



Journal of the Australian Naval Institute



Spring 2002

AUSTRALIAN NAVAL INSTITUTE Inc.

The Australian Naval Institute was formed and incorporated in the ACT in 1975. The main objectives of the Institute are:

- to encourage and promote the advancement of knowledge related to the Navy and the maritime profession; and
- to provide a forum for the exchange of ideas concerning subjects related to the Navy and the maritime profession.

The Institute is self-supporting and non-profit-making. Views and opinions expressed in the Institute's publications are those of the authors and not necessarily those of the Institute or the Royal Australian Navy. The aim is to encourage discussion, dissemination of information, comment and opinion and the advancement of professional knowledge concerning naval and maritime matters.

The membership of the Institute is open to:

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Front Cover: HMAS *Kanimbla* sailors restoring the gun on Christmas Island

Back Cover: Kiunga wharves showing bulk carrier and general cargo ship loading.

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FROM THE PRESIDENT



Dear Members,

Since my last letter the Council has been busy in trying to better position the Institute for the future. An extensive mail out has been undertaken to attract new members and to encourage an increase in articles submitted for publication. Also the Institute is close to launching its website to further promote our objectives, advise of recent Journal articles and provide an agreed link to the sites of our sponsors.

Much effort went into arranging the Institute's Annual Dinner on 7 November, at which Dr Norman Friedman delivered the Vernon Parker Oration on the future global security environment from the maritime perspective. This was an interesting and thought provoking session, the text of which will be published in the January edition of the Journal. The Council has also been active in producing a brief submission to the Joint Standing Committee on Foreign Affairs, Defence and Trade inquiry into a maritime strategy, and a number of relevant Journal articles were provided as background reading. I would hope the Committee would allow publication of the submission in the Journal at some stage.

I am pleased to announce that the Chief of Navy, Vice-Admiral Chris Ritchie, AO RAN has agreed to become the Patron of the Institute.

There have been a number of changes to the Council over the past few months. I thank Paddy Hodgman for his time on the Council and for his efforts in maintaining a strong link with our sponsors; James Goldrick has agreed to take on that role. I welcome Ms Kym Williams as our new Treasurer and thank Rob Glanvill for taking on this task for the past few months. I also welcome Richard Menhinick as Vice President and Henry Pearce as a Councillor.

I hope you enjoy this issue.

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FROM THE EDITORIAL BOARD

Thanks to Ian Reynolds, one of our foundation members for confirming that Vol 1 Nos 3 and 4; Vol 24 No 4; Vol 25 No 3; and Vol 27 No 4 of the Journal were never printed (there were also problems with incorrect numbering a few volumes ago). The Summer 2003 Edition will change to the new consecutive numbering system.

We intend to continue producing four Editions of the Journal a year, aiming to publish at the end of January, April, July and October. This is of course dependent on the provision of articles from both members of the Institute and others who are interested in naval issues. In that regard, the Board is particularly interested in publishing articles on Navy operations, where such information can be placed on the public record.

At its last meeting, the Council agreed prices for back copies of the Journal (where held). For members, prices will be \$5 each and \$15 for non-members. Importantly, if members no longer wish to keep copies of the Journal, the Institute will gladly take them back (particularly early Editions).

The email address for the Editorial Board is andrew.forbes1@defence.gov.au

The Editorial Board

Editor	Mr Andrew Forbes
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The Ninth Navy



By Captain Graham MacKinnell, CSC RAN

Frigate Sachsen undergoing sea trials in the Baltic

Germans are the same as us except that they are different.

Anonymous 2000

After two and a half years service in Germany, I remain astonished by how aptly the quotation above sums up what an Australian can find in Germany. And a comparison of the two Navies simply epitomises it. On the one hand the Germans operate a range of ships, aircraft and submarines broadly comparable to the RAN (especially if one includes the maritime elements of the RAAF) and follow NATO maritime doctrine. On the other hand, the strategic circumstances, the historical background and the domestic influences, which have shaped the German Navy, differ considerably from Australia's case.

Modern Germany has had no less than nine different Navies, ranging from the "contract" naval forces of the coastal traders in the 1850s, through the Imperial Navy of World War I, the *Kriegsmarine* of World War II, and the twins, the *Bundesmarine* and *Volksmarine* of the Cold War era. Shortly after my arrival I attended a most interesting exhibition by a naval historian of the German Military Research Institute, which illustrated the history of today's *Deutsche Marine*.

For an Australian, experience with the German Navy is eye opening. It is a good example of how one can go about the same business of taking ships to sea and fighting them if necessary, while doing it from quite a

different national basis. Accordingly, many of the German Navy's practices have limited direct relevance for Australia. But *in toto* it offers such a contrast that it provides Australians with a most valuable insight. For an Australian, the German Navy represents a stimulus for thinking "outside of the box", an example for attempting to imagine what it would be like if we changed "this" or a basis for examining the various alternative approaches to achieving naval capability.

Strategic Background

The Federal Republic of Germany has more than four times the population of Australia in an area just 40% the size of New South Wales. The country has only a limited coastline - only three of the thirteen states plus the two independent cities of Hamburg and Bremen border on the sea. Instead of blue horizons Germany has land borders with nine other nations. Furthermore, in the past two hundred years alone, there have been many grievous military clashes between Germany and its neighbours causing its borders to expand and contract markedly.

From the end of World War II until about 1990, the Cold War entirely occupied German strategic thinking. Noting also Germany's military history, the *Bundeswehr* (Federal Armed Forces) was totally focussed towards providing a substantial German contribution to the NATO forces arrayed to prevent a westwards onslaught by the Warsaw Pact. The *deutsches Heer* (the German Army)

was built upon heavy armoured divisions intended to fight in place. The *Luftwaffe* (German Air Force) consisted of fighter and strike aircraft, short-range light transports and a mass of ground-based air defence missileery. The then *Bundesmarine* comprised mostly of air, surface and sub-surface forces geared to fighting in the shallow waters of the Baltic. Only the destroyer force of three DDGs and (then) eight frigates was designed for wider ranging operations, such as convoy escort duties in the Atlantic.

Domestic Influences

As with northwest European countries generally, the Federal Republic of Germany is regarded as a social democracy in contrast with most first world English speaking countries, which are described as liberal democracies. In broad terms, the difference is that Germans are more prepared than English speakers to conform to governmental direction in return for assured social welfare. For example, Germans will accept conscription, the requirement to carry an ID card at all times and other forms of social regimentation. But, they expect that the state will provide for them comprehensively when they are out of work, sick or aged.

Germany has the world's third largest economy and is the second largest trading nation. Anecdotally, about half the population prefers to drive a German car and fill their homes with German products. Such faith in German goods supports a national manufacturing sector, which is almost equal to that of Great Britain and France combined. Germans understand extremely well the fundamental importance of their manufacturing industry to the national good. Hence on the one hand it drives them to equip the *Bundeswehr* with German-made platforms and systems wherever possible and, on the other, to avoid international political engagements which might prejudice trading competitiveness.

Not surprisingly, in this near land-locked country the Army is the senior service. Furthermore, Army thinking dominates the whole *Bundeswehr*. The *Bundeswehr* is the "Armee" and all of its members are "Soldaten". The Navy, renamed the *Deutschemarine* in 1996, represents less than 10% of the total personnel strength of the *Bundeswehr*. It is obliged to accept a share of the conscripts even though their nine months full time service virtually precludes them from sea service.

Promotion and professional development patterns tend to reflect the Army's example.

Post Cold War

The reunification of Germany in 1990 with the attendant problems of integrating the 17 million former "Ossis" into the western economy remains the first national priority. The Defence budget has been cut progressively to free up funds for more pressing social concerns. The conservative *Bundeswehr* has had to weather the downturn as best it can. Perhaps being the Cinderella-service has led the Navy to be more pro-active than its big sisters.

The largely conscript *Volksmarine* (Peoples Navy) of the former GDR was integrated into the *Bundesmarine*, but within a few years little trace of the former remained. All senior officers were retired and the conscripts were returned to civil life. By 1992 less than 10% of the former *Volksmarine* personnel were still serving. Its ships, a mix of Soviet and local design, were mostly sold to Indonesia; the remaining units have been retired. Today just a few former eastern career officers and NCOs remain in the *Deutschemarine*.

Appreciating the reduction in funding and the need to justify the existence of the *Deutschemarine* in the post-Cold War environment, the navy hierarchy adopted a somewhat aggressive approach to carving out a new focus. The flotilla of 12 small Type 206A submarines designed for Baltic operations is now permanently represented in the Mediterranean and routinely deploys to the USA to provide ASW training for the USN in littoral waters. *Deutschemarine* units serve with all four standing NATO squadrons (two destroyer/frigate squadrons and two MCMV squadrons divided between the North Atlantic and the Mediterranean); the only NATO navy so represented. Each year, German task groups range far and wide, including to Japan, South America and occasionally even to Australia. *Deutschemarine* submarines, intelligence gathering auxiliaries and maritime reconnaissance aircraft have continuously served as a component of the national commitment in the Balkans. Frigates, auxiliaries, maritime patrol aircraft, shore based Utility/SAR helicopters and, initially, fast attack craft have been deployed to the Horn of Africa as a major part of Germany's contribution to the War against Terror. Since May 2002, a German Admiral (CDRE equivalent) has commanded the allied maritime forces in that region.

