] Canadian Coastguard/Fisheries & Oceans website at http://www.ccg-gcc.gc.ca/overview-apercu/context_e.htm

[2] http://www.destinationwinnipeg.ca/fftg/g/Water%20Transportation.doc

[3] *Canadian Marine Industry: Overview*, Background document prepared by the National Marine and Industrial Coalition Council Secretariat - August 2004, at http://www.cmc-ccm.com/acrobat/BackgroundDocAug2004.pdf, pp. 10-13

economy, and employed 93,000.[4] The Canadian-flag fleet as of 17 January 2005 comprised 532 vessels[5] totalling 3,209,916 gross-tons (gt), of which 195 vessels (2,204,896 gt) were self-propelled, and the remainder were barges.[6] The Canadian-owned fleet as of 01 Jan 2004 stood at 323 vessels and 5,915,173 deadweight tons (dwt) (219 vessels and 2,584,240 dwt under national flag, 104 vessels and 3,330,933 dwt under foreign flags).[7] In the list of the 35 most important maritime countries as of 1 January 2004, Canada ranks number 23 with a relatively insignificant 0.76% of world tonnage.[8] The bias of the national flag fleet towards barges indicates a significant resource-centred and coastal/protected waters traffic, while the relative capacity of foreign-flag, Canadian-owned vessels indicates substantial Canadian maritime interests that for various reasons do not find it advantageous to register under the national flag.[9] In addition to trade transport, ferry services are an essential link in our national transportation system, carrying 39 million passengers and 15.4 million vehicles in 2003[10]. The cruise liner business also accounts for some significant economic activity, with more than 880 cruise ship calls and 1.55M passenger-visits to Canadian ports in 2003. Including indirect impacts, the total economic impact was $1.851B, creating 14,922 jobs full and part-time jobs in Canada (9,738 FTE), with $539M in wages and salaries. Vessel maintenance and docking fees accounted for $35.9M, or 5.8% of the cruise lines' direct spending of $616.7M.[11] Thus, the Canadian economy has significant linkages to marine traffic, whether or not these services are currently provided from within national means.

The maritime issues of environment, sovereignty, safety-at-sea, and resource exploitation are closely intertwined.[12] This fact can be seen in the frequent support the Navy provides other government departments in terms of both fisheries patrols and enforcement, and the growing importance of maritime surveillance assets in detecting and identifying perpetrators of maritime pollution. The importance of the environmental-sovereignty elements of Canada's maritime concerns will only increase as global

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[4] *Marine Industry Benefits Study: Economic Impact of the Canadian Marine Transportation Industry* Report prepared for Transport Canada by LECG, Executive Summary, at http://www.cmc-ccm.com/reports.html accessed 04/03/2005

[5] Only vessels over 1000 gt are included in this count

[6] Canadian Ship Registry 17 January 2005 at http://www.tc.gc.ca/marinesafety/Ships-and-operations-standards/ships-reg/list-ships-stats-Jan-17-2005.pdf accessed 06/03/2005

[7] including only vessels of greater than 1000 grt and excluding the Great Lakes fleet. United Nations Conference on Trade and Development (UNCTAD) secretariat, *Review of Maritime Transport 2004*, New York & Geneva, 2004 , at http://r0.unctad.org/ttl/ttl-rmt2004.htm accessed 28/02/2005

[8] Canada thus ranks behind Belgium (22/0.82%), Netherlands (21//0.94%), Switzerland (20)/1.10%), Italy (14/1.60%), Denmark (13/2.10%), UK (11/2.53%), Singapore (9/3.00%), USA (6/5.90%), Germany (4/6.31%), Norway (3/6.66%); and ahead of Sweden (24/0.75%), Philippines (25/0.71%), Brazil (26/0.70%), France (27/0.64%), Spain (28/0.63%), and Australia (33/0.37%).

[9] In 2002, foreign-flag vessels carried a whopping 99.6% of Canada's 168.4 million tonne deep sea trade. Ref Table 8-17, at http://www.tc.gc.ca/pol/en/Report/anre2003/8E_e.htm . Clearly there is plenty of room for expansion of the Canadian-flag fleet, were it to be competitively attractive to owners and shippers.

[10] *Canadian Marine Industry: Overview*, p.17

[11] Business Research & Economic Advisors (BREA), *The Contribution of the Cruise Industry to the Canadian Economy in 2003*, October 2004, athttp://www.portvancouver.com/media/news_20041029-3.html accessed 06/03/2005

[12] these are well covered in *The Strategic Importance of the Oceans*, Maritime Affairs, Centre for Foreign Policy Studies, Dalhousie University, at http://cfps.dal.pdf/oceans.pdf accessed Feb 2005

warming poses the challenge and risk of seasonal traffic through the Northwest Passage. If (or when) the arctic opens up for seasonal merchant traffic, the saving of 7000 km on the shipping routes between Europe and Asia could prove irresistible. Although there is no clear agreement on how soon this development might become a problem, it is clear that an additional burden will fall on Canada to exercise surveillance and provide enforcement of the pollution prevention regulations in the coastal regions over which Canada claims sovereignty[13]. Even in southern waters, this task is already challenged by the increasing prevalence of open registry or 'flag of convenience' (FOC) vessels. Since these vessels are generally not under the effective control of nations that can and will impose appropriate safety and equipment standards and enforce compliance, there is an additional burden of inspection that falls on nations permitting entry of such ships carrying their trade. Although the government has not hesitated in claiming and emphasizing 'maritime nation' status when it serves the purpose of affirming support for worthy and necessary global environmental initiatives[14], assertion of intent and responsibility is no substitute for providing the means for effective presence and control within the claimed maritime domain. The necessity of being able to follow rhetoric with action in the sense of physical presence has been shown in cases such as the 'Turbot War' and Georges Bank episodes. As the increase in claimed areas of jurisdiction confronts extra-national competition for ocean resources and/or assertions of doctrines of freedom of navigation (as in the Arctic) there will be an increasing need for demonstration to support diplomacy.

The importance of this linkage between maritime control and trade is further emphasized by consideration of the security environment *per se*. In the post 9-11 world, Canadians have become more conscious of the need for tighter maritime security with respect to key trade approaches and ports. In 2003, Vancouver retained its position as the third largest North American port handling container traffic exchanged with Asia and Oceania, thus making it a key hub port for Canadian commerce with considerable economic impact on the regions involved.[15] While Canadian ports are considered to be relatively effective compared to their US counterparts, there is a very significant security imperative to maintain the security of these trade routes and not to have trade flow impeded by security threats.

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[13]note Hubert, R., "Climate Change and Canadian Sovereignty in the Northwest Passage", *ISUMA*, Winter-Hiver 2001, pp 86-94; Griffiths, F., "The Shipping News: Canada's Arctic Sovereignty Not in Thinning Ice", *International Journal*, Spring 2003, pp 257-282; and Charron, A., "The Northwest Passage Shipping Channel: Is Canada's Sovereignty Really Floating Away?", CDAI-CDFAI 7th Annual Graduate Student Symposium, RMC October 29-30, 2004

[14]as Foreign Affairs Minister Lloyd Axworthy affirmed in a 15 May 2000 press release, "As a maritime nation with the world's longest shoreline, Canada will continue to provide leadership on the global effort for cleaner oceans.", Environment Canada web site at http://www.ec.gc.ca/press/000515_n_e.htm

[15] O'Keefe, D., *The Future for Canada-US container Port Rivalries*, Statistics Canada, revised 2003, At http://www.statcan.ca/english/research/54F0001XIE/54F0001XIE.pdf , p.6-7. First and second largest, respectively were Los Angeles and Long Beach. Interestingly, Vancouver had a larger annual growth rate (12.5%) than either US port (8.5% and 10% respectively). Montreal was the largest port for containerized traffic from Europe, ahead of New York/New Jersey.

Thus Canada has significant current maritime interests in terms of sovereignty, trade, environment and security. Since globalization of trade and commerce is widely recognised as a pervasive characteristic of the modern world, for better or worse, one might then ask how this phenomenon affects the future development of world maritime industry and by extension Canadian maritime interests.[16]

Globalization and World Maritime Industries

Much academic work has been devoted to the relationships between globalization and national security; between globalization and maritime power; and between globalization and maritime economics.[17] In all this debate there is a common agreement that, if globalization is affecting maritime industry, it can be counted a recursive effect; that the changing nature of maritime trade has enabled development of the economic system referred to as 'globalization'. One author has gone so far as to maintain that the maritime world is the 'root cause' of globalization, in that "sea borne trade is the lynch-pin of global economic development" to such an extent that access to the sea is a metaphor for access to the global economy.[18] He cites Mahan as providing an astoundingly prescient and modern description of the phenomenon that has made the oceans the 'great commons':

> Thus, with a vast increase in the rapidity of communication has multiplied and strengthened the bonds knitting the interests of nations to one another 'til the whole now forms an articulated system, not only of prodigious size and activity, but of an excessive sensitiveness, unequalled in former ages.[19]

Others have noted a similar cause and effect, viewed from an economic and trade perspective, and have remarked more directly that " …despite all the headlines and political bluster surrounding the World Trade Organization, NAFTA and other trade pacts, the real driving force behind globalization is something far less visible: the declining costs of international transport."[20] This decline in costs was the result of huge improvements in efficiency of transport following the development of containerization after 1966. Whereas before containerization, transport costs were generally 5-10% of the value of the item, they are now in the realm of 1-1.5%; a $6000 motorcycle can be

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[16] Two general works on the phenomenon and economics of globalization are Friedman, Thomas L., *The Lexus and the Olive Tree*, Anchor Books, New York, 2000, and Gray, John, *False Dawn – The Delusions of Global Capitalism*, Granata Books, London, 2002

[17] note for example *The Global Century – Globalization and National Security*, Eds Flanagan, S., Frost, E., & Kugler, R., National Defense University, June 2001, at http://www.ndu.edu/inss/books/book_titles.htm , accessed 19/01/2005; *Globalization and Maritime Power*, Ed Tangredi, S., Institute for National Strategic Studies, National Defense University Press, Washington, DC, Dec 2002; and "Globalization: The Maritime Nexus", Kumar, S. & Hoffman, J., in *The Handbook of Maritime Business and Economics*. Ed. Grammenos, Costas. London: Lloyd's of London, 2002, at http://bell.mma.edu/~skumar/IAMEBook.pdf , accessed 26/01/2005

[18] Tangredi, S., *Globalization and Maritime Power*, Institute for National Strategic Studies, National Defense University Press, Washington, DC, Dec 2002, p. xxvi & p.5

[19] Mahan, 1902, cited in Tangredi, p.1

[20] Kumar & Hoffman, "Globalization: The Maritime Nexus", p.36

shipped inter-continentally for $85; or a $1.00 can of beer for $0.01.[21] Although it is often taken for granted, this economy of international commerce rests fundamentally on the freedom of the seas guaranteed by US naval power and global presence.

The consequences of cost reduction in shipping went much further than mere economy of transport. With distance no longer 'a good proxy' for transport costs, the rise of containerization has changed fundamentally the nature of the business.[22] Whereas with break-bulk cargoes, cargo handling accounted for about 50% of cost of transport for a voyage of 2-3000 miles, containerization substituted fixed (infrastructure) costs for variable (crew and stevedore manning) costs; with containerization, fixed costs represent about 90% of total voyage costs, introducing a new "internal dynamic" for specialization of ships and systems, leading to intensified competition for cargoes.[23] Far from the declining cost of transport reducing the focus on the transportation element in modern commerce, increased competition has led to increased pressures for further competitive advantage and increased expectation among service consumers. As Coulter notes, "… further emphasis will centre on consumers choosing to view how a product gets delivered as an actual part of what they are buying", thus affecting a shift of logistic strategies from operational effectiveness to customer "value maximization".[24] In this way, the revolution in maritime shipping, based on containerization, underpins the four trends of globalization: the shift in maritime transport from focus on the ocean carrier to the total logistics system, the concentration of trade flows, the globalization of production, and the "rise of supply-chain management as a discipline".[25] This revolution has been a fundamental shift not only in the economics of international trade and industry, but in its very philosophical foundations relative to national capabilities and motivations.

In an analogous sense, and extending the thought, the maritime industry in general has over many years evolved 'supply chain' partnerships in the development of specialization in various areas of the global maritime economy.[26] This development is evident in the development of the open registry system and the ship management industry. It has also has led to significant specialization in the global maritime industry, whereby some small service economies (such as Panama, Cyprus, the Bahamas, and Bermuda) have concentrated in the provision of open registry, large populous Asian nations (such as the Philippines, India, Indonesia, and China) have concentrated on provision of a large share of the world's mariners, and other centres (such as Norway and London) have specialized in the provision of finance, brokerage services, or in the construction of most of the world's shipping tonnage (Korea, Japan, and China). It has

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[21] Coulter, "Globalization of Maritime Commerce: The Rise of Hub Ports", Chap 7 in Tangredi, op cit, pp.134-5

[22] Kumar & Hoffman also cite a finding that "halving transport costs increases the volume of trade by a factor of five", op cit p.42; others have written of 'the death of distance' as a feature of globalization, eg Frances Cairncross, *The Death of Distance: How the Communications Revolution Will Change Our Lives,* Harvard Business School Press, Cambridge,1997

[23] Gibson, A. & Donovan, A., *The Abandoned Ocean – A History of United States Maritime Policy*, University of South Carolina Press, 2000, pp. 210-11

[24] Coulter, , p 135

[25] ibid

[26] Kumar & Hoffman, "Globalization: The Maritime Nexus", p. 47

been noted in general that under globalization there is a lack of cross-country correlation with respect to location of carriers, building of ships, provision of seafarers, and registration of ships.[27] At the limit, there is not even a necessary correlation with proximity to the sea. Home to one of the top liner shipping companies in the world, Switzerland has a national flag fleet consisting of 281 ships, comprising 1.10% of world fleet by tonnage.[28] These observations serve to underscore the financial and economic basis of participation in the international shipping industry, regardless of any apparent maritime characteristics of the nations concerned. This thought suggests that a nation's status as a 'maritime nation' is a least in part a question of national strategy and choice, rather than solely a matter of geo-political endowment.