The new world order has also led to some changes in the fleet composition. Two large AORs joined the Fleet during 2001-02 providing a significant enhancement to deployability. The number of missile fast attack craft, specifically designed for Baltic operations, has been reduced and most of the remaining craft are to be replaced by larger corvettes better suited to contemporary littoral operations in almost any theatre. And funding is now being sought for two large amphibious ships able to deploy the German Army's heaviest equipment to wherever it may be assigned. German naval aviators regularly inter-operate with the French Navy and some consideration is being given to the replacement of the *Deutschemarine's* maritime strike *Tornados* with an aircraft capable of carrier-borne operations.¹

- single-service support commands have been amalgamated along with all Joint activities into a fifth service known as the *Streitkräftebasis* (literally - armed forces basis);² and
- civilianisation and rationalisation have become orders of the day.

A good example of how the differing German social construct affects the Navy's *modus operandi* is the way in which women have been integrated into the Fleet. Noting that women comprise less than 2% of the seagoing Navy, they have been assigned to ships in small numbers and are integrated in their accommodation. For example, the MCMV *Überherrn*, in which I spent a day at sea in June 2002, has just one female, an Able Seaman, in



AOR Berlin (not fitted with the containerised medical centre)

Having changed relatively little since the end of the Cold War, in 2000 the *Bundeswehr* was directed to adopt a range of measures comparable with most of the reforms undertaken by the Australian Defence Force between 1989 and 1997, and more. In addition to the decision to retain conscription, unlike many other western European countries, following are some of the major changes, which affect the *Deutschemarine*:

- women, who had hitherto been restricted to non-sea-going medical and music employment, will henceforth be admitted to all areas of the *Deutschemarine* except for combat diving;
- a Joint operational command, comparable with HCAST, has been established in Potsdam;

its ship's company and she simply lives alongside her male contemporaries in a normal messdeck.

The Fleet - Aspects of Interest

Details of all units now in service and projected for the *Deutschemarine* are readily available in publications such as *Jane's Fighting Ships*. Following are some observations on aspects of the *Deutschemarine*, which are of particular interest for the RAN.

Germany's latest frigate is the 6,000 tonne Type F124, the first of which, *Sachsen*, has been undergoing sea trials since late 2001. Though she is due to be delivered to the Navy in October 2002 (one month early), she will not be commissioned until late 2003. In the meantime she will be the trials platform for the Dutch-German ARPA system (also fitted in the new

¹ This is embryonic thinking. The advocates argue that given the development of an EU military force, the ability of the *Deutschemarine* to provide aircraft for a French (or possibly a British?) carrier could be politically and militarily useful.

² The "fourth service" is the Joint Medical Service, which has been in existence for years. Like the "armed forces basis" it is composed of members from the three traditional services plus civilians.

Dutch FFGs), which will culminate with SM2 firings at the USN's Roosevelt Roads range. Construction of the second ship, *Hamburg*, at Kiel is well advanced and the third unit, *Hessen*, was begun in early 2002.

The *Deutschemarine* has recently acquired two Type EGV 702 class ships (EGV is the German acronym for AOR). The lead ship *Berlin* was commissioned at Easter 2001; *Frankfurt-Am-Main* joined the Fleet in May 2002. Having completed first of class trials and a full work-up with the Royal Navy, *Berlin* has commenced her first operational deployment in the Horn of Africa area supporting the German and allied ships, which are conducting maritime surveillance. The class is of interest to the RAN because it represents one option for replacing *Westralia* and *Success*. The ships are marginally larger than *Success* and are designed to a composite Naval/Lloyds standard. In addition to fuel, ammunition and guided weapons, and victuals the ships can be fitted with a comprehensive, containerised medical centre immediately forward of the bridge. Computer automation and extensive use of video cameras has enabled the ship's company size to be kept to a minimum, though there is accommodation for about 200 personnel on board to allow for the embarkation of the medical centre and a helicopter flight.

After persevering with the vintage 1970 Type 206 class boats, 12 of which were upgraded to Type 206A standard around 1990, Germany has at last begun the production of a new class of submarine for itself. Since 1970, German industry has produced a large number of submarines for other countries and hence has maintained its technological standards. The new Type 212A is being built in batches for both the German and Italian Navies. The first German boat, U-31 is being fitted out at the HDW yard in Kiel. Compared with the *Collins* class, the Type 212A is quite small, but ideally suited for littoral operations in the Baltic and Mediterranean. Two features of particular interest are the use of non-magnetic, stainless steel for the hull and the incorporation of air independent propulsion (AIP). The German form of AIP is based on fuel cells, which simply absorb oxygen and hydrogen to produce electricity and water. While the fuel cells can only sustain a speed of six knots, they can power a boat for more than seven days during which it can remain virtually silent. Diesel powered generators provide power for transits to the area

of operations and high-speed bursts. While the Type 212A is too small for RAN requirements, its technology is worthy of perusal.



Type 212 Submarine (artist's impression)

Combined Activity with Australia

Until near the end of the Cold War, interaction between the German and Australian navies largely involved action at sea during the two World Wars. The actions between HMAS *Sydney* (I) in November 1914 against SMS *Emden* and HMAS *Sydney* (II) in November 1941 against HSK *Kormoran* continue to attract significant attention on both sides of the globe. And just as HMAS *Sydney* (IV) perpetuates the name of her famous predecessors, the *Deutschemarine* of today includes the FFG *Emden* and the FAC(M) *Kormoran*. In early 2002, HMAS *Sydney* and Frigate *Emden*³ were operating within a few hundred miles of each other but were unable to meet, apparently much to the dismay of the Public Relations Officers in both ships!

Since the 1960s, there has been a steady growth of commonality between the two Navies. Both purchased three *Charles F Adams* Class DDGs from the USA in the late 1960s. Many of the weapons carried by contemporary German ships, such as *Harpoon*, *Standard* and *Seasparrow* missiles, 76 mm guns and Mk 46 torpedoes, are also in service with the RAN. Both navies operate the *Sea King* helicopter in the utility role and since 2001, the gearboxes of the RAN's *Sea Kings* have been receiving their depot level maintenance in Germany. During the

³ While allied authorities sometimes refer to German warships as "Federal German Ship" (FGS), German practice is to refer to them simply by type and name, eg Frigate *Emden*, Destroyer *Lütjens*.

1990s, the adoption of the German MEKO 200 design for the *Anzac* class was a further step towards Germany. Similarly the purchase of the European MU 90 ASW torpedo has created another linkage.

Summary

With just over 20,000 personnel including about 1500 conscripts the *Deutschemarine* is marginally larger than the RAN, noting that it also incorporates maritime strike and patrol aircraft, which are operated by the RAAF in Australia. In the wake of the Cold War, it is being adapted to become a deployable force capable of independent, joint and combined operations. In spite of limited funding, a steady flow of new ships and submarines is joining the Fleet. While Germany's strategic circumstances differ markedly from Australia's, the *Deutschemarine* offers the RAN an interesting comparison in management techniques and a range of impressive maritime warfare technology.

Over the past 30 years there has been a trend towards commonality between the RAN and the *Deutschemarine*. And some of the new ships entering service with the *Deutschemarine* also represent viable alternatives for the RAN. Thus there exists firm grounds to increase the level of contact between the two navies. And the Germans will not be reluctant to cooperate. In February 2002, a national survey revealed that for Germans between the ages of 19 and 59 years, Australia is the most preferred business and holiday destination!

About the Author

Captain Graham MacKinnell CSC RAN is a 1967 graduate of the RANC who pursued a Surface Warfare career culminating in command of HMAS SWAN 1988-1990. He has since attended the JSSC, the ACDSS, and completed Bachelor and Masters degrees in Arts. Having served in Defence and Navy HQ in Canberra from 1990 to 1999, he was accredited as Defence Attaché Berlin in January 2000.

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Naval Force Structuring



In this article I will look at naval force structuring from three separate perspectives to define some of the key parameters for effective force structure planning. Firstly I shall take an historical view, which is quite selective in order to assist in defining some of the problems encountered or limitations of earlier approaches. Then I shall look at the Australian Defence Force (ADF) experience over the past 20 or so years, and lastly I shall endeavour to outline some of the factors or approaches that might be adopted in future.

In any approach to force structure planning there are two essential ingredients:

- an overarching strategy which provides the context for planning; and
- a resource context to provide economic reality for the plan.

The Royal Navy

In 1893 Lord George Hamilton announced in the House of Commons that:

"... the minimum standard of security which the country demands and expects is that our Fleet should be equal to the combination of the two next strongest Navies in Europe."

This statement later became known as the "Two Power Standard" and was adopted by British governments for several decades albeit in modified form. The initial focus was on the French and Russian navies, though this later changed with the defeat of the Russian fleet at

Tsushima and the development of an alliance with France. Some consideration was given to whether the standard should apply to the two next most powerful navies or assessments of the likelihood of conflict with particular foreign powers.

The battleship was very much the symbol of seapower and naval strength was estimated upon ship numbers and the size of gun carried. Initially little attention was paid to the quality of training, logistic support or indeed the relative capability of the ships being compared. This situation was somewhat rectified during the tenure of Admiral Fisher as First Sea Lord, when he rationalised the Royal Navy's (RN) worldwide presence, disposed of obsolete vessels and reformed training. These moves coincided with the introduction of the *Dreadnought* battleship, which made previous battleships obsolescent almost overnight. Of greater strategic significance though was its consequence of placing the RN at an immediate disadvantage with her competitors, as her preponderance of seapower was dissipated and she found herself competing on a more equal footing with other global rivals, especially Germany and the United States.

The notion of a "standard" involved considerable ambiguity. Numerous issues arose with interpretation of the policy. One of the first issues to arise was the ratio of strength needed to achieve equality with the next two naval powers. Did equality mean only numerical equality in warships, or, given the wide range of global

duties the Navy was required to perform, was a margin of superiority required. Nor was it clear whether a single ratio should be applied to all classes of warship or just battleships. These issues were gradually resolved, and in 1903 Lord Selbourne informed Parliament that:

"in respect of cruisers and torpedo craft the (two power) standard has never had a real application, because the strength there must be in proportion to the work the Navy has to perform; and it has never been possible to assess that in proportion to the cruisers and torpedo craft of the next two naval powers."

It was also gradually accepted that something more than numerical equality was required. While naval planners had always held that a margin was required, political commitment was initially vague and it was not until 1908 that Lord Tweedmouth informed Parliament that:

"...my predecessors have always taken the Two Power Standard as meaning the two next strongest powers abroad plus ten percent."

This view was confirmed by the Prime Minister later that year as endorsed Government policy.

Britain's pre 1914 naval standards were ambiguous at the best of times. A wide range of interpretations could be placed on any standard, while governments could and did alter definitions to accommodate changing political, financial and strategic circumstances. Hence while an overarching strategy of a kind existed to guide naval force structure planning, it had major complexities in its vagueness and was open to manipulation by all contributors to the planning and decision making process.

At the end of World War I the RN possessed an overwhelming numerical superiority in warships over any other power. With the demise of the German High Seas Fleet, the United States Navy (USN) was the next most powerful fleet, followed by France. The latter was an ally and the former was not considered a potential threat. The British Government in 1919 considered the standard issue and decided that the Navy should plan on a standard of 160% of the next strongest naval power excluding the USN. This decision caused considerable concern within the Admiralty as potentially it acknowledged a situation where the USN could be superior to the RN. The British Cabinet subsequently revisited the standard issue and it was agreed that the RN should not be inferior in strength to the Navy of any other power.

Further guidance was provided at the Washington Naval Disarmament Conference, where a treaty was concluded in 1922 which established a 5:3:1.75 ratio for capital ship tonnage between the United States and Great Britain, Japan, and France and Italy. Qualitative limits were also imposed upon battleships, aircraft carriers and cruisers. Linked to these considerations limitations were also placed on the establishment of naval bases in the Pacific. This had particular implications for both the RN and USN and their ability to project naval power into the western Pacific.

The combination of the one power standard and the Washington Treaty provided some restraints to naval planning and innovation. In addition, there remained a degree of ambiguity, especially in relation to the standard. It was not clear if it should apply only to battleships, did equality mean numerical parity or parity in fighting power, nor was it clear if calculations should be based on a conflict in home, neutral, or enemy waters. The Admiralty was also faced with the problem of planning to counter an adversary as well as protecting the Empire and its trade routes. In the early 1920s the Admiralty continued to plan on a Navy which was at least equal in fighting strength to the USN in American waters. This position was clearly impractical from both a resource and political perspective. The British Treasury fought to reduce the standard to a more practical financial situation and in 1922 succeeded in getting Government approval to a definition which acknowledged that the Navy only need remain approximately equal to the USN in overall strength. It also accepted that deficiencies in one area could be counterbalanced by superiority in others.

Overall the Admiralty considered that Britain's maritime security should dominate financial considerations and argued that the one power standard should take precedence over the Government's assessment that there would be no war for ten years. The Admiralty argued that conflict could arise with little warning and it also assessed that Japan's longer-term intentions in the Pacific could lead to conflict. This assessment was rejected by the Foreign Office. The focus on a distant conflict, rather than a conflict in Europe had clear advantages for the Admiralty in its claim for Defence resources, however in adopting arguments designed to increase Navy expenditure, it frequently found itself out of step with the Foreign Office, Treasury and Government. Nor did it engender

support from the other two Services.

The Admiralty had occasional successes in terms of establishing global infrastructure to support its operations, and a modest ship construction program, however, it was not until well into the 1930s with deteriorating strategic circumstances in both Europe and the Pacific that significant investment was directed towards the RN. Despite the political rhetoric of the Navy's central role in the defence of the empire the RN throughout the 1920s and 1930s was very much the poor cousin of the other two Services in terms of Government expenditure.

Despite the validity of some of the Admiralty's perspectives, such as its assessment of the strategic situation in the Pacific, and its views on warning times for conflict, it failed to develop effective force structure plans. This situation was in part due to the limited utility of power standards as a viable basis for effective planning, and its failure to comprehend the practical resource restraints of its ambitions. The ongoing opposition of the Treasury and the Royal Air Force, to some of its more fundamental requirements complicated the Admiralty's position.

As a result the RN entered World War II with a force of battleships, most of which were 20 or more years old; a small aircraft carrier force with limited aircraft carrying capacity and an inventory of obsolete aircraft; a relatively modern cruiser force; and a modest destroyer and escort force which was not well equipped to deal effectively with the emerging submarine and air threat. Nor was the force capable of meeting the needs of conflict in both the European and Pacific theatres. Despite the Admiralty's forecasts about conflict in the Pacific its vessels were poorly designed for conflict in this maritime environment. Little existed in the way of afloat support assets and the range and endurance characteristics of RN ships, in general, was relatively poor. For example, the range of its aging *V* and *W* class destroyers was inadequate, without modification to meet even the modest endurance required in meeting the Atlantic Ocean convoy escort task.

The United States Navy

In the period preceding WWII the United States Armed Services lacked strong and consistent policy guidance from political leaders and the State Department. As a consequence the Services independently attempted to deduce for themselves what might constitute basic national policy and objectives, as a basis for planning.

Observations - Strategy

- Needs to be related to the strategic environment, unambiguous and provide a basis from which force development proposals can logically be developed.
- Needs to look well into the future and make predictions about perceived strategic developments.
- Needs to be agreed by all key players in the force development process.
- The strategy or subsidiary analysis should assess the implications of technological developments and provide resource parameters for planning. Factors relating to industrial capacity and other matters, which might influence planning should also be considered.

Observations - Planning

- Needs to be directly related to the strategy (planning on issues which are in conflict with Government policy or a strategy's guidance is nugatory).
- Should include inputs from, and to the extent practical be agreed by, other key related interest groups (financial authorities and the other Services).
- Inter-Service rivalry can be counterproductive and lead to poor levels of capability development (this is particularly relevant to strike, aerospace and amphibious capabilities).
- Planning and tactical development should take account of technological developments (the increased threat from submarines and aircraft).
- The capabilities of force structure proposals should reflect strategic assessments (range, endurance, weapons and sensor performance).

The USN's strategic planning was based around a series of plans developed from wargaming various scenarios. Plans were developed for situations involving conflict with Japan (War Plan Orange), Germany (War Plan Black) and Great Britain (War Plan Red), as well as various sub themes. Although these wargames were developed in a joint Navy/Army environment there was no civilian participation, nor did State Department officials contribute. In 1939 planning commenced for multinational wars between the Axis coalition and the United States alone or in coalition with allies. These plans were developed in the "Rainbow" series and postulated that defeat of Germany would be

the United States first priority.

War Plan Orange formed the essential blueprint for the war in the Pacific, and whilst there were some divergences, its overall thrust was implemented. War Plan Orange was often developed in three basic phases. Phase One comprised the Japanese offensive and assumed Japanese occupation of such places as the Philippines and mainland China extending into Southeast Asia. Phase Two comprised the United States Offensive, involving an island hopping campaign which bypassed and isolated Japanese centres of power. Phase Three involved the siege of Japan. The centrepiece and turning point in the campaign involved a decisive battle between the two opposing fleets. A campaign of attrition was envisaged where the industrial might of the United States would prevail. Development of this plan was also fundamental to identification of the strategic importance of particular islands in the Pacific. Geography played a fundamental role in determining the character, nature and evolution of the campaign. However, it was evident to the planners that these strategies lacked realism as they involved significantly larger forces than were then available to either the USN or US Army.

War Plan Orange was important for its incorporation of several new weapons and techniques, in particular the projection of seaborne air power, amphibious operations and seagoing logistics. The planners clearly understood the role of naval air in spearheading landings in the Philippines, long range patrolling, and neutralisation of enemy bases. There does not, however, appear to have been recognition of the possibility of carrier on carrier battles that characterised the Pacific campaign. Aircraft carriers were seen as providing support to the battle fleet, rather than its centrepiece. Indeed, in a lecture at the Air Corps Tactical School in 1929 Commander John Towers commented that:

"In a typical Fleet action, submarines and mine-layers are disposed to intercept the enemy; carriers follow the battle divisions closely, ready to launch planes and take up position on the disengaged side of the battleline. Carriers may also be pushed out ahead to wear down the enemy main body but such an attack would not be as effective as an attack during the main engagement."

Development of the war plans provided the

overarching strategy for the development of force structure, however, they did not provide sufficient context to enable effective planning to be progressed. As a result USN force development planning well into 1940 was based upon simple ratios in comparison to adversary forces. It was clear to naval planners at this time that even the US could not provide a fleet capable of concurrently taking the initiative in a two-ocean war.

While operations in the Pacific seem to have been factored in to such things as ship range and endurance characteristics, especially for destroyers and submarines, other lessons from the development of the war plans seem to have been largely ignored, or at best been deemed of lesser priority. For example, little was done pre war to address the logistic problems involved in distant extended operations, and amphibious requirements flowing from War Plan Orange.

In mid 1941 the President directed that by 10 September 1941 the Armed Services provide an estimate of the equipment and personnel needed to fight a war against the Axis Powers. The Army, Navy and Army Air Force each adopted an independent approach and up until a week before the report was due there had been no consultation between the various planning staffs. The resultant report, not surprisingly, contained different strategic assumptions and approaches to the campaign. Nor was there any agreed approach to setting production priorities or allocating manpower or other critical resources.

In total the USN sought 32 battleships, 24 aircraft carriers, 111 cruisers (including 10 battle cruisers), 444 destroyers and 238 submarines. This estimate exceeded by a considerable margin the Navy's 1938 assessment of the assets required to take the offensive in both the Pacific and Atlantic oceans - an assessment that Navy saw as being beyond the countries resources to meet.