The effect of these developments on the marine transportation industry has been to shift the balance of power from transportation providers to cargo owners, decreasing the relevance of mode-specific transportation policies and leading to policies that favour seamless multi-modal freight movements in general.[29] At the same time as policy focus shifts away from transportation modes, competition in the shipbuilding field has grown ever fiercer, posing the dual risk of price undercutting and development of overcapacity. As Huxley has noted, the shipbuilding industry is essential to the health of the shipping market as it controls flow of new tonnage to market, but the dynamic of the market is such that shipping recessions can generally be blamed on the shipbuilding market encouraging overcapacity.[30] The demand for hulls has led to an unprecedented world order book: as of July 2004 there were 3,338 vessels on order totalling 183.8M dwt, an increase of 11% since January 2004.[31] This rate of construction is even more startling when one considers specific key sectors of shipping: as of August 2004 LNG carriers on order up to 2008 represented 46% of current fleet numbers and 56% of capacity; containerships on order represented 78.4% of current fleet numbers and 97.9% of capacity.[32] Not surprisingly, this rate of construction is not only rapidly driving the average age of world fleets down,[33] but is also driving competition and innovation with respect to the size, capacity and complexity of commercial shipping. While the 8,000 TEU containership is now standard, O'Keefe notes that the proposed super post-panamax (aka Malacca-max 18,000 TEU) ships would have cost levels about 16% less than 8,000 TEU ships and could revolutionize bulk shipping by attracting traditional bulk

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[27] ibid, p. 48
[28] *UNCTAD Review of Maritime Transport 2004*, op cit.
[29] Kumar & Hoffman, "Globalization: The Maritime Nexus", p. 51
[30] Huxley,T., "World Shipbuilding Trends", 14 Sep 2004, presentation at http://www.gia.org.sg/iumi/presentation/14Sep2004/Stamford/TimHuxley/TimHuxley.doc
[31] These orders are largely concentrated in the east Asia, with South Korea having 892 ships on order (30M cgt or 39.4% of the world total tonnage), Japan 912 ships (21M cgt or 27%) and China 560 vessels (10M cgt or 13.3%). The next country in order was Germany at rank 4 with 2.1m cgt on order, followed by Poland, Italy and Croatia. ISL Market Analysis 2004, at http://www.isl.org/products_services/publications/pdf/comm-48-10-short.pdf accessed 02/04/2005
[32] Huxley,T., "World Shipbuilding Trends", 14 Sep 2004
[33] Based on the UNCTAD 2004 report, the average age of fleet was 12.5 years (with only 27.7% of them 20 years or older), while general cargo vessels were the oldest at 17.4 years average, and container ships the youngest at 9.2 years. op cit, p. x
twenty-foot equivalent unit, the standard container metric for comparison of containership capacity

commodities.[34] This combination of demand for hulls, increasing size and specialization of ships, and fierce competition to keep shipyard capacity employed (even at a loss) has fundamentally changed the nature of competition in the world shipbuilding market.

The central fact of current world shipbuilding is its extreme competitiveness and concentration of volume. This trend was alluded to in the observations of some Japanese shipbuilders concerning the possibility of US shipbuilders breaking into the world market. Far from being optimistic about the US's chances, they were not even that confident about their own prospects of retaining their position in the market.[35] With the sheer volume of the competitive Asian shipyards, there is tremendous leverage in production process improvement. The following figures convey some sense of the magnitude and production rate of these world-class commercial yards: a large South Korean shipyard (established in 1979) has a steel throughput of 50,000 tons/month, 6,000 employees and 5,000 in-yard subcontractors, and delivers more than 40 large vessels/year, earning $2.8B in revenue; a medium sized Japanese shipyard (established in 1975), processes 10,000 tons/month with 1,900 employees, delivering 9-13 large vessels/year for $400M in revenue.[36] As a further example of the degree of concentration and of the desperate imperative to match orders to the expansion of capacity, the three biggest Korean shipbuilders, (comprised of three Hyundai yards, Ulsan, Sambo and Mipo) have an order-book of 15M cgt,[37] over half the Korean total and close to 20% of world orders.[38] Of these, the Mipo yard alone has an order-book of 153 vessels only 8 years after switching from repair to shipbuilding.[39] The demands of keeping this capacity employed have led the Korean yards to undercut the competition, even to the point of un-profitability where it is assessed that the gap between contract price and normal market prices is approaching 20%.[40] Clearly, international commercial shipbuilding is an enterprise of such volume, specialization and competition that it may not be a reasonable proposition to compare Canadian shipbuilding to it, let alone to suppose that it could compete; this league is completely different from anything Canadian shipbuilders could or should aspire to.[41] However, acknowledgement of this fact is not to suggest that

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[34] O'Keefe, D., *The Future for Canada-US container Port Rivalries*, Statistics Canada, revised 2003, At http://www.statcan.ca/english/research/54F0001XIE/54F0001XIE.pdf , p. 3

[35] From 116,000 people in Japan's 36 largest shipyards in 1975, there were in 1999 about 20,000 (not counting production subcontractors) and the pressure to maintain productivity was intense. VLCCs are built with 50,000 manhours and sell for $70M; Cape-size bulk-carriers for less than $40M and Panamax bulk-carriers for $20M. *ONR/IFO Shipbuilding Newsletter # 10 – November 1999*, at http://nsnet.com/archive/jack_10.html, accessed 27/03/2005

[36] Koenig, P., "Current Directions in Asian Shipbuilding Technology", presentation to *ShipTech 2003*, at http://www.nsrp.org/st2003/presentations/koenig.pdf accessed 25/03/2005

[37] compensated gross tonnes, a shipbuilding comparability measure which adjusts gross tonnage to allow for differing complexity of different ship types

[38] ISL Market Analysis 2004 Major Shipping Countries, http://www.isl.org/products_services/publications/pdf/comm-48-10-short.pdf

[39] Huxley, *World Shipbuilding Trends*

[40] Commission of the European Communities, *Seventh Report from the Commission to the Council - On the Situation in World Shipbuilding*, Brussels, 6.5.2003, p. 12. It might also be suggested that the advantageous pricing of the BC ferries to be built in Germany similarly represents loss-leader shipbuilding.

[41] it is important to note that competitiveness is not a simple function of wages and benefits, but more importantly a question of what is accomplished with each labour hour paid for. For comparison of

Canadian shipbuilding does not have its own place in the world market. Before turning to consideration of Canadian national interests in the state and capacity of domestic marine industries, it is appropriate to consider briefly the impact of globalization trends in shipping on the relationship between commercial shipbuilding and national interests in naval shipbuilding.

A significant impact of globalization/regionalism on the ship construction sector will be to continue the reversal of the traditional relationship between commercial and naval shipbuilding.[42] Traditional navalist theory (the 'defence argument' for domestic shipbuilding capacity) has viewed a commercial shipbuilding/shipping industry as an essential support to naval operations and sealift in time of conflict, both in terms of available vessels, and in terms of the resources of production innovation, trained labour and shipbuilding investment capital. This purported linkage between the merchant marine and the naval auxiliary function now carries less weight as a result of the US experience of the force build-up during Operation Desert Shield.[43] While the performance of Ready Reserve Force (RRF) ships that were available and which did deploy was good, only 42 of 98 ships in RRF were activated. Containerships and bulk carriers of the RRF proved of little use in serving operations in undeveloped areas, and RO-ROs were primarily used up to the point (several months later, during the sustainment phase) when US containerships could be used at modern Saudi ports. The lack of ships was further compounded by a lack of personnel, aging of those available, and the loss of skills necessary to operate older-generation steam-propelled ships. Hence the navy was obliged to augment RRF assets with charter vessels, hiring 73 in the 3 months after invasion of Kuwait. Interestingly, there was no mobilization of multi-lateral coalition merchant fleets to support war material; there was limited involvement of the Jones Act fleet in the Gulf War (6 in armada of 460)[44], and most cargoes carried by US-flag commercial freighters were trans-shipped outside of Persian Gulf to foreign flag vessels, while additional American vessels were not withdrawn from commercial service due to concerns about loss of market share.[45] The USN has since embarked on programmes to acquire a dedicated military sealift fleet of specialized ships owned outright.

With the polarized specialization of both warships and commercial vessels, and the adverse impact of global shipbuilding on the competitiveness of western shipyards, the defence argument (in the specific sense of domestically-built, national-flag commercial shipping being an essential component of the national defence posture) is no longer sufficient strategically to sustain a domestic industry, even in the US. Thus, the

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international shipbuilding wages see "Relative Cost of US Shipbuilding Labour" at http://www.coltoncompany.com/shipbldg/statistics/wages.htm; for comparison of cgt/hour productivity factors see Koenig, op cit

[42] Dombrowski, Peter, "The Globalization of the Defense Sector? Naval Industrial Cases and Issues" , Chap 11 in Tangredi, p. 208

[43] Gibson & Donovan, *The Abandoned Ocean*, pp 249-253

[44] Francois, Joseph F, Arce, Hugh M, Reinert, Kenneth A, Flynn, Joseph E, "Commercial Policy and the Domestic Carrying Trade", *The Canadian Journal of Economics*, Feb 1996. Vol. 29, Iss. 1, p 184

[45] Ferguson, A., "Reform of Maritime Policy: Building Blocks of an Integrated Program", in *Regulation - The Cato Review of Business & Government*, at http://www.cato.org/pubs/regulation/regv17n2/reg17n2-ferguson.html accessed 02/04/2005, p. 6

implicit suggestion is that the traditional polarity of the relationship is reversed and it is rather the naval (or direct 'national interest') shipbuilding and repair requirement itself which furnishes the argument for continued existence of the domestic shipbuilding industry. This conclusion was evident in the May 2001 National Security Assessment of the U.S. Shipbuilding and Repair Industry, which included (among many others) the following conclusions:

> The U.S. commercial shipbuilding industry is generally not internationally competitive, particularly in the construction of vessels over 1,000 gross tons
>
> Shipbuilding and repair is important to the national security of the United States. Frontline warships both enhance the national security and protect American interests abroad. It is essential that the capability and infrastructure needed to build these ships is resident in the United States because it provides added assurance that they can be built, repaired, and maintained during times of conflict.
>
> The current U.S. commercial market for merchant vessels does not support the construction of the type of large sealift vessels needed in wartime. The projected market is unlikely to be any different.
>
> The U.S. shipbuilding and repair industry is dependent on government policy for its long-term survival. Shipbuilding and repair is an important component not only of the nation's defense but also of America's transportation infrastructure.
>
> Extensive modernization of the commercial shipbuilding industry could improve productivity and thereby reduce the costs for purchasers of American-made vessels. The market for large vessels in the United States, however, is limited and may not provide an adequate return on this investment.[46]

Notwithstanding the difference in scale and scope of global interests, there are in the above arguments parallel conclusions for Canada to draw regarding national flag fleet carriers, potential for domestic construction of commercial deep sea shipping, and the navalist/defence argument concerning commercial construction and the naval auxiliary function. If the scale and specialization of global commercial ship construction effectively precludes effective market competition for deep sea domestic shipping requirements, and if the specialization of ship types and dispersion of ownership preclude convenient 'take-up' and application in times of national need, then the traditional 'defence' or navalist argument no longer furnishes a sufficient basis for maintenance of a domestic shipbuilding industry. However, to refute the traditional defence argument is not to deny a national interest, as opposed to a merely commercial interest, in the existence of a domestic marine industry. Therefore we turn next to a consideration of the specific Canadian national interests involved.

Canadian National Interests and Issues in the Marine Industries

Canada does have significant national maritime interests and activities that require the support of a marine industry and there are associated national strategic and

[46] Executive Summary, *National Security Assessment of the U.S. Shipbuilding and Repair Industry*, May 2001, US Department of Commerce, Strategic Analysis Division, pp. xiv & xvi

economic interests at stake that compel maintenance of some level of domestic 'service-delivery' capability. These interests can be viewed from the various perspectives of contribution to national productivity at the macro-economic level, regional economic impact (in terms of employment and industrial sectors), or functional relationship to the discharge of national obligations (defence, transportation, internal security).