The planners optimistic estimates glossed over many practical problems and failed to identify the reality that Service expansion goals would outstrip the United States finite war making capacity. These shortcomings were driven home in very short time and the serious flaws in the national war planning system were soon exposed. The pre war planning euphoria soon degenerated into a series of acrimonious exchanges between the US armed forces as they each strived for the limited resources and sought to exert the primary influence on the direction of

the war.

Observations - Strategy

- Single Service strategies can lead to uncoordinated and unrealistic planning outcomes.
- A government endorsed national defence strategy is a pre-requisite to effective force planning.
- A strategy needs to provide adequate guidance so force structure planning can proceed.

Observations - Planning

- Needs to be coordinated with all Armed Services, to ensure consistency of approach.
- Outcomes should be feasible from a resource perspective.
- Geographic considerations are a fundamental component of planning force structure.
- Needs to take account of non-Service implications (personnel/industrial capacity).
- Lessons learned from wargames need to be taken into account in the planning and implementation processes (the need for logistic services and amphibious capability flowing from War Plan Orange went largely unheeded).
- Effective planning requires a detailed understanding of platform/system

Some comments on naval performance in WWII

Most navies prior to WWII underestimated the threat from submarines, aircraft and mines. To some extent this view developed from the restrained use of these assets in major naval exercises. That is, submarines and aircraft were seen as providing support for the decisive naval battle, rather than being key players. This latter role was reserved for the battleship. In addition, the inter-war debates over the vulnerability of battleships to air and submarine attack had led to the development of naval dogma which created an impression of the invincibility of the battleship, and by inference other ships, to these forms of attack. As a result, at the beginning of WWII, most warships were inadequately armed to counter air and submarine threats.

The priority in the major navies for new investment was centred upon the decisive battle and its major elements - battleships, cruisers,

aircraft carriers and destroyers. Trade protection, especially for the RN, was also important but very much of lesser priority. It being assumed that after the decisive naval battle, maritime trade would flow freely and unimpeded. Other areas of naval warfare, such as amphibious operations, afloat logistic support and in some cases mine warfare were largely neglected, despite in some instances clear planning indications that these areas of warfare could be fundamental to the success of an overall campaign.

In many respects the major navy's tactical reliance on the decisive naval engagement to ensure victory at sea, led to a narrow perspective of naval warfare, and resulted in the lack of effective tactical doctrine and understanding in many areas of naval warfare.

Inter-Service cooperation was largely neglected, though this would be rectified in many defence forces in the decades following the war. This lack of cooperation existed in virtually all areas of activity. Its implications were most significant in the planning and operational areas.

Observations

- Understanding the full potential and limitations of capabilities is critical to their successful employment in conflict (the Japanese employment of submarines almost exclusively against naval forces limited the effectiveness of their overall submarine campaign).
- Joint planning and operations can be critical to success in conflict.
- Exercises and wargames need to be innovative and aimed at informing tactical development, and improving understanding of weapon and sensor performance and effectiveness

Planning Against a Single Threat

In the period between 1945 and the collapse of the Soviet Union, some 45 years later, most naval force structure effort in NATO and the WARSAW Pact countries was concentrated on developing forces to meet a threat from the opposing military bloc. The European NATO partners concentrated on the provision of escort, mine countermeasures (MCM) and in some cases submarine forces whose role was support for USN offensive operations, the protection of

trade transiting the Atlantic and coastal European waters, and limited maritime strike capability. On the other hand the USN developed carrier battle groups and SSBNs to take the battle to the Soviets. The RN and French navies also invested in nuclear submarines, which because of their significant resource requirements impacted on other naval forces that could be afforded. In the RNs case the most significant impact was the dramatic reduction of destroyer and frigate numbers, a small amphibious capability, and eventually the demise of conventional submarines. Considerable effort was required to maintain a small aviation component of limited capability.

The result within European NATO navies, was highly specialised forces, with an emphasis on escort and MCM tasks, but in some cases relatively modest capabilities in power projection and strike capabilities could be afforded.

On the other hand Soviet forces tended to develop from coastal defence tasks to a more blue water capability, but aimed almost exclusively at countering the might of US naval power. Specifically, Soviet naval forces were designed to deny the USN use of the sea, through targeting its carrier battle groups and SSBNs. In littoral areas the emphasis of Soviet doctrine was on missile boats and mines to deny an adversary the ability to operate in these areas.

As a consequence of the Cold War both NATO and Soviet naval forces developed quite narrowly. In general they lacked balance between the various arms of naval power and hence flexibility to meet a broad range of possible contingencies. This was borne out in the 1982 British campaign in the Falklands, where the RN found itself facing a complex campaign requiring strike, escort and fire support for land forces at extended lines of communication. The RN was obliged to seek outside support to sustain its forces in the South Atlantic. Key RN capabilities were supplemented by merchant ships to improve the aircraft capacity of the force and logistics support. In addition trawlers were requisitioned for mine countermeasures operations. In many respects the key capabilities in this campaign had been those that were being denuded to place emphasis on a major conflict with the Soviets. Subsequent to the Falklands the RN revised some of its plans to sell one of the *Invincible* class carriers and provided the Type 22 frigates with a 4.5 inch gun to make it a more flexible platform. Planning for the new frigate to replace

the *Leanders* was also revised with the Type 23 frigate being enlarged and provided with more comprehensive stealth and war fighting capabilities.

The impact of planning against a narrow range of threats can also be discerned from an examination of other navies. Whilst the USN has been the most complete naval power since the end of WWII, its planning against a single threat, led to a situation in the early 1990s where because of its emphasis on countering the Soviet SSBN threat, its ASW capability was not well equipped to deal with conventional submarines operating in shallow waters. Similarly, the USN's reliance on other NATO partners to provide MCM capability, has resulted in the neglect of this area of capability in the USN until recent years. Importantly, also the effectiveness of some of its ships, weapons and sensors, which have been designed for blue water operations, may not be as effective in complex coastal environments. The *Harpoon* anti shipping missile being a case in point - its effectiveness in a land clutter environment is much reduced.

While some will argue that technological superiority and firepower will prevail in all circumstances, and others will contend that if you can meet the most severe threat you can counter all lesser threats, such views are fundamentally flawed. Such views might be supported by reference to the Gulf War and the recent campaign in Afghanistan. The flaws in such views can be readily dismissed when one contemplates the US campaigns in Vietnam and its peace efforts in Somalia. In both these cases technology and firepower failed to reach a decisive outcome in favour of the superior military force. Nor is the US military establishment well positioned to meet the terrorist threat. This was demonstrated with the *USS Cole* incident and more recently with the September 11 attacks in the United States. Force planning needs to canvass a range of threats, including non-conventional operations. It is important to understand both the capabilities and limitations of particular force solutions in reaching an informed decision on a preferred force structure.

The ADF Experience of the Last 25 Years

Defence planning during the 1970s was centred round a strategic assessment, which was generally produced about every three years. These documents provided the strategic context for force structure planning. The next step was

the formulation of a capability development paper, which was intended to outline the necessary capabilities required within the ADF. This latter document had its foundation in the strategic assessment and single Service capability assessment papers. It also sought to make logical arguments as to the need for particular capabilities. In essence however, the capability assessment guidance was little more than a reflection of new equipment projects which were provided for in the New Major Equipment Program - the summation of Service bids for new equipment.

At this time the Australian Department of Defence employed a "systems analysis" approach to evaluation of capability requirements; derived very much from the McNamara era in US defence planning and was heavily into cost/effective analysis. The major studies undertaken in the Australian context were on the need for an aircraft carrier and destroyer numbers and types. These studies tended to very lengthy and complex and often ventured into minute detail. For example, the aircraft carrier work involved several studies - Naval Airpower/Tactical Air weapons (NAPTAWS), Seaborne Air Capability Review (SACR), both of which examined the role of various types of carrier in a range of separate contingencies, related to the defence of Australia and its interests. The performance of Short Take off and Vertical Landing Aircraft (STOVL) in various roles as well as a broad ranging study of ASW requirements provided separate but related analysis. There were also detailed assessments of the cost effectiveness of conventional carriers, smaller carriers operating a mix of STOVL aircraft and helicopters, including an AEW variant, and merchant ship conversions, including new ships built to Lloyds merchant ship specifications. This period was jokingly referred to as a time of paralysis by analysis.

The core tenants of the strategic philosophy at this time were no identifiable threat to Australia, self-reliance and the core-force concept. The core-force concept was based on timely identification of an emerging threat and expansion of the force in warning time to meet the threat. Lower levels of threat were also deemed more likely than a major invasion of Australia, and hence things like countering raids tended to take on major significance in force planning, rather than large scale force-on-force operations. The force-in-being was to be capable of only meeting lower levels of conflict. That is, it was to be capable of performing current and

foreseeable tasks and dealing with selected short term contingencies. For example, maintenance and expansion of the base; sea control in areas of Australia's maritime jurisdiction; quick detection and response to any maritime or coastal harassment; maritime surveillance and display in areas of Australian interest etc. Force structure requirements remained the domain of the single Services and the discussion of capability requirements in the 1976 White Paper *Australian Defence* reflects this when it addresses maritime needs in terms of naval general purpose warfare, naval air warfare, submarine and anti submarine warfare, afloat support and mine countermeasures and mining.

Overall the framework for planning was too narrow, focusing too heavily on lower level operations, it was also too heavily biased towards single Service capability assessments and the competition and resentment this ultimately fostered through competition for finite resources. The process led not only to inter-Service bickering and rivalry, but also to conflict between the central planning staffs, who were largely civilian personnel, and the Service Headquarters staffs who were responsible for sponsoring new initiatives. Despite the complexities of this period it did address some of the more complex aspects of planning against a range of possible threats, albeit at the lower end of the conflict spectrum. It also set the ADF on track for planning force structure in the absence of a defined threat. Consequently, the approach of Australian defence planning was in some respects conceptually well ahead of most major navies, at this time. Indeed, it was not until the demise of the Soviet Union that many western navies had to face planning against an undefined adversary, or to contemplate their navy's involvement in operations other than conventional war.

In February 1985, Defence Minister Kim Beazley initiated a major review of Australian Defence planning, when he commissioned Paul Dibb to: "*examine the content, priorities and rationale of defence forward planning and to advise...on which capabilities are appropriate to Australia's present and future defence requirements.*" In reporting his findings in March 1986, Paul Dibb wrote

"One of the problems encountered by the Review was arriving at satisfactory estimates of the size of force elements we need to meet our particular strategic circumstances. For much of our force

structure this issue has not been comprehensively addressed. The Review could obtain no material centrally endorsed by the higher Defence structure which explained, for example, the strategic rationale for a 12-destroyer Navy, three fighter squadrons, six Regular Army battalions and an Army Reserve target of 30,000."

While Dobb's *Review of Australia's defence capabilities* had no official status, being a consultant's report to the Minister for Defence, much of the Review's thrust appeared as official policy in the subsequent Government White Paper *The Defence of Australia 1987* (DOA87). In many respects Dobb and DOA87 were evolutionary rather than revolutionary. While much of the earlier dogma remained there were some important changes. There was now a much stronger geographic context and a clear priority for Australia's region of primary strategic interest, namely Southeast Asia and the South West Pacific. A broader approach to the spectrum of conflict was adopted - now it was accepted that threats could take the form of low, escalated or more substantial conflict, as well as threats to Australia's trade. While the priority remained at the lower end of conflict, these distinctions became quite important in defining the relative priority between various force structure proposals and their relative utility across the threat spectrum.

Flowing from DOA87 an attempt was made to bridge the logic gap between strategic guidance and the formulation of new capability proposals. As a result ADF Headquarters staff embarked on the formulation of a series of Operational Concepts. The first concept set the geo-strategic parameters for the formulation of Operational Concepts covering Maritime, Air and Land Warfare. Drafting of these concepts was the responsibility of the Joint Staff with input from the Service Headquarters, Force Development and Defence Science areas. This process ultimately foundered as the approach was not broad enough and it did not sufficiently allow the joint nature of operations to be fully addressed.

Some two years later, Government released *Australia's Strategic Planning in the 1990s* (ASP90). This document was an evolutionary development of DOA87 and provided greater clarity to the definition of levels of conflict. In particular it noted that the escalation of conflict is manifested by one or more of the following:

- a widening of the geographical distribution of incidents;
- an increase in the scale of operations;
- the nature of the weapons systems employed;
- a higher intensity and frequency of engagements; and
- the significance of the targets attacked and the damage inflicted on them.

Importantly ASP90 also for the first time defined the ADF principal Defence roles in terms of operations rather than single Service functions. The roles were presented in the following terms:

- intelligence collection and evaluation; and, specifically for the ADF:
- surveillance in our maritime areas of interest;
- maritime patrol and response;
- air defence within our maritime areas and northern approaches;
- protection of shipping, offshore territories and resources;
- protection of important civil and military assets and infrastructure;
- detection of and defeating incursions onto Australian territory;
- strategic strike; and
- contributing to the national response to requests from South Pacific nations for security assistance, including incidents affecting the safety of Australian nationals.

These roles provided a framework for the development of a series of strategic concepts. The purpose of these concepts was to form the link between the overarching strategy and force development proposals. As such they sought to identify particular tasks that would be undertaken in performing each role. They also attempted to define a tasks geographic location, as well as its duration and concurrency of operations. Consideration was also given to adversary objectives and potential military capabilities and distinctions were drawn in relation to the various levels of conflict. The threat was addressed in generic terms as it was considered this would lead to more enduring and robust outcomes. It quickly became very evident that geographic factors were a major influence across a broad range of considerations - how and where an adversary might act and what options and restraints were imposed on any ADF response. The sea/air gap to Australia's north was seen to be critical and clearly the ADF needed to be able to exert strategic control in

this area if it was to prevail.

The overall utility of these strategic concepts has generally not been well recognised within Australian defence management. They did prove to be particularly useful in providing the strategic foundation for a major analytical study into the surface combatant force. The tasks generated in the operational concepts formed the basis for several options examined in the study and also facilitated study judgements on the definition of priorities for geographic locations and task importance. The guidance on levels of conflict was also useful in deriving judgements on the utility of various types of surface combatants, and assessing their ability to contribute effectively across levels of conflict and in differing geographic circumstances and threat levels. The study was particularly innovative in that it addressed not only the capability of the surface combatant force but also its capacity to meet concurrent and sequential commitments. It achieved this through adopting a campaign, rather than a single task approach, in its analysis.

Within a couple of years the strategic concepts had fallen into disrepute. It was accepted that the defence of Australia was the primary force structure determinant but other factors needed to be taken into account. It was apparent in the light of the range of peacetime and international commitments, in which the ADF was becoming increasingly involved, that a new approach was needed. Also the strategic concepts took a very insular and localised approach to defending Australia - a more forward looking view was necessary.

Rather than building on the strengths of the strategic concepts it was decided to adopt a totally new methodology. The new approach was based on a range of Military Strategies aimed at providing guidance for both force structure and preparedness. The basis of this approach was the strategic tasks for the ADF as outlined in *Australia's Strategic Policy* that is: Defeating Attacks on Australia, Defending Australia's Regional Interests, Supporting Australia's Global Interests, Peacetime National Tasks, and Shaping the Strategic Environment. Within regional interests, important distinctions were made between the Inner Arc, Southeast Asia and North Asia. Those circumstances, which arose closer to our mainland were of greater strategic importance and hence demanded a fundamental contribution by Australia, whereas tasks further afield were seen as supporting others efforts and the contribution

would be less significant to the outcome.

The main output from the Military Strategy process was a series of Military Response Options (MROs) from which forces could be drawn to respond to particular situations. MROs were grouped together to achieve particular outcomes, such as defeating an adversary's power projection capabilities, or protecting strategically import trade. This process was subsequently complemented by what became know as "Force Option Testing". This comprised a series of scenarios and staff assessments of forces needed to respond effectively in a given situation. Force Option Testing was mainly based around the force in being and was designed to highlight specific deficiencies, however, it was also flexible enough to assess the impact of new capability options. This process was not particularly scientific and was open to the vagaries of professional military judgement and the experience levels and competence of individual players. It is consequently now planned to complement the process further with a series of experimentation and wargaming reviews. It seems that experimentation, in the initial stages at least will concentrate on the validation or assessment of particular concepts, such as networked warfare and effects based operations. How effectively it can be applied to individual questions of say surface combatant capability and numbers is yet to be demonstrated.

In summary, the past 20 or so years has seen the ADF striving to achieve an effective model to inform force structure development. It has evolved from an essentially single Service approach, through a rather insular joint approach based around defending Australia, to recognition of Australia's broader strategic interests, to the present complex series of interactive analyses and assessments. The main issue would seem to be that the process is too complex, with too many stages and interest groups each pushing the pre-eminence of their particular part of the process above others. The other danger is that the process may be too complex for effective utilisation in force structure planning. A key component which is still missing, and which Paul Dibb alluded to in his 1986 *Review of Australia's defence capabilities*, is the underlying logic for the forces we have, or need. This is not to suggest that valuable work is not being done to inform judgements on future force structure, but rather that fundamental components of the process are missing.

It is also important that the overall

process is streamlined. The timescales between strategic assessment and the introduction of relevant force structure changes is too lengthy. Procurement of the *Anzac* class frigates is very instructive. The concept of an intermediate class of light patrol frigate arose during Paul Dibb's 1986 Review and approval of 8 ships to meet this requirement was announced in the context of DOA87. The lead ship of this program HMAS *Anzac* commissioned in mid 1996, however, the last ship will not enter service until about 2006 - some 20 years after conception. Over this time Australia's strategic perceptions have changed significantly and it is now apparent that these ships will need to be capable of more wide-scale employment than originally intended. In addition, there has been significant technological development with surface combatants in the intervening period, which means that these ships are virtually obsolete on delivery. In recognition of this dilemma a modification program for the *Anzac* class was developed before most of the ships had been delivered. The central message here is that strategic perceptions need to be more forward looking and the decision making and procurement cycles need to be shorter.

Deciding on a Future Force Structure

There are three basic steps in developing a future force structure. Firstly, there is a need for a strategic assessment or strategy, to guide the process. This assessment would then form the basis for a more detailed capability review, which defines broad capability and capacity requirements for various force elements, and sets the framework for development of individual capability proposals. While predicting the future is an impossible task the impact of uncertainty on planning can be reduced through considering alternative futures and assessing the performance of various force options against those situations.

Some basic characteristics of the strategy would be:

- It should be developed by the Defence organisation and be endorsed by Government.
- It should be forward looking - some 20 to 50 years ahead.
- It should look at relevant national, regional and global issues.
- It should address both defence and national tasks.
- It should define the national defence

strategy.

- It should seek to identify trends of defence significance (strategic, resource, technological, national infrastructure development, industry capacity etc).
- It should be clear and unambiguous in its direction.
- It should define priorities for force development.