As a whole, the ocean industries sector[47] was responsible in 2000 for the employment of 152,000 full time equivalents (FTE), an output value of $22.7B, and added value of $11.7B or 1.48% of GDP. The component portions of the total output and employment and annual average rates of growth (ARG) for the period 1988-2000 are given in Table 1. In terms of regional distribution, the economic impact of the ocean sector is roughly two-thirds east and one-third west.[48] The marine transportation element of the Canadian economy was responsible for direct employment of 36,000 people, adding some $9.1B (or 0.75%) to national GDP in 2003, and creating an estimated total employment of some 93,000 people.[49] For the ship and boatbuilding and repair elements of ocean transportation, the latest statistics Canada figures (for 2002) are given in Table 2.

Table 1
Ocean Sector Elements and Share of Output[50]

	Value of Output		Employment	
	%	A.R.G. %	%	A.R.G. %
Commercial Fishing	17.8	2.8	31.7	-1.7
Offshore Oil and Gas	23.2	25.4	3.9	20.7
Ocean Transportation	13.5	-0.4	16.6	-1.1
Ocean Tourism	4.5	2.4	6.9	0.5
Marine Construction	9.9	12.7	8	9.9
Ocean Manufacturing & Services	10.5	6.6	14.4	2.8

[47] the ocean industries sector is formally defined by Industry Canada as consisting of the following:
commercial fishing : including catching operations, mariculture and fish processing, but not recreational fishing;
offshore oil and gas : including exploration, development and production, but not refinery operations;
ocean transport : including port operations, vessel operations, ship and boat building and repair;
ocean tourism: including recreational fishing, coastal tourism and cruise ships;
marine construction : including buildings, offshore platforms, and general marine works;
ocean manufacturing and services : including communications and electronic equipment, marine technology and consulting services; and
government services : including defence, resource management and R&D.

[48] The gross output of the sector in the Atlantic Provinces and Quebec in 2000 was $16.8B, employing 102,000 and contributing 4.40% of the regional GDP; in the Pacific region, the output was $6.0B, employing 49,300 and adding 2.52% to regional GDP. *Canada's Ocean Industries, Contribution to the Economy 1988-2000*, at http://www.dfo-mpo.gc.ca/communic/statistics/oceans/economy/contribution/part3_e.htm , accessed 20/03/2005

[49] *Marine Industry Benefits Study*, pp. 5-6, noted the relative breakdown of direct, indirect, and induced impacts in 2003 as follows:

	GDP % total	employment % total
▪ direct impact	32.8	38.7
▪ indirect impact	11.8	25.8
▪ induced impact	55.4	35.5

[50] *Canada's Ocean Industries: Contribution to the Economy 1988-2000*, pp 35, 37

Government Services		20.6	-4.4	18.5	-3.5	

Table 2
Industry Output 2002[51]

Category & NAICS*		Number of Estab	Labour Force	Salaries and Wages	Value of Mftg Shipments	Mftg Value-added
			FTE	$ M	$ M	$ M
boatbuilding & repair (336612)	**2002**	**405**	**5423**	**158.5**	**680.3**	**309.9**
	% 01-02		6.9	6.5	13.3	-1.0
shipbuilding & repair (336611)	**2002**	**112**	**3,862**	**174.4**	**600**	**300**
	% 01-02		-9.9	-25.8	18.5	-14.2
Ship & boatbuilding (3366)	**2002**	**517**	**9,285**	**332.9**	**1,300**	**600**
	% 01-02		-0.8	-13.3	15.7	-8.0

Clearly, the marine manufacturing industry is almost insignificant, in percentage terms, in the overall scale of national employment. In terms of regional distribution of shipbuilding and ship-repair workers, of the 4,765 employed in 1999, 810 worked in two shipyards in Quebec, 600 at one in Ontario, 1,770 at three yards in BC, and 1,585 were distributed among 5 sites in the Maritimes.[52] This becomes more significant in terms of the regional dynamics of employment and trade diversity.

The necessity for identification of the domestic shipbuilding industry as a strategic resource was debated during the drafting of *Leadmark – The Navy's Strategy for 2020,* although the final document was limited to identifying the 'sustainment' (resource maintenance) requirement.[53] There are some who have advocated letting the shipbuilding industry sink or swim based on its own competitive merits, and that in particular the domestic construction requirement for the navy be given up. It has been suggested regarding Canadian warship procurement that since the domestic industry is not capable of competing successfully in the international marketplace (due to labour expense, an insufficiency and instability of the domestic demand, and lack of foreign sales potential) warships be procured offshore and the demise of the industry be accepted.[54] Alternately, it has been suggested that "Canada's shipbuilding industry does not constitute an essential element of the defence industrial base or of defence industrial preparedness" due to the limited inherent capacity to sustain independent warship construction, and the

[51] http://strategis.ic.gc.ca/canadian_industry_statistics/cis.nsf/IDE/cis33661prdE.html accessed 21/03/2005
To put some of these employment figures in perspective, total Canadian employment in the entire manufacturing sector (NAICS codes 31-33) for 2002 was 1,958,850, while the transportation equipment sector (NAICS 336) employed 221,006. Within transportation equipment, the aerospace sector (NAICS 3364) employed 42,166, the motor vehicle sector (NAICS 3361) 47,495, and the auto parts sector (NAICS 3363) 88,840.
[*] NAICS = North American Industry Classification System, a system of cataloguing industry statistics
[52] 1999 figures, at http://www.caw.ca/campaigns&issues/pastcampaigns/shipbuilding/workersstatistics.asp accessed 20/03/2005
[53] personal communication form Dr Richard Gimblett, 11 April 2005
[54] Sing, D., LCdr, "Procuring Warships for the Canadian Navy: Does Canada Spend Its Money Wisely?", Toronto, Canadian Forces College Command and Staff Course New Horizons Paper, 3 April 1995

unlikelihood of engagement in prolonged global conflict.[55] Another paper has critiqued the Canadian Patrol Frigate (CPF) acquisition as having lacked a coherent industrial strategy not only to build but also to sustain a competitive world class industry on the basis of the huge investment in design and construction of the initial twelve frigates.[56] Even the Chair of the Senate Committee on National Security and Defence, Senator Colin Kenny, has suggested in a December 2003 speech that

> … its time to eliminate the 'Buy Canadian Premium'…
> I don't think it is appropriate to use the Canadian Forces budget for regional economic development. I think the CF should be free to purchase best value regardless of country or source of the product and ensure that these acquisitions are interoperable with our allies – particularly the United States. If the Canadian Government wants to provide economic incentives to a region it should send them a cheque. [57]

The contested proposition here (of using the Canadian Forces budget to service regional economic development) actually has three distinct but implicit elements. The first element of the proposition, that government spending should be regionally shared, is clearly a matter of broad government policy subject to many variables of opportunity and need. The second, that the budget of the department in question (in this case DND) should be used for these 'equalization' purposes certainly creates ample potential for confusion and conflict between the possibly unrelated objectives of asset acquisition and industrial/regional development, and of different government departments (ultimately begging a question of whether the budgets for acquisition and regional development 'premiums' ought to be separately allocated). The specific matter of offsets or industrial regional benefits (IRBs) will be considered in a later section.

The third element of the proposition, the implicit suggestion that there is a regional industry meriting development assistance through direction of government spending (regardless of departmental budget) is the key issue here, and therefore some comments are in order regarding the nature of the industry. Certainly, the Canadian shipbuilding and repair industry cannot hope to rival the productivity of the other sectors of the transportation equipment industries and the manufacturing industry as a whole, as shown in Table 3. This lack of comparative competitiveness is to a certain extent inherent in the 'craft' or labour-intensive character of the present industry and its small production runs.

While many technology development initiatives are in play to map the best practices of the apparently 'more productive' industries into the shipbuilding sector

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[55] Guérard, M., "Canadian Defence Industrial Preparedness: Is An Indigenous Canadian Shipbuilding Industry Essential?", Toronto, Canadian Forces College Command and Staff Course New Horizons Paper, 30 March 1992

[56] Yeates, I.S., "Government Procurement – A Confusion of Aims: The Canadian Patrol Frigate Project", MBA paper, Queens University, April 1993 (private communication from author)

[57] Senator Colin Kenny, "Defence Acquisition: Building Canada's Future Military Forces", keynote speaker's address on Monday December 1, 2003 at a conference held at Queen's University in Kingston, At http://sen.parl.gc.ca/ckenny/Speech%20Dec%202003.htm accessed 12/03/2005

(including 'lean production'[58] which is one of the keys to Asian shipbuilding success), the fact remains that shipbuilding in Canada is inherently a low volume, custom activity. Even worse for the industry, it has been characterized by a boom-and-bust cycle which has compounded the situation by contributing to retention of over-capacity. The question arises as to what is the potential Canadian demand for shipbuilding and repair services, and why should we care whether this is delivered domestically or globally?

Table 3
Manufacturing Industry Productivity 2002[59]

	NAICS Code	Mftg Shipmts per Prodn Worker	Mftg Added-Value per Prodn Worker	Employment	
		$k	$k	FTE	%
motor vehicle	**3361**	1843.0	570.1	47,495	2.42
auto parts	**3363**	391.9	144.5	88,840	4.54
aerospace	**3364**	478.6	232.6	42,166	2.15
railroad rolling stock	**3365**	572.3	184.8	8,258	0.42
ship & boat building	**3366**	167.5	77.7	9,285	0.47
transportation eqt mftg	**336**	703.3	242.0	221,006	11.28
all manufacturing	**31-33**	359.9	142.1	1,958,850	

The report of the National Partnership Project Committee ('*Breaking Through*') recommended in 2001 that the volume of business necessary to sustain the commercial viability of Canada's ten largest shipyards was in the order of $500-750M[60], of which $300-350M would have to come from federal procurement and the offshore oil & gas business ($150-200M/year over a 15 year period being considered feasible in the context of anticipated Navy and Coast Guard fleet renewal requirements worth close to $5B[61]). In addition to this amount, considerable renewal of the BC ferries fleet is necessary. The controversy regarding the current purchase of the three ferries from Germany is well known.[62] However, according to the BC Ferries fleet profile[63], there are about 21 ferries (totalling 46,600 tonnes, or 29% of the fleet) which are older than these three being currently replaced and which will also need replacing soon, as well as a further 10 vessels

[58] Otherwise known as the Toyota Production System (TPS), a rate-of-flow production concept, to distinguish it from the Ford Production System, the classic mass (or volume) production concept; see Lamb, T., "World - Class Shipbuilders: Their Productivity Using Lean-Manufacturing Principles", *Transactions of the Society of Naval Architects & Marine Engineers*, 2001, vol 109, 285-308
[59] http://strategis.ic.gc.ca/canadian_industry_statistics accessed 21/03/2005
[60] *Breaking Through: The Canadian Shipbuilding Industry*, 30 March 2001, report of the National Shipbuilding and Industrial Marine Partnership Project established by the Minister of Industry on 20 October 2000, p. 18
[61] ibid, p. 39
[62] see "BC Ferries Defends decision to Build in Europe", MarineLog.com, 31 July 2004; "BC Ferries Orders Super-C's in Germany", MarineLog.com, 18 September 2004; and MacPherson, George "A convincing case for offshore work? The Times-Colonist arguments are far less than convincing for building new BC Ferries ships in Germany", at http://www.bcshipyardworkers.com/news/march1_05.html
[63] http://www.bcferries.com/files/AboutBCF/Fleet_Profile_Sept_23_041.pdf accessed 25/03/2005

(68,400 tonnes, or 43% of the fleet) requiring replacement over the next 20 years[64]. This demand backlog should result in ferry-building demand from BC alone of about $2.0B during this period.[65] Although it has been noted that the local shipyards in BC are owned by an American company (the Washington Group), the significance of this construction demand lies in where the added-value is actually delivered.[66]

The Senior Officials' Task Force on Federal Procurement of Shipbuilding and Ship Repair Services responded to the '*Breaking Through*' report in April 2002 when it published the following conclusions:

> … the Canadian Forces will have to factor the new security environment and the 2001 Budget into its ongoing mandate and operational requirements review. Increased current and continuing demands may call for changes in the long-term procurement scenario. However, there is no current indication that this review will call for an acceleration of shipbuilding procurement
>
> On this basis, we are forced to conclude that:
>
> 1. There is no scope for levelling out newbuild procurement as recommended by the report of the National Shipbuilding and Industrial Marine Partnership Project.
> 2. There is no approved funding for either CCG or naval newbuilds of large ships at this time, regardless of departmental wish lists.
> 3. The 2001 budget did not provide any new funding for either CCG or naval newbuild projects.
> 4. Funding will continue to be a challenge for capital programs. In the absence of new funding, departments will have to continue to find alternative ways of meeting operational requirement
> 5. There is not enough domestic federal government newbuild requirement for large ships alone to support the existence of the two largest shipyards. These yards must be commercially viable, independent of government procurement[67]

This conclusion was apparently influenced by a DND statement that "there is no strategic military requirement for naval new-build capability in Canada to a degree that would warrant the government keeping SJSL and Davie in a state of shipbuilding readiness".[68] Other than remarking that procurement has been characterized as 'lumpy' and 'sporadic', it did not make any acknowledgement of the interplay of government and commercial orders in stabilizing construction demands, nor of the potential for proactive, long term programming for the renewal of government fleets. It was rather a conclusion based on current planned spending profiles, not including known but un-funded fleet renewal requirements. Thus, the tenor of the government response was very much, albeit tacitly, along the lines of having the markets decide the survival of the industry.