Some basic characteristics of the capability review would be:

- It should be based on the Government endorsed strategy.
- It should be weighted to reflect the priorities for force development.
- It should address various levels of conflict to discern how they might influence the direction of force development.
- It should address conventional and non conventional operations.
- It should address national tasks and operations other than war.
- It should take account of the influence of geography.
- It should be supported by a series of futuristic studies covering, amongst other things, resources, technological trends, industry capacity, alternative futures studies, wargames and experimentation studies.
- It should address the resource feasibility of the proposed future direction and define limitations of the preferred approach.
- It should develop the logic to define both force strength and force capacity for individual force elements (i.e. capability and numbers).
- It should reflect a joint perspective, which is informed by single Service analysis and professional judgement.

Assessment of ADF Performance

The ADF has developed some innovative approaches to planning in the absence of an identified threat and at the moment has a range of complementary activities running in parallel to inform force development issues. If effectively harnessed these could prove to be particularly fruitful, however significant challenges will be faced in bringing disparate bureaucratic processes together to produce meaningful and coherent outcomes, which can be agreed by senior management. It is difficult to see how experimentation will be able to deal effectively with esoteric concepts like networked warfare and effects based operations,

and how these outcomes will be combined with the outputs from other processes, such as the results of the military strategy process, alternative futures analysis, force options testing, as well as studies based around individual force structure issues. Indeed each process seems to be heading in its own direction with little thought being applied to bringing it all together in some coherent manner.

Considerable effort is being devoted to making better decisions, but there still appears to be a major logic gap between strategic guidance and the development of specific force structure proposals for new capabilities. The current processes do not seem to be addressing this matter. Nor is effort being applied to answering the question posed by the Dibb Review as far back as 1986 that "no material centrally endorsed by the higher Defence structure which explained, for example, the strategic rationale for a 12 destroyer Navy, three fighter squadrons, six Regular Army battalions and an Army Reserve target of 30,000" could be found. Put another way, the ADF seems pre-occupied with defining capability but pays little if any attention to defining capacity requirements of the force. The process is further exacerbated by complex and


lengthy procurement processes which seem to be aimed at expending considerable cost and effort on risk reduction (often to little avail as evidenced by the *Collins* and *Super Seasprite* purchases), at the expense of timely introduction of strategically relevant capability.

In summary, there would appear to be considerable merit in devoting effort to formulation policy document/s to provide the logic link between the strategic guidance and force development process, and to making the current disparate analytical processes more practically oriented, coherent and inter-related.

About the Author

John Mortimer was a public servant for over 30 years. He began work in Navy in March 1969, and was the Chief Executive Officer Maritime Warfare in the Force Development and Analysis Division from the late 1970s to 1987, where he was extensively involved in Navy force structure deliberations. He then worked with the Ministerial Consultant Bob Cooksey on the Defence Infrastructure Study before returning to Navy in 1987 until his retirement in 2001 as the Director of Navy Policy.

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Historic Gun Restoration



By Lieutenant Commander Greg Swindon, RAN

A significant piece of Australia's military history is now in better shape thanks to the men and women of HMAS *Kanimbla*. While operating near Christmas Island during the ship's recent deployment, several sailors and soldiers expended much blood and sweat to refurbish a 6-inch gun emplacement and observation post which overlooks Flying Fish Cove.

The 6-inch gun was made in 1900 and installed at Christmas Island in late 1940, where men from the Royal Artillery manned it. Christmas Island was a large supplier of phosphate for the Australian and Southeast Asian agricultural markets and with the potential threat of war with Japan, the island's defences were increased. In February 1942 a Japanese submarine sank a phosphate-carrying vessel off the island and the gun was fired in anger in an attempt to sink the submarine.

In March 1942 the Japanese invaded Christmas Island. The majority of the island's garrison was made up of Indian Army troops who refused to fight the Japanese. Several of these men rose up in mutiny against the British troops on the island and murdered them before surrendering to the invading Japanese. The five Royal Artillery men manning the 6-inch gun were among those killed and their bodies were dumped over the nearby cliffs into the sea.

Following the end of WWII the gun fell into disrepair. In 1983 a major restoration of the gun emplacement was undertaken. When the site

was visited in July 2002, however, the ravages of time had taken their toll with the gun showing substantial weathering and the emplacement and observation post were overgrown with trees and weeds.

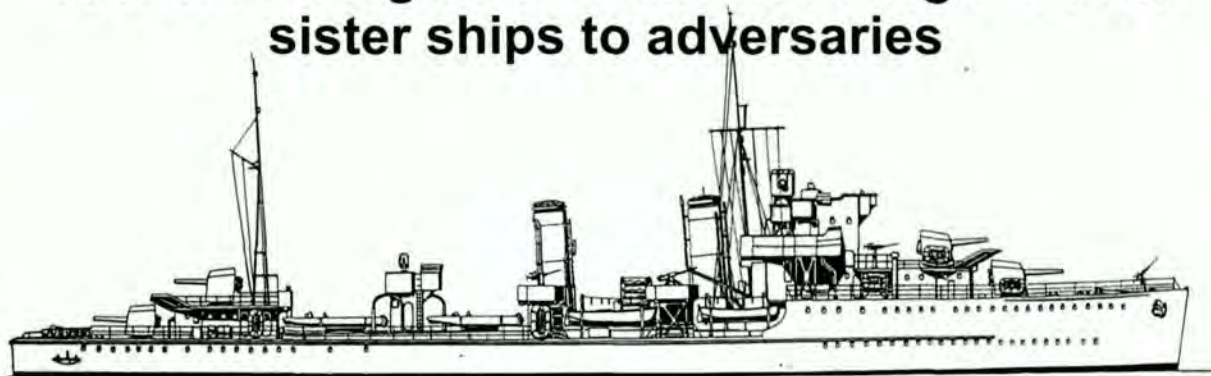
An offer was made to the Christmas Island Shire Council to refurbish the gun emplacement site, which was eagerly accepted.

Kanimbla's volunteer work parties, consisting of both Navy and several Army personnel embarked, turned to with a will and stripped the gun of its layers of rust, repainted it and the emplacement's external walls and removed 20 years worth of dust, rubble, weeds and trees. The trees surrounding the observation post were cut down as were 50 metres of thick vegetation on the seaward side of the gun to allow both to be more visible to island visitors. Some concreting was also undertaken to strengthen the emplacement.

The Shire Council provided most of the tools, concrete and paint for the venture, with *Kanimbla* supplying the muscle. The refurbishment took place over several weekends with groups of sailors and soldiers volunteering their time to ensure this important part of Christmas Island history remains intact and in good condition.

The site will become part of the Christmas Island Museum linked to the nearby Colonial Administrator's House, which is also being refurbished and due to be opened as a Museum in September 2002.

Vasilefs Georgios and Vasilissa Olga - From sister ships to adversaries



ZG 3 Hermes, ex-Vasilefs Georios, 1942

By Dr Zvonimir Freivogel

One of the smaller navies in the eve of the Second World War was the Royal Hellenic Navy (RHN). Greek naval policy had traditionally been dominated by the rivalry with Turkey, but since the 1920s a new danger had arisen in the form of fascist-governed Italy. Between the wars the RHN was composed of miscellaneous units acquired from various sources, including the pre-dreadnought battleships *Kilkis* and *Lemnos* (ex-USS *Mississippi* and *Idaho*), the armoured cruiser *Georgios Averoff* (a veteran of the Balkan Wars, built in Italy in 1907-1912) and the old cruiser *Helli* rebuilt as a minelayer. There were four destroyers of the *Hydra* class, built in Italy between 1929 and 1932, and four of the *Aetos* class, built 1909-12 in Great Britain, together with several old steam torpedo boats of Austro-Hungarian and German origin, six submarines, two motor torpedo boats, eight minesweepers and some auxiliaries.

The navy clearly required modernisation, and in 1934 Greek authorities announced that the RHN would order one light cruiser, sixteen destroyers (two flotillas) and several modern submarines. The first four destroyers were to be built to a foreign design, two in the country of origin and the second pair by the Greek Scaramanga shipyard. In 1935-36 rumours arose that four units of the British A-I class had been ordered from the Fairfield shipyard. The prototypes, christened *Vasilefs Georgios* and *Vasilissa Olga*, were indeed built in Great Britain, but by Messrs. Yarrow & Co., being laid down at Scotstoun in 1937 and

delivered to Greece in February 1939. Their weapons systems came from a variety of sources. Germany supplied the main and AA armament, while the fire control systems were of Dutch origin. The torpedo tubes and torpedoes came from Britain. Some material for two further units (to be named *Vasilefs Constantinos* and *Vasilissa Sofia*) was shipped to Scaramanga, but the boilers and machinery never arrived because war broke out in September 1939. The new destroyers were similar to the British G and H classes, with a length of 101.2m, a beam of 10.4m and a draught of 3.43m. Their displacement was 1,350 tons standard and 1,850 tons full. Main machinery consisted of two Parsons geared turbines giving a total designed power of 34,000 shp and a maximum speed of 35 knots. Three Admiralty 3-drum boilers supplied steam. Carrying 465 tonnes of oil, the envisaged endurance was 6000 miles at 15kts or 1350 miles at 27kts.

Vasilefs Georgios was launched on 3 March 1938, and at delivery was armed with four 127mm (5-in) guns, four 37mm AA guns, eight AA machine guns and eight 533mm torpedo tubes (two quadruple sets). She was designated to serve as flagship until the new cruiser was built and, to accommodate an admiral, the captain's cabin was made more comfortable. *Vasilissa Olga* was launched on 2 June 1938 and was almost identical to her sister ship.