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[64] assuming a 30-year lifespan

[65] estimating replacement costs as a function of displacement based on the new German-built ferry costs noted in news item 'BC Ferries' board approves $325 million in contracts' , 17 Sept 2004 at http://www.cnw.ca/en/releases/archive/September2004/17/c0995.html accessed 6/03/2005

[66] This situation is not new; Versatile Pacific was US-owned. Although the profit may be remitted to an out-of-country, the national benefit in terms of employment, taxation, skill generation, and development of peripheral industries/services is still accrued where the added values is delivered.

[67] *Federal Procurement of Shipbuilding and Ship Repair Services, Overview and Outlook* , Report Of The Senior Officials' Task Force April, 2002, at http://strategis.ic.gc.ca/epic/internet/insim-cnmi.nsf/en/uv00013e.html accessed 30/01/2005

[68] ibid

What, then, are the arguments against this implied policy of letting nature take its course; if you like, of industrial Darwinism? They fall under two broad headings, the functional and the philosophical. The functional considerations concern the emergent and future domestic requirements for a marine industry based on defence and transportation imperatives coupled with regional industrial employment dynamics. The philosophical dimensions concern the degree to which governments are prepared to intervene in influencing the domestic market conditions in which an industry exists and competes (leaving aside for the moment the question of what means actually exist for any government to exert such influence). These two headings are not at all as cleanly separable as this categorisation might suggest, but it is important to discuss the two separately in order to try to distinguish between the objective/subjective and the more ideological components of the argument.

The objective components are concerned with the role of a marine industry as a vital support to the naval defence industrial base, the response to emergent and pressing national transportation imperatives, and the question of employment diversity. Arguments of support to the naval defence industrial base are not generally viewed these days as particularly persuasive. It has been noted that "as an economic good satisfying human utility, the provision of defence services, especially in peacetime, is an abstract concept, complex and unfortunately malleable depending on the politics of the day".[69] Since the shipbuilding sector is both largely defence-dependent and not largely involved in defence-export sales, and since the notion of the shipbuilding industry as an emergency asset on retainer for use in times of either crisis or prolonged conflict is barely credible, the argument has to be found rather in the role and relevance of the industry in support of stable, steady-state domestic requirements for both new-building and in-service support. Indeed these two activities are closely linked through the use of common resources of labour skill-sets, facilities, and systems integration knowledge. While trade skills at the worker level tend (in general) not to be highly differentiated across the construction-repair/naval-commercial divide, and while the facilities required to support either activity tend to be differentiated in terms more of size and capacity than of type, it is with respect to systems integration that the differentiation is greatest. Thus it can be argued that, accepting that there is a need to maintain a domestic ship repair and in-service support capability for domestic fleets, there is an associated requirement for maintaining a new construction component in order to have a target industry for the acceptance of technology transfer from new construction and its integration into ongoing fleet support functions.

Beyond the question of acquisition and support of current fleets and their replacements, there is an argument related to emergent requirements in the transportation system as a whole. There are growing concerns with the increasing congestion of highway routes for movement of goods, which has led to considerable discussion of the merits of short-sea shipping as an environmentally friendly alternative. This idea has

[69] Binyam Solomon, *The Canadian Defence Industrial Base*, December 1999, at http://www.ecaar.org/Articles/solomon.pdf accessed 05/03/2005 p. 20

been the subject of considerable discussion not only in Canada, but also in Europe and in the USA.[70] Advocates of short-sea shipping point to the significant benefits in terms of energy efficiency of goods movement, with advantageous emissions, accident, and spill indices over both road and rail services, as noted in Table 4. As Brooks has noted, the "social costs of road congestion and pollution "are not borne in general by the transport provider but by the taxpayer and consumer".[71]

Table 4
Environmental and Safety Indices By Mode[72]

		Relative Indices		
performance	**marine specific value**	**marine**	**rail**	**truck**
energy usage	130 kjoule/t-km	1	2.2	9.7
air emissions	15.73 g/t-km	1	1.4	7.6
accidents	0.026/100 M t-km	1	13.7	74.7
spills	0.008/100 M t-km	1	10.0	37.5
noise	66 dB	1	1.4	1.3

In Europe, short-sea shipping is being seen as an essential answer to the impending critical congestion and usage damage of road communications infrastructure, and a special inter-modal support programme entitled 'Marco Polo' has been instigated to co-fund modal shifts towards what are viewed as the 'motorways of the sea'.[73] In Canada, short-sea shipping presents considerable potential due to our population concentration around the grand waterways of the east and west coastal regions, as well as through the St Lawrence Seaway and Great Lakes chain connecting the Canadian industrial heartland. For these advantages to be enabled, however, will require government support through formulation of coordinated strategies to resolve significant financial and regulatory barriers to entry, and to assist in developing fully inter-modal solutions.[74]

The third element of the objective argument concerns the maintenance of industrial employment diversity, both regionally and in terms of skilled trades. Although the shipbuilding and repair industry does not weigh heavily in the overall Canadian

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[70] See Transport Canada website on Shortsea Shipping at http://www.tc.gc.ca/pol/en/Marine/shortsea/menu_e.html accessed 27/02/05 ; Brooks,Mary R., & Frost,James D., "Short sea shipping: a Canadian perspective", *Maritime Policy Management*, Oct-Dec 2004, vol 31, no 4,, 393-407; and example studies linked under site of the Third Annual Short Sea Shipping Conference, 13-15 October 2004, at http://www.iei-corp.com/sssc2004/studies.html, accessed 26/03/2005

[71] *Atlantic Canada Short Sea Shipping Background Study*, prepared for Transport Canada by MariNova Consulting Ltd and Dr. Mary R. Brooks, September 2003, at http://www.tc.gc.ca/pol/EN/Marine/shortseaS/workshop/Atlantic_Canada_SSS.pdf accessed 26/03/2005, p. 51

[72] *Canadian Marine Industry: Overview*, August 2004, op cit, p. 29, referring to a Minnesota Department of Transport (Ports and Waterways Section) report of March 1997 regarding impacts of transport modes, Monetary Cost of A Modal Shift, at http://www.dot.state.mn.us/ofrw/PDF/Monetary_Modal_Shift.pdf

[73] Communication From The Commission To The Council, The European Parliament, The European Economic And Social Committee And The Committee Of The Regions, *On Short Sea Shipping*, 2 July 2004, at http://www.iei-corp.com/sssc2004/com_2004_453_en.pdf accessed 26/03/2005

[74] *Atlantic Canada Short Sea Shipping Background Study*, op cit; note also a study entitled *The Jones Act Under NAFTA and Its Effects on the Canadian Shipbuilding Industry*, prepared by Dr. Brooks for DFAIT in 2004 and due to be published in May 2005

economy, it is more proportionally significant in the coastal regions, and serves to support the development and utilization of industrial skill-sets in these regions. In his discussion of the determinants of Canadian productivity and growth,[75] Harris notes the relationship between agglomeration in manufacturing and urban and economic growth, noting in particular that agglomeration at either the city or regional level supports development of strong economies; that city growth rates are strongly related to growth rates in human capital, and that cities can be either specialized (into financial services, business services or manufacturing) but that diversity within cities tends to encourage urban growth. The interplay of these factors can be seen in the rise of Montreal as an economic hub in the Canadian aerospace sector.[76] While observing that high tech activities are inherently footloose (people being the only 'sticky factor', unlike agriculture or resource industries), Harris notes that the global 'gold collar' worker who is mobile and supposedly has little national allegiance is balanced by the multitude who never leave their home region, let alone their country.[77] This trend might suggest that the regions concentrate on what is intrinsic to those regions or has developed as a local agglomeration.

While the factors influencing formation of such manufacturing agglomerations or clusters are a complex combination of natural competitive advantage (à la Porter's diamond or other such models), the more immediate question is whether it would actually matter if, in the absence of a secure industrial core, a region became 'de-industrialized'. There is a substantial literature on the subject of de-industrialization and its relation to the politically charged topics of regional development and employment. It has been argued alternately that deindustrialization is "in reality, consistent with the processes of capital mobility – disinvestments in one location and reinvestment in another – that have been shaping the American industrial landscape since at least the beginning of the 20th century."[78] Some writers have suggested that the structural dislocation associated with shift away from manufacturing industries can be offset by a concentration on the service-producing use of human capital as a critical determinant of growth.[79] This view, however, overlooks that service delivery industries, like the gold collar industries noted above, may not be firmly rooted to location. Other analyses have stressed the importance of manufacturing industries for the stabilization of balance of payments, noting that "knowledge-based services are a vital and dynamic component of our exports, but they cannot be expected to compensate for widespread failings in the manufacturing sector", and concluding that "manufacturing still matters to economic performance even at the highest levels of economic development".[80] Others argue even more strongly that an

[75] Harris, R.G., "Determinants of Canadian Productivity Growth: Issues and Prospects", *Industry Canada Research Publications Program*, Discussion Paper Number 8, December 1999, p. 18
[76] Niosi, J. & Zhegu, M., "Aerospace Clusters: Local or Global Knowledge Spillovers?", *Industry and Innovation*, Vol 12, No. 1, 1-25, March 2005
[77] Harris, "Determinants of Canadian Productivity Growth: Issues and Prospects", p. 27
[78] Christopherson, S., review of Beyond the Ruins: The Meanings of Deindustrialization, in the Journal of the American Planning Association, Autumn, 2004; 70,4; p. 487
[79] Peck, J.E., "The Effect of Deindustrialization on Area Income: Myth vs Reality", *Economics Development Review*; Spring 1996; 14,2; pp 31-6
[80] Rowthorn R. & Coutts,K., *De-industrialization and the Balance of Payments in Advanced Economies*, UNCTAD Discussion Paper No. 170, May 2004

economic system is composed of two sub-elements, the production system (manufacturing) and the distribution system (services), that service industries are dependent on manufacturing, and that manufacturing matters for every country.[81] Even in supposedly healthy industries, there is concern with the trend towards outsourcing of production and the potential consequences in weakening even the foundation of the high tech knowledge/systems integration base of the business. In two papers on the American commercial aircraft industry, Pritchard and MacPherson echo the concern for the occupational structure of the industrial workforce, the impact on balance of payments and the potential loss of the productive basis of the systems integration function.[82] They note the transfer of core production technologies to foreign producers (including critical wing technology to Japan, allowing total production competence for commercial airframes), the shift of the industry from production to assembly, and the relocation of corporate headquarters away from production sites as discrete events leading this trend. Concern for the retention of critical technological expertise within an industry for purposes of preserving some national productive capacity thus begs the question of how (and where) to establish a proper balance between commercial and national interest, between unconstrained market forces and intrusive policy intervention.

At one extreme of the interest spectrum, a Canadian commentator on the defence industrial base has answered the questions as follows:

> Thus, the principal observation is that the defence industry itself has been internationalized, if not globalized, within the community of democratic countries, as part of the free market economy. In other words, the defence of the defence industry is ultimately the responsibility of companies, not of governments.[83]

He notes that it is"…far from easy, even in theoretical terms, to define the role of and need for an indigenous industrial industry. The very concept of an industrial base as an element of national security strategy comes into question. "[84] Others have contested this view, noting that it is a public responsibility to ensure an adequate defence industrial base and that market criteria are a means to this end rather than the end in themselves[85], and that

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[81] Rynn, J., "Why Manufacturing Matters: A production-centered path to economic growth and social justice", 14/08/2000, at http://www.aftercapitalism.com/deindust.html accessed 27/03/2005

[82] MacPherson A & Pritchard D, "The International Decentralization Of US Commercial Aircraft Production: Implications For US Employment And Trade", Canada-United States Trade Center, Dept of Geography, State Univ at Buffalo, Occasional Paper No 26, June 2002, at http://www.pravco.com/PDF/occppr26.pdf accessed 20/03/2005; and Pritchard D & MacPherson A., "Outsourcing US Commercial Aircraft Technology and Innovation; Implications for the Industry's Long Term Design and Build Capability", Canada-United States Trade Center, Dept of Geography, State Univ at Buffalo, Occasional Paper No 29, July 2004, at http://www.pravco.com/PDF/occppr29.pdf accessed 20/03/2005

[83] Manson, P.D., "Who Defends the Defence Industry?", in *Security, Strategy and the Global Economics of Defence Production,* Canada-UK Colloquium held Nov 5-8, 1998, Halifax,N.S., Eds Hagland,D.G. & MacFarlane,S.N., School of Policy Studies, Queen's University, 1999, p.91

[84] ibid, p.85

[85] Deutch,J., "Consolidation of the US Defense Industrial Base", *Acquisition Review Quarterly*, Fall 2001 p.148

> The myth of free market forces in this industry has been the single greatest cause of its decline and remains the single greatest obstacle to substantive policy reforms. Failure to recognize the special 'monopsony' relationship between buyer and seller perpetuates the assumption that 'natural' forces will sort things out spontaneously in a manner compatible with US security and industrial interests[86].

This suggested tension between the ideologies of classic free market liberalism and government intervention in support of perceived 'national interests' is the philosophical core of the issue. One commentator of the Canadian political scene has referred to "the primacy in our own time of American interpretations of the liberal idea, with the emphasis it gives, in particular, to the cultivation of market economics as one of the first priorities of the state"[87] But is the market always right, is the market perfectly free, and (given that states exist in their present configurations as a result of their history and not necessarily because of the free operations of the market) are there not obligations of statehood that mandate a government's intervention on behalf of its citizens? Laux contends that while past recessions have been blamed on politicians and regulators substituting their judgements for those of the market place, the increasing globalization of corporate activities and competition leads governments to get engaged in influencing the locale where the value-added will be created. [88] Furthermore, the objectives of intervention cannot be solely founded on macro-economic objectives. It also begs some questions regarding the structure of economic life and employment. In a review of Michael Porter's noted book *The Competitive Advantage of Nations*, Murphey (1996) has the following criticism:

> The supreme weakness is that all this says nothing about an economic system as a means of mass participation and mass wealth-creation. It speaks in a rarefied atmosphere of always-higher skill and quality. It makes no effort to define the role for the average fellow with a high school education and two years of college. Porter never considers displacement, either that comes from low-paid foreign workers or that will soon come from near-workerless technology. … His emphasis is on the firm and what a nation must do to provide the milieu for success on the part of its firms; this does not involve him in making an effort to see an economy as an economic and social system serving millions of people.[89]

This view suggests that the obligations of the state include care and concern for both sectoral and regional distribution of employment in order to ensure regional economic resilience through balanced diversity of occupational structure. In a country as large and as sparsely populated as Canada, regional economic vitality and vigour is a matter with significant national unity dimensions. Each region needs to have sufficient

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[86] Redshaw,M.D., "Watching the Invisible Hand", Executive Research Project S97, Industrial College of the Armed Forces, 1993, p.2

[87] Stairs, Denis, "The Changing Office and the Changing Environment of the Minister of Foreign Affairs in the Axworthy Era", Chapter 2 in *Canada Among Nations 2001: The Axworthy Legacy,* ed. Fen Osler Hampson, Norman Hilmer and Maureen Appel Molot, Toronto: Oxford University Press, 2001, p.34

[88] Laux, J.K., "Limits to Liberalism", *International Journal*, XLVI winter 1990-1, p. 133; this point, questioning the 'post-industrial' order based on free-market ideology, is also well argued in Fingleton, Eamonn, "The forgotten merits of manufacturing", *Challenge*; Mar/Apr 2000; 43,2; pp 67-85

[89] Murphey,D.W., "The 'Warp-Speed' Transformation of the World Economy: A Discussion of Ten (of the Many) Recent Books", *Journal of Social, Political and Economic Studies*, Fall 1996, 21;3; pg 327

diversity of employment. While one cannot argue that every region must be represented in all the basic industries, equally well the cohesiveness of national economic life cannot be well served over the long term by having too great a disparity of economic diversity and opportunity between principal populous regions. To do so would be to invite cross-border (north-south) regional economic associations and/or regional balkanisation that would be detrimental to preservation of a robust sense of the national community of interest. This risk is a particular geo-economic 'fact of national life' that is possibly unique to Canada and explains the persistent importance accorded to regional industrial development. As the government's most significant discretionary expenditure category, defence and federal fleet expenditures are, not surprisingly, quite susceptible to such considerations. Acceptance of this reality, however, is not to deny the prospect of a coherent regional industrial policy which might mitigate the resulting premiums of intervention to those acceptably commensurate with the broad spectrum of national interests involved.

It has been noted in the context of defence procurement that "countries such as Australia, Canada, The Netherlands, Sweden and Switzerland face a more benign security environment and, thus, have more choice in shaping their national security value chain".[90] The role of the associated domestic industry in both shaping and being shaped by this value chain rests in the advantages of defence production as an instrument of economic development, as enumerated by Treddenick: the combined complexity and simplicity of it (on one hand it is impossible to say definitively that there is too much or too little of it, on the other " … defence production is easily understood. It is about making things."); the controllability of it (it is "unequivocally in the federal domain", and can be targeted at particular regions, industries, even specific companies); and the acceptability of it (the "international acceptability of protecting domestic defence industries through preferential government procurement practices").[91]

In the present context, the question concerns not only what Treddenick has designated as the 'narrow industrial base', but also the supporting industries of the value or supply chain.[92] Shipbuilding and repair utilize a large range of trade skills (such as steel & aluminium fabrication and welding, pipe forming and fitting, mechanical fitting, electrical and electronics), all of which are also supportive of other industries. While the emphasis on defence industrial base development is generally in expecting the kernel of the narrow industrial base to attract the more diffuse elements and capabilities of the broader industrial base, with the shipbuilding sector in Canada, the argument should be the reverse. The regional marine industry should be encouraged in order to support the domestic requirements of Canada's maritime interests, recognizing the value in maintaining regional industrial employment and trade skills development, and accepting

[90] Markowski, S. & Hall, P., "Defence Procurement and Industry Development: Some Lessons from Australia", RMC Institute for Defence Resources Management, IDRM/IGRD 2003-6, December 2003, p.25

[91] Treddenick, J., "The Economic Significance of the Canadian Defence Industrial Base", in *Canada's Defence Industrial Base – The Political Economy of Preparedness and Procurement*, Ed. Haglund, D.G., Ronald P. Frye & Co., Kingston, Canada, 1988, p.22-23

[92] ibid, p.26-27

that this will yield some indirect by-product benefit in terms of mitigating the costs of the Buy-Canada policy regarding renewal of federal fleets.

Factors in the Development and Implementation of a Marine Industrial Strategy

What options are available to Canada to foster and support development of a domestic marine industry commensurate with its national interests? Other nations with similar interests have taken steps to protect their national interests through development and implementation of industrial strategies, and it would be contrary to Canada's national interest to adhere more closely to the philosophy of free market liberalism than is the international norm.

Any discussion of industrial strategies and policies inevitably involves political/ideological viewpoints, and has a limited timescale of acceptance. Opponents of industrial policy have characterized the arguments for an activist industrial policy as "bad history, bad economics, and bad politics" (even while admitting the proposal is often only to do systematically and comprehensively that which has been done ad hoc and piecemeal over decades), and have commented that "industrial policy is one of those rare ideas that has moved swiftly from obscurity to meaninglessness without any intervening period of coherence".[93] Others, while admitting the requirement to do something (and critiquing existing policies as inadvertent, uncoordinated, containing inherent choices and trade-offs that are rarely debated openly, and subject to narrowly focussed special interests), have advised following a programme of political incrementalism ("be incremental", "trust existing representative institutions", "be ad hoc", and 'avoid delegation") rather than corporatist policy-making. [94] Such a menu of options and motivations offers ample scope for analysis by political scientists. It also poses the pragmatic policy implementation difficulty that, without objective aims and criteria, 'success' can be prematurely declared at any one of a number of politically convenient off-ramps.

In a recent survey work, Pitelis notes that "following years of 'disrepute', the issue of industrial strategy (IS) is now back on the political agenda with a vengeance"[95], noting both EU and British government policy statements on the matter, and observing on the linkage of interest in industrial strategy (IS) and industrial policy (IP) to the 'topical' concerns of international competitiveness and de-industrialization. He notes that the development of IS and IP theories concerns two major fields of economic enquiry: industrial organization (IO), and the debate of 'market failure' vs. "government failure' (aka privatization vs. nationalization). A third factor is later noted; that of international

[93]Miller, James C., "The Case against Industrial Policy", *Cato Journal*, Vol 4 No. 2 (Fall 1984), pp 651-660 and Norton,R.D., quoting Robert Reich in 'Industrial Policy and American Renewal', *Journal of Economic Literature*, Vol XXIV (March 1986), pp 1-40

[94] Hudson,W.E., "The Feasibility of a Comprehensive US Industrial Policy", *Political Science Quarterly*, Vol 100, No. 3 (Autumn, 1985), 461-478

[95] Pitelis, C., "Industrial Strategy: For Britain, in Europe and the World", *Journal of Economic Studies*; 1994;21,5; pp 3-92

competition and in particular the concept of comparative advantage based on assumptions of perfect competition.[96] Regarding the debate between government intervention and privatization, the assumptions are significant, as for example the tenet of mainstream economic theory that "markets can allocate resources efficiently without state intervention, provided that market failures do not exist".[97] Although the state is acknowledged (along with the market and the firm) as "one of the most important institutional devices for resource allocation", the possibility of states becoming captive to the special interests of powerful organized groups is noteworthy[98]. In the British industrial context, the post-war industrial policy was reactive (to market failures) rather than proactive, and compounded by a focus on size as a competitive factor (ie picking 'national champions'), by discontinuity,[99] and by the "absence of an industrial strategy … a set of well-thought-out and consistent industrial policies designed to achieve a long-term objective concerning industry".[100]

This trend is seen in the nationalization-privatization process which saw the formation and dissolution of British Shipbuilders (BS).[101] In response to the collapse of the shipbuilding market following the oil price crises of 1973-74, the British government nationalized the industry in 1977. It had been intended to happen earlier (having been an election pledge of 1974) but was delayed by political opposition until March 1977. Even after nationalization the fortunes of the industry did not improve, partly because wages had been harmonized at high levels and there had been assurances of no compulsory redundancies. Without any ability to rationalize the industry to the demands of the market, BS was unable to turn a profit during the whole of its existence. During this period, British yards continued to concentrate on 'simple' ships rather than the higher value cruise ships which had once been their forte in the 50s and before, and thereby lost out to increased competition from the new low cost shipbuilding nations, such as South Korea. With the return of the Conservatives to government in the 1980s came another change of philosophy, to privatization, although the industry was in such desperate straits that it was commented later that "British Shipbuilders was impossible to sell or even give away".[102] Another reading of the decline of British shipbuilding attributes the demise of the industry to an inability to manage change, resulting from a failure of cooperation over proposed institutional reform in part due to lack of trust between labour and management.[103]

As an alternate example, Sweden also nationalized its shipbuilding industry in 1977, but decided to get completely out of large-scale merchant shipbuilding and

[96] ibid, p. 31
[97] ibid, p.21
[98] ibid, p. 18
[99] ibid, p.27
[100] ibid, p.31
[101] Jamieson, Alan G., *Ebb Tide in the British Maritime Industries – Change and Adaptation 1918-1990*, University of Exeter Press, Exeter, 2003, pp. 75-83
[102] cited in Johnman, L. & Murphy, H., *British Shipbuilding and the State since 1918 – A political economy of decline*, Regatta Press Ltd, New York, 2002
[103] Lorenz, E.H., "An Evolutionary Explanation for Competitive Decline: The British Shipbuilding Industry, 1890-1970", *Journal of Economic History*, Vol 51, No. 4 (Dec 1991), 911-935

progressively closed yards from 1979 to 1986. Sweden now concentrates on naval construction through Kockums as part of the multinational HDW group ('Kockums: A Swedish Shipyard in International Waters').[104] Conversely it is noted that the experience of Japan and the newly industrialized countries (NICs) (principally the four Asian 'tigers' or 'little dragons' of Singapore, Taiwan, South Korea and Hong Kong) was that economic success correlated with a "focus on consensus-based export-led manufacturing growth and a (dynamic) competitive advantage achieved through strategic industrial strategies".[105] It is interesting to note that elimination of excess domestic competition was an important part of Japan's strategy.[106] Pitelis makes the significant point that firm competitiveness should not be confused with national competitiveness; that it is neither the nationality of trans-national corporations (TNCs), nor the foreign direct investment (FDI) of home-based TNCs which indicates and contributes to competitiveness, but rather the ability of nations to attract either home- or foreign-based TNCs.[107] He concludes by accepting the possibilities of a successful long-term industrial strategy pushing the private sector; of creating (as opposed to merely accepting) comparative advantages; of adopting some degree of protectionism; and of nations successfully playing the bidding game for basing of TNCs. In considering the factors of importance for industrial strategy, he stresses clustering, domestic competition, and attraction of TNCs.[108] However, he notes that competition or industrial policies which benefit a country's business sector do not necessarily benefit the country as a whole since the potential benefits from increased competitiveness are not necessarily distributed evenly; the benefits to a TNC will not necessarily accrue to the home-country of the TNC; and short-term benefits to business do not necessarily correlate positively with long-term benefits to the home nation.[109]

The considerations above are not foreign to the maritime sphere, and there has been a long history of protectionism linking the shipping and shipbuilding industries. These policies have been motivated primarily by the navalist or 'defence' argument – that is, the maintenance (in a maritime nation) of a strong commercial maritime sector to support naval requirements for ships and seamen in times of war. In Britain, wars had been fought with the Dutch over issues of maritime trade and access, while a succession of laws (the Corn Laws and Navigation Acts) endeavoured to ensure a preferential share for British ships in the carriage trade (and thereby a steady stream of construction demand to support the shipyards of the nation). Indeed, such was the faith in the importance of the Navigation Act for the business that one author is quoted as observing that the Act was the shipowner's " …constant companion, carried about with such affection as the saints of old carried their precious relics; and never a relic was believed to have worked more miracles than this same act."[110] This sentiment hardly overstates

[104] http://www.karlskronavarvet.se/ accessed 27/03/2005
[105] Pitelis, p.38
[106] ibid, p.35
[107] ibid, p. 42
[108] ibid, p. 43-44
[109] ibid, p. 66
[110] Gibson, A. & Donovan, A., *The Abandoned Ocean,* p. 57

the degree to which national protectionist instruments can garner adherents with dogmatic fervour.