After the outbreak of war Greece remained neutral, only to be attacked by Italy on 28 October 1940 (The RHN had suffered its first

loss on 15 August 1940 even before the outbreak of hostilities, when the cruiser *Helli* was sunk at the Tinos anchorage by the Italian submarine *Delfino*). RHN destroyers initially attempted to cut the Italian supply lines to Albania and undertook several night raids in the Ionian Sea. On 14-15 November 1940, the *Vasilefs Georgios* (flying the flag of Admiral Cavadias) and *Vasilissa Olga*, together with the destroyers *Psara* and *Hydra* made a scouting raid into the Otranto Channel. They reached the island of Saseno but found no enemy convoys. On 5-6 January 1941, *Georgios*, *Olga*, *Spetsai*, *Psara* and *Condouriotis* bombarded Cap Doucates near Valona. On 28-29 March, seven Greek destroyers were sent to intercept the Italian fleet after the battle of Matapan, but because of incomplete intelligence were unable to make contact.¹ *Hydra* nevertheless managed to find and rescue 112 Italian survivors.

Italy found the invasion of Greece more difficult than expected. The Royal Navy was managing to hold the Italian Navy in check, while the Greek counter-offensive into Albania threatened the Italian Army. In support of its hard-pressed ally, Germany attacked Yugoslavia and Greece on 6 April 1941. Both destroyers of the *Vasilefs Georgios* class were kept busy, at first ordered to evacuate the Greek gold reserves to Crete and later, after the British intervention, escorting troop convoys between Greece and Egypt.

The *Luftwaffe* had immediate success, sinking several Greek and British ships during the evacuations of Greece and Crete. *Vasilefs Georgios* was damaged by two near misses during a Stuka attack on Sofiko (in the Peloponese) on 12-13 April 1941.² The after part of the hull on the port side was holed and the destroyer limped to Salamis where she entered a floating dock. On 20 April the dock was bombed and both it and the destroyer sank.³ Other units were lost to air attack or scuttled as the Germans advanced, but *Vasilissa Olga* escaped to Crete on 22 April. On board were the Commander-in-Chief of the RHN and members of the Greek government. She later proceeded to

Egypt to join with other surviving Greek warships (five destroyers, three torpedo boats, five submarines, several auxiliaries and the armoured cruiser *Averoff*).

Vasilefs Georgios

The Germans reached Salamis on 6 May 1941, where they raised the dock and later salvaged the damaged *Vasilefs Georgios*. By arrangement between the Axis powers, all warships captured in the Mediterranean were to be given over to the Italians. There were, however, two exceptions and one of these was the Greek destroyer.⁴ The Italians showed no interest in this acquisition, probably because she mounted German guns and the supply of ammunition would be complicated. *Vasilefs Georgios* was instead repaired at Salamis by the Germans and commissioned on 21 March 1942 as ZG 3.⁵ The ship's company comprised ten officers and 215 NCO's and ratings. Her new captain was Commander (later Captain) Rolf Johannesson, former commanding officer of the destroyer Z 15 *Erich Steinbrinck*.⁶ Thanks to his rank, he was often the senior officer of the escorts that accompanied the German troop convoys.

There were some problems with the torpedo tubes (according to Johannesson 'similar to the old German tubes from 1913'), but during her repairs ZG 3 received additional German equipment in the form of five 20mm AA guns, two machine-guns, mine rails, submarine detection apparatus and W/T systems. The port shaft remained slightly deformed but after lengthening and some modifications to the bearings was quite usable, although the destroyer could only reach 30-33 knots. ZG 3 was ready for sea on 30 May 1942.

ZG 3 operated under the orders of the German Admiral of the Aegean and at first remained in the Eastern Mediterranean. The first operation on 1 June was cancelled, but on 24-25 June ZG 3 escorted seven steamers with German troops to Suda. Assisting her were the Italian

¹ Signals Intelligence provided the Royal Navy with an accurate appreciation of Italian plans, but the British were unwilling to share this information with another (albeit allied) navy to avoid compromising their sources.

² According to some sources the date was 14 April.

³ According to Greek sources, the Greeks themselves sabotaged the dock.

⁴ Another was the Yugoslav minelayer *Zmaj* that became the German *Drache*.

⁵ ZG 3 = Zerstörer, Griechenland, (Destroyer, Greece) No. 3; Nos 1 & 2 were reserved for the ex-Dutch destroyers *Gerhard Callenburgh* (ZH 1) and *Tjerk Hiddes* (ZH 2).

⁶ Z 15 took part in Operation JUNO in June 1940, when the British subchaser *Juniper*, tanker *Oil Pioneer* and troop transport *Orama* were sunk, and in several skirmishes with British units in the English Channel.

torpedo boats *Sirio* and *Calatafimi*, German subchaser *Uj 2107* and the auxiliary *Bulgaria*. On 3 July *ZG 3* laid mines off Syros with *Barletta* and *Bulgaria*, escorted by *Lupo* and *Cassiopeia*. On 8-9 July she escorted a troop convoy from Crete to North Africa together with the destroyer *Mitragliere*, torpedo boats *Sirio*, *Cassiopeia* and subchasers *Uj 2107* and *Uj 2104*. Later, the destroyer *Turbine* and one steamer joined the convoy, which was unsuccessfully attacked at night by British aircraft. The *ZG 3* and the *Cassiopeia* escorted two ships back to Crete from 15-17 July, after which *ZG 3* proceeded to Salamis for a short overhaul. The next convoy to Tobruk sailed on 23 July, and was escorted by *ZG 3* and the Italian torpedo boat *Sagittario*. That night British aircraft unsuccessfully attacked the ships. Afterwards the escorts were detached to Suda to refuel from the wrecked tankers *Maersk* and RFA *Olna*, being assisted by the Italian submarine tanker *Balila*.

Commander Johannesson often praised the reliable British machinery of his ship, which he contrasted with the complicated and fragile German high-pressure boilers and machinery. After every sortie 'an army of engineers and workers' was needed to overhaul the contemporary German destroyers, but *ZG 3* was underway without pause and almost without needing a shipyard. On 5 August she was sent to bring the damaged German submarine *U 97* back to Salamis. On 10 August *ZG 3* escorted two steamers loaded with aircraft fuel to Tobruk, assisted by the torpedo boats *Lince* and *Calatafimi*. The convoy sailed on 11 August, but as the British 'Pedestal' convoy was underway to Malta, the Axis ships were redirected to Suda and *ZG 3* was detached to join the Italian 8th Cruiser Division at Navarino. The Italians remained in harbour during this action and the German destroyer was sent back to Suda to bring both freighters to Tobruk, this time with the torpedo boat *Partenope*. *ZG 3* was afterwards recalled to Piraeus and towed the damaged German submarine *U 83* to Salamis on 19-20 August.

On 21 August 1942 *ZG 3* was named *Hermes*, in part to simplify contacts with the Italians, whose destroyers and torpedo boats were all named. On 22-23 August *Hermes* and the Italian torpedo boat *Sirio* escorted two steamers from Piraeus to Suda. Three days later *Hermes* was ordered to search for submarines north of Crete together with the destroyer *Da Verazzano* and the torpedo boats *Calliope* and

Orione. Not only were these sorties unproductive, but British aircraft attacked the now unprotected convoys, sinking three transports.

The Italian tanker *Stige* (with aviation fuel) was on 1-3 September escorted to Tobruk by *Hermes* and *Uj 2104*. On the return voyage *Hermes* brought the tanker *Giorgio* to Piraeus. On 9-10 September *Hermes* and the destroyer *Pigafetta* escorted the transport *Citta Di Savona* with 400 German soldiers to Suda. On 14 September *Hermes* and *Cassiopeia* were sent to Tobruk via Derna with a convoy comprising one tanker and five Italian landing craft. During the night of 13-14 September the British raid on Tobruk began, but the convoy sailed as ordered. It reached Tobruk unscathed on 15 September, while the British operation suffered heavy losses. On the return voyage *Hermes*, *Cassiopeia* and *Castelfidardo* escorted the German freighter *Ankara* to Piraeus.

Between 20-25 September *Hermes* again sailed to Suda (with the Italian auxiliary *Barletta* and the troop transport *Re Alessandro*) and later to Tobruk (with the torpedo boat *Orsa* and the tanker *Rondine*), to bring the fast freighter *Foscolo* back to Piraeus. On 28-29 September *Hermes* and *Euro* escorted two tankers to the Dardanelles. Afterwards *Hermes* went with *Calatafimi* and *Barletta* from Piraeus to Heraklion, escorting three steamers on 30 September. The voyage back on 1-2 October was made with the torpedo boat *Solferino*, because *Calatafimi* suffered a mechanical breakdown. On 9-11 October *Hermes* and the subchasers *Uj 2102* and *2107* escorted *Bulgaria* and *Barletta*, during a minelaying operation in Mesaras Bay.

Hermes underwent a boiler clean between 14-22 October and four older 37mm guns were replaced by more modern 37mm SK C/30U AA guns. The destroyer was sent to Thessaloniki on 23-24 October to bring one steamer to Piraeus, returning on 26-27 October. On 29-30 October *Hermes* and *Euro* accompanied the empty tanker *Ossag* to the Dardanelles, and on the voyage back two steamers were escorted from Thessaloniki to Piraeus. From 2-4 November the destroyers *Hermes*, *Freccia*, *Folgore* and the torpedo boats *Ardito*, *Uragano* and *Lupo* brought three merchantmen from Piraeus to North Africa, successfully fighting off an attack by British torpedo aircraft. In the meantime the Battle of El Alamein had been fought, followed by the retreat of the German Africa Corps. On 7

November the *Hermes*, the destroyer *Sella* and one subchaser escorted two tankers to Syros. Later the *Sella* and both tankers were detached to Leros.