Around the world, nations have taken steps to protect their coasting trade by imposing rules of what has come to be known as cabotage.[111] A US Maritime Administration (MARAD) survey found that at least 50 countries have some form of cabotage laws.[112] Notwithstanding, there has been a rising chorus of debate in the US as to whether their systems of laws and construction/operating subsidies works to the benefit or to the detriment of the industry, and there are vocal advocates on both sides of the argument. There are those who advance the case for subsidies as a strategic measure to access new markets and satisfy rapidly changing customer expectations, arguing that although transportation costs are an insignificant part of the final costs of anything shipped these days, it is not insignificant who carries the cargo.[113] There are others who argue that the US maritime industry is 'out of step' with the rest of the world as the only country which demands that ships engaged in the coastal trade be built (and repaired) domestically; or that the intertwining of shipping and shipbuilding policies has been detrimental to both industries.[114] A good example is the Alaskan tanker trade, showing how distortion of the domestic market and lack of stability in ground rules can have adverse consequences and lead to overall economic loss. In this instance, the imposition of an oil export ban and admission of subsidy-repaying VLCCs into the Alaska oil trade ultimately rebounded to detriment of industry by undercutting smaller, more modern vessels which did not benefit from economies of scale. The resulting lower prices for oil actually ended up increasing America's dependence on oil imports since they both discouraged domestic production and increased consumption. By increasing the attractiveness of the domestic tanker market, the ban helped to draw about $4 billion into the construction of new tankers to deliver Alaskan oil to the US market. The irony is that, once they were built, a substantial number of these tankers were driven out of the Alaskan trades as a result of the Administration's decision to change the cabotage rules and admit ships from the international wing of the US flag fleet into the domestic trades.[115] This was thus a classic case of the unintended consequences of uncoordinated policy making alluded to above, and supports the arguments for either framing coordinated, stable policies for the long term, or eliminating interventionist policies. A further significant lesson for Canada, relative to use of policy intervention in regional industrial systems, is the unanticipated deleterious impact due to the introduction of extra players into marginal subsistence industry. It underscores the imperative for interventionist public policy to be based on clear and committed long-term national

[111] after the French 'caboter" meaning to sail coastwise, or 'by the capes', now taken to mean particularly merchant marine traffic between two ports of the same country (cabotage: navigation marchande le long des côtes et spec. entre les ports d'un même pays)

[112] By the Capes Around the World – A Summary of World Cabotage Practices, MARAD, at http://www.marad.dot.gov/Publications/ports.htm accessed 25/02/2005

[113] O'Neil,D.A., "America's Orphan: The US Flag Merchant Fleet", *Review of Business*, Fall 2004; 25,3; (reprinted from Sea History 77 (Spring 1996))

[114] Gibson, A., "US Maritime Industry is Out of Step", *US Naval Institute Proceedings*, vol 124, Iss 1 p 67; and Shashikumar, N., "Comparative Maritime Policies: A US Dilemma", *Transportation Journal*, Fall 1994, Vol 34, Iss. 1, pp 32-39

[115] Pollack,G.A., 1991, "Promoting the US Flag Merchant Fleet", *Business Economics*, Apr 1991; 26,2

objectives. France provides an interesting example of a country where there is less reluctance to take a *dirigist* approach to industrial policy, particularly in connection with industrial sectors related to defence.[116]

It has been suggested that the playing field of international shipyard subsidies needs to be levelled. Against the proposals to do so, two different measures of success must be considered: whether the vehicle chosen to eliminate subsidy practices will actually be effective in doing so; and whether achieving elimination of world shipbuilding subsidies would actually allow any given nation to compete more effectively in the commercial ship construction market.[117] In 1989, the United States was the instigator behind the original OECD efforts to achieve agreement with respect to shipbuilding subsidies, but since the signing in December 1994 of the Final Act[118] has still not ratified it, due to fierce lobbying by the American Shipbuilding Association faced with ensuing impacts on national protectionist policies.[119] This is a not uncommon demonstration of industry wanting to have it both ways, and again emphasizes the need for policies to be driven by a stable consensus.

A number of countries stand out in this regard as positive examples of how concerted shipping policies have aided the growth of the sector, among them Singapore and Norway. Singapore made a decision in 1985 to promote service delivery over manufacturing and in 1991 introduced the Approved International Shipping Enterprise Scheme (or AIS Scheme). This decision provided a number of incentives for shipowners to relocate to Singapore and to flag at least 10% of their fleet there.[120] This policy, in combination with Singapore's strategic location has had a beneficial effect in making Singapore a broad-based maritime centre with a host of supporting services that act to attract further business. Norway took the approach of establishing a Norwegian International Ship (NIS) Registry, allowing a number of freedoms regarding crew nationality requirements and wage negotiations, foreign ownership and taxation, and level of registration fees. This development has encouraged the basing of ship operations in Norway and attracted a cluster of supporting services.

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[116] There, the DGA (Direction Générale pour l'Armament) has intervened with the aim of eliminating most of the uncertainties of activities of companies operating within the sector, based on a strong national consensus on defence questions and a perception of the need to maintain France's 'rank in the world'. The development of this consensus is fostered by "favouring the permanent coming and going of civil servants between the State authorities and the management of the defence industrial groups …" Mampaey, Luc, "Ownership and regulation of the defence industrial base: the French case", excerpt from: Serfati, Claude (Ed.), *The restructuring of the European defence industry – Dynamics of change*, European COST Action A10, Directorate-General for Research, EUR 19977, Brussels, 2001, p. 6

[117] Zeien, "International Shipyard Subsidies: Can the United States Level the Playing Field?"*, The George Washington Journal of International Law and Economics*, 1991; 25,2; p.641

[118] "Agreement Respecting Normal Competitive Conditions in the Commercial Shipbuilding and Repair Industry", signed by the EU, Finland, Japan, ROK, Norway, Sweden, and the United States, at http://www.oecd.org/document/3/0,2340,en_2649_34211_1810179_1_1_1_1,00.html ; The OECD Council has since established a Special Negotiating Group for Establishing Normal Competitive Conditions, which met for the first time in December 2002.

[119] Gibson & Donovan, *The Abandoned Ocean*, pp 280-81

[120] Shashikumar, op cit

In Norway the maritime industries employed approximately 35,000 in 1998 (12,000 involved in shipbuilding and repair according to 1996 figures). Although the industry is characterized by high wages and costly production, its perceived advantage is technical innovation and professionalism due to the close relationship between research and development institutions, shipowners and shipbuilders which has enabled rapid adaptation to international competition.[121] The industry has specialized in production of chemical tankers, research ships and high speed catamaran ferries, but entered a crisis period in late 1999/2000 due to reductions in orders. This decrease led to calls to the government to bridge production with government acquisition orders for ferries, coast guard ships and a research vessel. One study of the Norwegian maritime cluster draws interesting conclusions regarding the symbiotic relationships between regional specialization, national integration, and internationalisation.[122] A particular example given is of the role of the Norwegian classification society DNV as a central knowledge supplier to the industry. Although Norwegian shipyards may not be able to build everything that is produced by the ship design and consultant elements of the national business sector, the integrated national network between the shipowners, builders, consultants and suppliers ensures that where possible Norwegian equipments can be specified, assuring support for regionally specialized niches. The factors influencing the formations of such mutually reinforcing clusters in five European nations (Norway, The Netherlands, Denmark, Germany and the United Kingdom) have been reviewed and assessed in a recent book, Attracting the Winners.[123]

The Dutch Maritime Cluster (DMC), a commonly noted model, is comprised of 11 maritime sectors, in three main groups: shipbuilding (cargo vessels, yachts, and suppliers), exploitation (shipping, inland shipping, dredging, offshore, fishery, and Navy), and maritime services (ports and 'other').[124] The DMC employs 137,000 persons directly (shipbuilding being 8% of the total) and provides an added-value of about $US 7.282B.[125] During the five year period 1997-2002, the total production value of the cluster grew 22%, with added-value growing 19%.[126] This growth was due to the close synergy between the various elements of the sector. It is noted that the 'cluster' did pre-exist the development of industrial cluster theories, but that the turning point in the industry came from the realization that the greater part of added-value (70%) was created ashore in the offices of shipping staffs and supporting industries. This observation led to

[121] Crisis in Norwegian Shipbuilding, *European Industrial Relations Observatory Online*, 28 Jan 2000, at http://www.eiro.eurofound.eu.int/2000/01/feature/no0001175f.html accessed 25/01/2005

[122] Jakobsen,E.W., Vikesland,M. & Salter,C.,"The Regional Maritime Norway", Centre for Value Creation Report, August 2001, Norwegian School of Management

[123] Jakobsen,E.W., Mortensen,A., Vikesland,M., & Cappelen,A.W., *Attracting the Winners: The Competitiveness of Five European Maritime Industries*, Oslo, Kolofon, http://mf-vtb.no/Dokumentvedlegg/Attracting%20the%20winners%20sluttpresentasjon.pdf accessed 28/03/2005

[124] Peeters, Lefever, van der Linden, Bruynseels, & Webers, *The Dutch Maritime Cluster*, Delft University Press, 1999, Executive Summary, at http://www.policyresearch.be/english/downloads/Maritime_Cluster_-_Book_13.pdf accessed 28/03/2005

[125] de Langen, P.W., "Clustering and Performance: the case of maritime clustering in the Netherlands", *Maritime Policy Management*, 2002, vol 29, no. 3, 209-22, p. 214

[126] The Dutch Maritime Network, Times Shipping Journal, June 2004
At http://www.etshipping.com/June2004/gUpdate.html accessed 28/03/2005

a change of strategy from focussing on flagging of vessels to using policy measures to establish level playing field conditions for Dutch ship-owners. The indirect effects of the cluster overall are about 35% of direct in terms of production and 40% in terms of employment; in the case of the shipbuilding sector, the indirect added value is 1.3 times the direct.[127] This relationship between direct and indirect effects is also noteworthy in the Italian case. The Italian maritime sector currently employs some 356,000 (185,830 directly and the remainder evenly split between related upstream and downstream economic activities). Industrial maritime activities are estimated to have multiplier effects of 2.333 and 2.153 on economic production and employment respectively. [128] Italian shipbuilding employs 32,650 and is particularly notable for cruise-ship building. The success of Fincantieri in this respect is attributed to outsourcing to networks of highly specialized subcontractor companies.[129] This example emphasizes the importance of the existence of a network or cluster of productive capabilities.

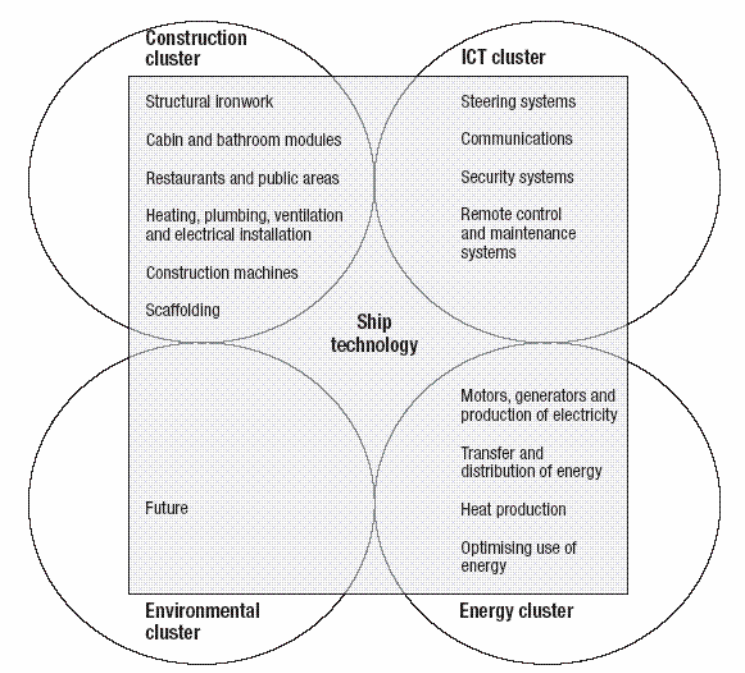
A very comprehensive report has been made on the structure and functioning of the Finnish Maritime Cluster.[130] In reviewing other studies, it notes that the turnover of the overall European maritime cluster was EUR 159 billion in 1997, with value-added of EUR 70 billion,, employment of 1,545,000 people and taxes and social contributions of EUR 23 billion. The direct impact of the Finnish maritime cluster on employment is EUR 89.6B and 331,000 employees (of which the maritime sector's share was EUR 11.4B and 47,000 employees). Breaking this down further, a total of 136 shipbuilding subcontractors were responsible for a turnover of EUR 8.9B and 42,000 employees (the maritime sector share being EUR 2.68B, 10,848 employees), while 4 shipyards and 1 offshore company turned over EUR 1.55B, and employed 6,657 people.[131] What emerges from these figures is not so much the huge importance of the maritime cluster to the economy (although the sector employment out of a national labour force of about 2.3 million is very significant), but rather the fact that the maritime sector is so much more than just the shipbuilding element. The shipbuilding element is an essential functional portion of the whole, but it is the extended cluster that yields the national economic benefit. The point is made that the magnitude and structure of the maritime cluster in Finland tends to dampen out economic swings due to the diverse base of subcontractors and the fact that smaller companies tend to retain their labour force better in difficult times than large ones.[132] A number of points noted with respect to other clusters are reinforced: the significant branching of the cluster into many industries; the dependence of cluster competitiveness on a high level of cluster networking with respect to technology exchange and innovation; the importance of improving the image of the maritime cluster; the need for involvement of the public sector; and the need for the

[127] Peeters et al, op cit, p. xiii
[128] The Second Maritime Economy Report 2002, *The Economic and Employment Impact of the Italian Maritime Cluster*, prepared by CENSIS for the Federazione del Mare
[129] Clark, J., "Sailing along: Fincantieri of Italy has long dominated the cruise-ship-building business; What's its secret?", *Wall Street Journal*, Sep 22, 2003, pg R10
[130] Viitanen,M., Karvonen,T., Vaiste,J. & Hersnesniemi,H., *The Finnish Maritime Cluster*, Technology Review 145/2003, TEKES, Helsinki, 2003, at http://www.tekes.fi/eng/publications/Finnish_Maritime_Cluster.pdf accessed 01/02/2005
[131] ibid, p. 12, Table 7.2 p. 85, and pp 29-30
[132] ibid, p.91

cluster to be viewed as "an operational whole".[133] The concept of the maritime industry as a systemic whole, rather than a loose constellation of exchange of services and commodities, is a significant step. In this light, a campaign is underway in France to represent national maritime activity and interests in an integrated, cohesive manner. In a statement that could apply equally to Canada, the President of l'Institute Français de la Mer in his preface to the seminal document comments regarding the need for a global approach:

> Le cluster est plus nécessaire dans le secteur maritime que dans d'autres secteurs parce que la dispersion y est plus grande qu'ailleurs. Il constitute aussi un moyen efficace pour situer la France dans le monde maritime. Instrument conçu par les anglo-saxons, il se révèle donc être un veritable moyen d'action, dont la France a besoin pour apprécier l'ampleur et les enjeux de sa puissance maritime. …
> La France est en effet un État maritime qui a des difficultés à se reconnaître comme tel.[134]

The Finnish report also offers an excellent encapsulation of the technological and structural function of the shipyards as the kernel of the cluster, engaging subcontractors from other fields as well as offering technologies with applications to other fields, and being important clients for a wide network of suppliers and manufacturers, providing a springboard for their development into independent, global actors. In addition, there is considerable synergy and supportive cross-utilization between the shipbuilding trades and technology sector and others such as construction, power generation/distribution, environmental, and information & communication technology (ICT).[135] These overlaps are diagrammatically depicted in the following figure:



Technological synergies between shipbuilding and other clusters (Ref: The Finnish Maritime Cluster, op cit., figure 8.7.2., p. 173)

[133] ibid, 179
[134] Le Cluster Maritime Français: Poids économique et social de la France maritime, janvier 2004, at http://ifm.free.fr/htmlpages/pdf/2004/cluster-maritime.pdf
[135] ibid, p 172

Three particular examples of industrial strategy applicable to the case of shipbuilding are relevant to this discussion as examples of how various national governments have attempted to define the objectives and issues involved.

The United Kingdom published a Defence Industrial Policy in October 2002.[136] From the outset it acknowledges the tensions that might exist between the dual government responsibilities of securing high quality equipment at best value for money for the taxpayer, while simultaneously demonstrating commitment towards the national manufacturing sector. In accepting that the British defence market has been too small economically to support a comprehensive defence industrial base, it suggests that the defence industrial base be defined in terms of "where the technology is created, where the skills and the intellectual property reside, where the jobs are created and sustained, and where the investment is made".[137] The value for money issue involves the need to maintain competition (at both prime and sub-contractor levels) in order to encourage innovation, flexibility, efficient use of resources, and development of skill and knowledge, while not carrying it beyond the point at which long-term advantage can be gained. The policy notes that where there exist 'wider national interests' that constrain the potential solutions, these should be clearly declared and explained to bidders (national construction of new warship hulls, or sole source procurement being the examples given). The importance of aligning corporate and applied research programmes to improve the 'pull-through of technology' into practical applications is noted, as well as the necessity of maximizing exploitation of civil technology. The policy statement finishes with the following very clear summation of the necessity for a coordinated, stable framework that recognizes the business imperatives:

> In an open market, the trend will be for investment and economic benefit to migrate towards markets providing the best returns. This includes a favourable commercial and regulatory climate, a fair and sensibly applied competitive process, and getting the risk/reward balance correct through early technological de-risking of projects. Companies also need to be able to formulate their future investment strategies confidently, which requires a better understanding of what the government wants in the long term. A clear industrial policy framework – as set out in this document – should help. But it is the sum of acquisition activity within this framework that will give more tangible substance to our industrial policy.[138]

Turning to European policy, following from the Commission of European Communities' 2002 Communication on 'Industrial Policy in an Enlarged Europe', several High Level Advisory groups were established to develop related policy measures on a sectoral basis. 'LeaderSHIP 2015' is the report of the group charged with looking into the future of the shipbuilding and repair industry.[139] In setting the scene of future challenges for the industry, it is noted that "short production series, customisation as a general principle, and global competition force shipyards to permanently search for

[136] United Kingdom, Ministry of Defence, "Defence Industrial Policy", Policy Paper No. 5, October 2002
[137] ibid, p.9
[138] ibid, p. 22
[139] Commission of the European Communities, LeaderSHIP 2015 – Defining the Future of the European Shipbuilding and Repair Industry – Competitiveness Through Excellence, COM(2003)717, Brussels, 21.11.2003

innovative solutions …" and that rather than production site of heavy industry, they "have to be seen as large scale integrators within a high technology industry whose key players are often highly specialized SMEs".[140] Overall, the Commission had three fundamental themes: that trade distortions need to be eliminated; that the value of ships needs to be re-established, to view them as a capital good and strategic assets for a sustainable and efficient transportation industry, rather than merely as global commodities with a volatile price level; and that measures have to be taken to ensure the improved competitiveness of the industry. These themes were mapped out in eight policy elements:

1. **establishing a level playing field in world shipping** (through the continuation of current EU trade policies, determined enforcement of WTO rules, and development of enforceable OECD disciplines);
2. **improving research, development and innovation (RDI) investment** (through ensuring that shipbuilding enjoys the same conditions as other industries that engage in similar RDI activities and is not overly constrained by Community regulations);
3. **developing advanced financing and guarantee schemes**;
4. **promoting safer and more environmentally-friendly ships** (through a more transparent, uniform, efficient and independent system of technical surveys, and exploitations of the great potential of Short Sea Shipping and advanced intermodal integration);
5. **developing a European approach to naval shipbuilding needs** (through development of joint requirements for ships below frigate size, encouragement of standardisation of components and systems, harmonisation of export rules, and development of common rules for a European defence equipment market);
6. **protection of intellectual property rights**;
7. **securing access to a skilled workforce** (through shipbuilding-specific management training, definition of new skill requirements, broad-based, shop-floor-to-academia personnel exchanges, and a campaign to publicize the vitality and sustainability of the industry so as to attract new blue and white collar staff); and
8. **building a sustainable industry structure** (through further development of relevant industrial policies and facilitation of a consolidation process providing incentives to retire less efficient production capacity).

The third example, the Australian Naval Shipbuilding and Repair (NSR) Sector Strategic Plan, is an impressively detailed and comprehensive document.[141] It commences with an assessment of the current situation, a definition of the problem and potential solutions, and recommendation of 'a new way of doing business'. Australia has just emerged from a period of very high naval shipbuilding activity into a period (for the next 15 years at least) in which it is foreseen that demand will be only half that of the last 15. Thus, it is entering into the down phase of a boom and stagnation cycle and facing the

[140] ibid, p. 5 ; SME = subject matter expert
[141] Australia, *The Australian Naval Shipbuilding and Repair Sector Strategic Plan*, 26 Sept 2002, 240 pgs http://www.defence.gov.au/dmo/id/NSR_Sector_Plan_26Sep02.pdf , accessed 13/01/2005

usual challenge of similar sized nations (such as Canada) of how to preserve the economic, financial and human skills investment in having ramped up a domestic production capability. In assessing that there is a very strong strategic case to be made for continuing to build Australian warships in Australia (based on strongly expressed governmental preference in the Defence Policy 2000), this poses significant problems for how to manage what is essentially a monopsonistic market in the NSR sector, how to manage demand strategically to shape and sustain industry capabilities, and how to manage critical industry skills retention. The demand and supply scenarios represented by three different models, demonstrate that "future demand is sufficient to sustain only one shipbuilder, and that the single shipbuilding entity model provides the only feasible structural arrangement to meet the Navy's new construction capability requirements."[142] It is noted that this conclusion is not a 'fine' judgement relative to the other options – that is, the margin of advantage is very much greater than the margin of error. It is also concluded that, rather than a hand-off approach, defence should use its monopsony power to influence the market response through entry into a strong 'alliance' relationship with a sole-source supplier. It is assessed that the risk of a single entity having an overabundance of market power would be compensated for by the fact that typically 70-80% of subcontracts would continue to be competitively bid. A final conclusion of the Plan is that, since defence analyses indicate that ship replacement after 20 years achieves optimal annuity value by avoiding the need for expensive mid-life upgrades associated with a 30 year hull life-expectancy, a shorter in-service life and rolling build program would have beneficial effects both for sustainability of industry and defence costs.[143]

In all these strategies, there are some recurring common threads: stabilize the industry demand, eliminate over-capacity in supply, provide for encouragement of innovation, maintain effective and 'sufficient' competition as a performance incentive, and take committed steps to ensure the retention of skills and the renewal of human capital in the industry.

Canadian Maritime Industry Strategy – Issues and Opportunities

It would be hard to make a convincing argument that there has been any consistent, long-term Canadian national strategy for the maritime industries. Although there have been notable periods of significant accomplishment in the Canadian shipbuilding industry, the measurement of these phoenix-like resurrections (under the impetus of war) against the preceding and succeeding dearth of activity serves to underscore rather than contest the point. The stories of innovation and output have been variously chronicled by Knox, Middlemiss, Davis, Hennessy, and others.[144] However, the

[142] ibid, p. 7
[143] ibid, p. 13
[144] Knox, J.H.W., "An Engineer's Outline of RCN History, Parts I &II" in *The RCN in Retrospect 1910-1968*, Ed James .A. Boutilier, UBC Press, 1982; Middlemiss, Dan W., "Economic Considerations in the Development of the Canadian Navy Since 1945", in *The RCN in Transition 1910-1985*, Ed. W.A.B. Douglas, UBC Press, 1988; Davis, S. Mathwin, "Naval Procurement 1950 to 1965", in *Canada's Defence Industrial Base – The Political Economy of Preparedness and Procurement*, Ed David G. Haglund, Frye &

lack of an underlying strategy of sustainment has precluded establishment of a long-term record of prosperity.

Hennessy has documented how, during the Second World War, in response to disappointed expectations as to who would protect Canada's coasts, the nation developed a substantial shipbuilding industry employing 70,000 workers. The War finished with Canada having the third largest navy in the world, and a taste for an interventionalist maritime policy, expressed through formation of a Canadian Maritime Commission having broad responsibility for development of policies directed at preservation of the shipping industry, maintenance of shipyards and coordination of naval shipbuilding. While Hennessey has particularly noted the "positive, ordering and stabilizing influence of government regulation", he assesses that both the relation between defence policy and civilian shipping/shipbuilding policies, and the buoying effect of naval shipbuilding requirements acted to distract attention from the need to adapt to post-war realities in the commercial markets. Lack of clear policies and the lines of authority between multiple mandates led to internecine strife with respect to departmental objectives and resources, and a gradual divergence of what should have been more coordinated policies concerning naval and merchant marine construction requirements. Hennessy particularly notes the confluence of several factors in leading to the demise of both the shipping and shipbuilding industries: first, prohibition of reserve-fleet-covenanted ships from seeking the most competitive registry (compounded by the 1949 reflagging scheme which forced Canadian owners to transfer ships to the flag (British) that "proved the least likely to actively nurture or preserve ships on its registry"); an expansive naval programme that filled order books across the country; and a kindling of economic rivalry in pursuit of competitive reduction of naval building costs, at the same time as indiscriminate use of assistance to maintain this level of competition. The effects of these last two were to reduce the consequences of comparative advantage and competition and to maintain over-capacity rather than encouraging consolidation and rationalization.[145]

The mention of industrial assistance as a factor in the above assessment resonates with more recent times regarding industrial regional benefits (IRB) policies. A traditional criticism of IRBs has been related to their impact in encouraging establishment of new production facilities and creating excess capacity.[146] There can also be considerable difficulty in achieving what is accepted as equitable regional distribution of such benefits. For this reason, the Belgian government decided in 1999 to eliminate offsets altogether for defence acquisition, noting that direct compensation (a share in the production of equipment) leads to generation of excess production capacity, while indirect compensation often entails imprecise contracts without any guarantees. There is a need for a strategic policy framework to guide the application; Struys has commented that

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Co, Kingston, 1988; and Hennessy, Michael A., *The Rise and Fall of a Canadian Maritime Policy, 1939-1965: A Study of Industry, Navalism and the State*, PhD Thesis, University of New Brunswick, February 1995

[145] Hennessy, *The Rise and Fall of a Canadian Maritime Policy*, p. 433

[146] Edgar & Haglund, p. 73

"absence of a genuine industrial policy in the defence sector … gave rise to a short-term strategy and transformed the offset policy into a dogmatic behaviour".[147]

What long-term industrial strategy and policies might be appropriate to development of the Canadian shipbuilding sector in the 21st century? Due to the magnitude of national investment in naval ship acquisition programs, this question is inevitably coloured by consideration of defence requirements and opportunities. It has been commented that, due to the mercantilist nature of the international arms trade, "export potential ... is the least credible reason for supporting the in-country sourcing of defence products".[148] This is not to say that export linkages are not an important part of a strong industrial cluster but that this cannot be the principal driver behind domestic sourcing.

Development of core competencies is a key issue, and there are numerous examples in the industrial growth of newly industrialized countries as well as in the adaptation of old-world powers. As an example of strategic adoption and change in mature industries, Chou and Chang note the case of Bazan Naval Shipyard in San Fernando Spain, which shifted from naval construction to high-speed aluminum commercial craft.[149] This will, of course invite a rebuttal citing the case ("the fiasco") of the BC Ferries *Pacificats*. However, it is important to note that the conclusions of the BC Auditor's Report, in finding principal fault with the governance and project management of the Fast ferry Project, do not so much fault the fundamental strategy of attempting to develop a niche capability but rather fault the implementation.[150]

As noted in connection with the Finnish and Norwegian cases, domestic sourcing can assist in creating a stable indigenous basis of demand for the components and sub-systems which may have greater export potential than the integrated system. This raises an important distinction between two discrete sectors of the defence systems industry (or indeed, any industry that produces highly integrated systems to specific tailored requirements).[151] On one hand are the highly diversified systems integrators that work to develop what are essentially custom platform and/or network-based solutions to sophisticated requirements; on the other are the sub-system and component original equipment manufacturers (OEMs) that may produce speculatively in anticipation of either domestic or export orders, and whose products may find application in a wide range of tailored systems, either civil or military. While this is still a valid generalization in the 21st century, it has been suggested that there several coming shifts in industrial orientation, responding to some of the dynamics of military technology requirements in

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[147] Struys, W., "Offsets in small countries: between Scylla and Charybdis?", Royal Military Academy, Brussels**,** Communication at the ECAAR Conference on *"Offsets and Economic Developmen*t", Cape Town, 25-27 September 2002, draft at http://www.ecaar.org/Articles/SA%20Papers/Struys.pdf

[148] Markowski & Hall, "Defence Procurement and Industry Development", p.35

[149] Chou, Chia-Chan, & Chang, Pao-Long, "Core competence and competitive strategy of the Taiwan shipbuilding industry: a resource-based approach", Maritime Policy Management, April-June 2004, vol 31, no 2, 125-137

[150] British Columbia, Office of the Auditor General, *A Review of the Fast Ferry Project: Governance and Risk Management*, Victoria BC, October 1999

[151] Markowski & Hall, "Defence Procurement and Industry Development", p.19

the era of the Revolution in Military Affairs (RMA). The first of these shifts is towards 'agile manufacturing', a so-called 'postfordist' approach that uses "computer-driven flexible machine tools, 'lean production' processes and rapidly reconfigurable 'virtual enterprises' to undertake low-rate/low-volume production of increasingly 'knowledge-intensive' high technology weapons".[152] It is suggested that this will lead to "severing the military-fordist connection between volume and cost", which has led to smaller numbers of increasingly complex 'baroque' weapons, and will enable elimination of the segregated market in which there are barriers separating military/civil technologies and industrial bases, and distinct firms serving each sector.[153] The other, related shift, is an increasing emphasis on the systems integrator side of the production system. This idea is implicit in a projection of the impacts of military transformation on the defence industry as a whole.[154] It is suggested that shipbuilding may become an example of emergence of a 'new old economy' wherein the "traditional extractive and metalbending industries are being transformed and reinvigorated by the information economy", and where prime contracts will be more likely let to systems integrators (such as leading aerospace and electronics firms) than to shipyards.[155]

This peripherally-suggested comparison of the shipbuilding and aerospace sectors is interesting in the Canadian context, where the reluctance to establish a long-term program of support to the shipbuilding industry skirts the fact that this very thing has been done for the aircraft industry. Indeed it is curious to note that the arguments for this being the case (governmental support of 'national champions', aircraft as large, big-ticket items impossible to sell without financing) are common to both industries, as is the general argument:

> To understand the importance of government loans to aerospace, one must first contemplate the industry's unusual dynamics. Large plane manufacturers don't simply materialize by accident or from unbridled entrepreneurial spirit; wherever they exist, the hand of government has played a deliberate, nurturing role.[156]

One should then consider whether, relative to national interests, some other common characteristics of the two industries deserve consideration, in particular their importance as basic transportation industries in a large country with world-wide interests and trade. This joint importance of transportation and trade has recently been underscored by the Federal and Provincial governments' seed-money investment in what will ultimately be a $570M container port at Prince Rupert. When complete in 2009, this 'Asian Gateway' port will be capable of handling 2 million TEU per year (greater than

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[152] Latham,A., "Postfordism in the US Arms Industry: Toward 'Agile Manufacturing", YCISS Occasional Paper Number 43, York University Centre for International and Security Studies, December 1996, p. 2
[153] ibid, p. 26
[154] Dombrowski, P.J., Gholz, E., & Ross, A.L., "Military Transformation and the Defense Industry After Next: The Defense Industrial Implications of Network-Centric Warfare", Naval War College Newport Papers 18, September 2002
[155] ibid, p. 30-32
[156] McClearn, Matthew, "Bombardier's Bank", *Canadian Business*, Toronto: Mar 29-Apr 11, 2004; Vol 77, Iss. 7; pp 20-22

Vancouver's current capacity of 1.8 million TEU) and employ 500 full time.[157] This development is being driven by bottlenecks in other west coast container ports but also benefits from Prince Rupert's comparative advantages such as the depth of harbour, proximity to Asia and CN rail connections. Additionally, the proposal by Enbridge Inc of Calgary to build a $2.5B pipeline from Alberta to Prince Rupert and proposals for a liquefied natural gas terminal at the port all point to an increasing economic role for Canada's ports. Although the arguments made earlier concerning the likelihood of Canada competing directly in the construction of large-scale containerships and tankers is not likely changed by these projections, the increase in maritime activity does represent an opportunity for Canada to decide to be a more integral participant in the maritime industry rather than as just a raw resource exporter and finished products consumer.

Conclusion

Canada is a nation with a sense of self that is somewhat ambiguously defined by its ocean boundaries: it can be variously described as a maritime nation, a continental nation, or a coastal nation with maritime interests. Canada's economy is significantly dependent on trade, but the majority of our waterborne trade is carried in ships flagged in other nations (less than half of Canadian-owned ships are flagged in Canada). However, Canada also has significant maritime interests that rely on access to and use of the oceans in the fields of domestic security, transportation, sovereignty, and the environment.

The phenomenon of globalization has been significantly impacted by, and has significantly impacted the maritime industries (shipping, shipbuilding, and a whole constellation of economically supportive and integrated activities). The world shipping market is brutally competitive, and is dominated by countries that have either proactively nurtured their natural comparative advantages, and/or established protectionist instruments to support a competitive advantage for broader economic purposes. The world commercial shipbuilding industry is also brutally competitive, driven by significant consolidation of construction volume, leading to economies of scale, and specialization, leading to production efficiency.

Canada's shipbuilding industry is small; while it has accomplished significant productive feats in the past, this has been under the impetus of wartime requirements and a 'command' economy. Given the way in which the world commercial shipbuilding has evolved, this is not a field in which it is at all likely that Canada can compete. In addition, some of the traditional formulations of rationale for a domestic shipbuilding industry are no longer as persuasive or applicable as in the 'navalist' past. The argument of maintaining a strong industry to support 'emergency' construction of warships does not apply as conflict will require national forces to be committed as they are, and it is extremely unlikely that any emergent (un-forecast) security crisis will last long enough for the usual timescales of naval design, development and procurement to be able to augment existing forces. The 'defence' or 'naval auxiliary' argument is also of limited weight due to the specialization of modern merchant ships (and hence their limited

[157] Greenwood, John, "Gateway to the East", *National Post***,** Don Mills, Ont.; Apr 16, 2005. p. FP1 Front

applicability to the theatres of likely conflict), and their limited national accessibility in times of conflict.

This is not, however, to say that Canada does not have sufficient reason and demand to support some measure of Canadian shipbuilding. A number of national interest reasons exist as to why Canada should retain a domestic maritime industry: first, to maintain regional and sectoral diversity of employment, preserving the vitality of industry in all regions, and avoiding the over-specialization of economy and employment that goes with de-industrialization; second, to support renewal of federal and provincial fleets; third, to provide a domestic maritime outlet for systems integration capabilities; and fourth, to provide a nucleus for development of a national maritime cluster to support entry into niche markets and demands that do serve Canada's direct interests (for example, offshore, short-sea shipping, multi-modal transport, security/search-and-rescue, transportation, and marine safety/ice-breaking).

While Canada's domestic ship requirements are modest, they are sufficient to maintain a domestic industry. What is required is a committed and stable long-term strategy aimed at creating and preserving the conditions in which such an industry can survive and thrive in global competition. There are a number of countries that have taken such an approach. While this can be dismissed as counter-economic protectionism, it could be alternately viewed as placing long-term support of key domestic capabilities ahead of momentary price-advantage of the related commodities. One could liken the argument here to that regarding the urban impact of proliferation of big-box stores: just because it is the result of 'natural' markets forces does not mean that the unanticipated long-term consequences for the community will be either desirable or acceptable. The argument has a distinct tendency to become ideological, polarized between classical economics/free market liberalism on the one hand, and national strategy/ political science on the other. This inevitably calls for strategic consideration of national objectives and benefits over the long term. This has been demonstrated by a number of nations that have developed their maritime industries to benefit from the synergies of 'clustering' or agglomeration.

In pragmatic terms, the most successful European experience with maritime clusters has demonstrated that the shipbuilding sector does not have to be the economic pillar of the cluster, but rather functions as the kernel around which the more economically diverse and resilient elements of the cluster crystallize. Experience of successful elements of European shipbuilding (e.g. Italian cruise-ship building) shows that it is not the shipbuilding *per se* which makes for success, but the integration of the activity of an extended network of skilled subcontractors, and the ability to understand and respond 'agilely'

This conclusion is borne out in projections of the industrial impact of the revolution in military affairs, and could be arguably a trend for the development of industry and commerce in the 21st century; in the same way that, under the influence of globalization due to containerization of transport, the transportation of an item has become an

inseparable and significant part of the 'value chain' of a purchase, so will the systems integration value-added assume greater prominence in the marketing of complex systems.

For national purposes, it is important where this value-added is actually delivered, since the benefits do not necessarily accrue to the home country of a trans-national corporation. As noted regarding concerns in the aviation industry (and the same applies to the auto industry), although the components and subsystems are the larger part of the industry and cost in economic terms, it is the integration and assembly functions that 'root' or anchor the industry, both in preserving a stable domicile or national presence, and in providing a core focus for networking and innovation.

Thus Canada needs a change of mind-set regarding the maritime industries, not to focus overly on the traditional hull-trades basis of shipbuilding, regarding it as a passé 'smokestack' industry, but rather seeing it as a national outlet for systems integration expertise and a vehicle for the myriad components and sub-systems that Canada is currently producing or will/can produce. This will require far-sighted vision that transcends the immediate horizon of individual ship-classes and considers the form of a niche industry to serve Canada's domestic needs while also providing another avenue for integration and export of the output of Canada's many other industrial capabilities.

One may note in passing that even with the successful Dutch maritime sector, the naval shipbuilding portion of it is currently in desperate straits, and has appealed to the government to accelerate naval shipbuilding to bridge a 10-year hiatus in the programme. In this they have been flatly rejected,[158] and hence have turned their hungry eyes towards Canada's Joint Support Ship (JSS) requirement. While the Dutch, in their own interest, will no doubt be prepared to make a very competitive offer for the construction of these ships, it will be incumbent upon Canada to ensure that a broad assessment is done to prevent long-term national interest falling victim to short-term financial opportunity.

One author has noted that, regarding the policy environment in which they attempt to become more productive and competitive, "the central desiderata for manufacturers, within reasonable limits at least, are stability, predictability, and clarity".[159] As noted in the above discussion, fluctuations in policies governing the competitive environment, even when apparently positive, can have unanticipated negative consequences. This has been borne out through the long and torturous history of American maritime policy. Almost seventy years ago, the need for clear objectives and commitments was encapsulated in a statement that bears careful consideration as Canada attempts to revitalize our own maritime policy framework:

> We are about to start again, not in a riot of enthusiasm, not with the expenditure of billions, but with a carefully-planned program that gives due regard to the factors of need, method and cost.[160]

[158] Jane's Navy International, 01 October 2004
[159] Edgar & Haglund, op cit, p.141
[160] Gibson & Donovan, *The Abandoned Ocean*, p.302, quoting from the *1937 Economic Survey of the American Merchant Marine*

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