On 8 November Allied troops landed in French North Africa. *Hermes* remained at Salamis, to sail on 12-14 November to Crete and back with the torpedo boat *Monzambano*, escorting four troop transports. On 16-17 November *Hermes* and the subchasers *Uj 2101* and *2102* brought two tankers to the Dardanelles. On 16 November *Hermes* detected the Greek submarine *Triton*, which was sunk shortly afterwards near the Doro Channel by *Uj 2102*. The next day another submarine was detected, but the detached *Uj 2101* discontinued the chase too early and the submarine escaped. On 18 November *Hermes* was back at Piraeus with one steamer from Crete. On 21 November she went to Thessaloniki with the destroyer *Monzambano* and the torpedo boat *Solferino* to bring to Piraeus four freighters. Three of these sailed further to Heraklion, reaching Crete on 26 November. On the same day another convoy started back to Piraeus.

From 29-30 November *Hermes*' boilers were cleaned at Salamis and on completion she sailed to Heraklion to bring the next convoy to Piraeus. The problems with the rudder were solved underway and in the evening *Hermes* met the convoy and its escort *Calatafimi*. Near Milos the netlayer *Piräus* joined, and the group arrived at Piraeus on 2 December. The next voyage, between 7-13 December, involved the *Hermes* and *Turbine* escorting two ships to the barrage between Attica and Euboea. From here they proceeded to the Dardanelles, where the tanker *Celeno* and torpedo boat *Solferino* were already waiting, ready to be brought to Piraeus. On 24-25 December *Hermes*, *Euro* and *Solferino* escorted the minelayer *Bulgaria* and *Celeno* to Thessaloniki. From 30 December 1942 to 1 January 1943 *Hermes* and *Solferino* escorted one tanker to the Dardanelles and another back to Piraeus.

On 5-6 January *Hermes*, *Calatafimi* and *Solferino* escorted three troop transports from Piraeus to Crete. They returned on 14 January. On 15-18 January the tanker *Petrakis Nomicus* was brought to Thessaloniki. From 20 January to 19 February there followed a machinery refit at Salamis. The destroyer made several more trips to and from Crete (together with *Turbine*, *Calatafimi* and the minelayer *Drache*). The last Aegean convoy to be escorted by *Hermes* (with the *Euro*, *Solferino* and *Uj 2101*) sailed on 25

March and comprised five transports from Piraeus via Crete to Rhodes and back.

To this point *Hermes* had remained a lucky ship and all her charges had arrived safely at their destinations. Now, however, the Axis situation in North Africa had deteriorated, and for political reasons it was decided to send her - the only German destroyer in theatre - to protect the supply lines around Southern Italy. The orders were received on 30 March, and the ship left Salamis three days later for Salerno, via the Corinth Channel, Messina Straits and Naples. She arrived on 4 April. The destroyer already had a new Commanding Officer, Commander Curt Ressel, formerly captain of the destroyer *Z 11 Bernd Von Arnim*.⁷ Captain Johannesson took over the 4th Destroyer Flotilla in the North Sea. (He was later promoted to rear-admiral, and became the first C-in-C of the new German Navy in 1956.)

On 19-20 April *Hermes* conducted a minelaying operation south of Sicily. The next day she sighted the periscope of the British submarine HMS *Splendid* some three miles off Capri and then held her with asdic while conducting a series of depth charge attacks. After 45 minutes *Splendid* was forced to the surface where she was sunk by the German's guns. *Hermes* rescued 20 survivors and the Italian subchaser *AS 226* another twelve. *Splendid*'s commanding officer is recorded as having stated that he had taken *Hermes* for a Yugoslav destroyer manned by the Italians. He would have been much more wary if he had realised that his opponent was German-manned.⁸

On 25-26 April *Hermes* was transporting troops and arms to Tunisia with the Italian destroyers *Pancaldo* and *Pigafetta*, when the latter was damaged by Allied aircraft. Even heavier attacks were experienced on 29-30 April when *Hermes*, *Pancaldo* and *Lampo* were again being used as fast transports, and were attacked by some 150 aircraft in five waves. *Pancaldo* and *Lampo* were sunk while *Hermes*, despite claiming nine fighters and a bomber, suffered several near misses. Damage to the lubrication

⁷ *Z 11* took part in the sinking of the Norwegian coastal armoured ship *Norge* and the British destroyers HMS *Hardy* and *Hunter* at Narvik. She was scuttled on 13 April 1940 after the Second Battle of Narvik. Ressel later commanded the destroyer *Z 29*.

⁸ Historical Section Admiralty, *Submarines, Vol II, Operations in the Mediterranean* (1955), p. 148.

pumps caused the shafts to stick fast and *Hermes* had to be towed to Tunis and later to La Goulette to be repaired. The situation deteriorated even further, however, and the immobilised destroyer was scuttled on 7 May 1943 to block the harbour entrance. Several members of her crew died on 8 May during the land fighting, the rest surrendered or were evacuated to Trapani, including Commander Ressel who had left on 7 May, allegedly to make an early report about the loss of his ship. The wreck was later salvaged to clear the harbour entrance and scrapped after the war.

Vasilissa Olga

After her escape from Greece *Vasilissa Olga* served under British control in the Mediterranean, the Red Sea and the Indian Ocean, finally operating as the part of the British 8th Destroyer Flotilla. For much of the time the surviving Greek destroyers were covering the approaches to the Eastern Mediterranean. The *Ierax* and *Panther* were at Alexandria together with the torpedo boats *Niki* and *Aspis*, the *Kontouriotis* was sent with the armoured cruiser *Averoff* to Bombay and the *Vasilissa Olga* with the destroyers *Spetsai* and *Aetos* to Calcutta.

Vasilissa Olga left the Mediterranean on 9 October 1941 and was modified for anti-submarine work at Calcutta, completing her overhaul on 5 January 1942. As part of the work, her after torpedo mounting was replaced by a 3-inch AA gun, while the 'Y' 5-inch gun was landed to provide more space for the depth charge throwers and rails. In addition, the mainmast was removed to improve AA arcs of fire. During the passage to Trincomalee it was found that she was top-heavy and her four 37mm guns were later replaced by four Oerlikons.

Queen Olga was the most active of all the Greek ships during 1942. She returned to the Mediterranean on 22 February 1942 and, together with HMS *Jaguar*, escorted the tanker *Slavol* in March. Both destroyers took part in an attack on the German submarine *U 652* off Marsa Matruh on 26 March, during which the U-boat sank the tanker and *Jaguar*.⁹ In May 1942 the Greek destroyer ran aground while escorting a convoy from Alexandria to Tobruk. The damage to her screws forced her to return to the Indian Ocean for repairs. In autumn

Vasilissa Olga operated in the Red Sea and came back to the Mediterranean in December.

On 15 December 1942 *Vasilissa Olga* and the British destroyer HMS *Petard* captured the Italian submarine *Uarsciek* off Malta, but the submarine later sank under tow. In early 1943 she took part in strikes against Axis traffic to North Africa and, during the night of 18-19 January, *Vasilissa Olga* (with the destroyers HMS *Pakenham* and *Nubian*) sank the Italian transport *Stromboli*.

During another detachment to the Red Sea and the Gulf of Aden the Greek destroyer formed part of the A/S escort for the 'Pamphlet' troop convoy, together with the destroyers HMS *Petard*, *Pakenham*, *Isis*, *Hero* and *Derwent*. The convoy comprised the passenger ships *Queen Mary*, *Aquitania*, *Ile De France*, *New Amsterdam* and *Queen of Bermuda* with 30,000 troops of the Australian 9th Division, and was underway from Suez to Australia between 7-24 February 1943.

On 2 June 1943 *Vasilissa Olga* operated with the destroyer HMS *Jervis* in an action off Cape Spartivento during Operation CORKSCREW against Pantelleria, sinking the Italian torpedo boat *Castore* and two freighters.¹⁰ After Pantelleria and Lampedusa surrendered on 11-12 June, *Vasilissa Olga* and her consorts of the 8th Flotilla were part of the Covering Force under the command of Vice Admiral Sir Admiral AU Willis, in command of Force H for the Sicily landings in July 1943. The landing followed on 10 July and *Vasilissa Olga* was in action for 214 hours without respite, covering some 3539 miles and bombarding Catania.

After the loss of Sicily, Italy signed an armistice which was proclaimed on 8 September 1943. In accordance with the cease-fire conditions the Italian fleet sailed from its bases to be interned at Malta. *Vasilissa Olga* represented the Greek naval forces when an Allied squadron (the battleships HMS *Warspite* and *Valiant*, destroyers HMS *Intrepid*, *Faulknor*, *Fury*, *Echo*, *Raider*, *Vasilissa Olga* and the French flotilla leader *Le Terrible*) met with the Italian ships on 10 September 1943 to escort them to Malta. Thereafter *Vasilissa Olga*, together with other units of the 8th Destroyer Flotilla, took part in the Salerno landing between 9-16 September 1943.

⁹ Greek sources incorrectly claim that the submarine was sunk during this action.

¹⁰ According to the 'Chronology of the War at Sea' only one freighter and the torpedo boat were sunk.

Afterwards the 8th Flotilla was detached from Force H and sent to the Eastern Mediterranean to help the take-over and defence of Italian positions in the Aegean. The Allies did not anticipate the swift German reaction and they suffered heavy losses. The 30,000 Italians surrendered the island of Rhodes to 7000 Germans after only token resistance and this key position was then used to counter Allied moves. The British landed on Leros, Coos, Casteloriso, Calino, Samos, Symi and Stampalia, but without the Rhodes airfields these positions were impossible to defend and were later abandoned. To reinforce their small garrisons in the Dodecanese islands, the Germans used many types of vessels. *Vasilissa Olga*, HMS *Faulknor* and *Eclipse* intercepted a German convoy on 18 September 1943, damaging the freighters *Pluto* and *Paola* and driving the escort vessel *Uj 2104* aground.

British units anchored during the night in the neutral waters of Turkey ('off-limits' to the Germans, who were unwilling to cause a diplomatic incident) to bring reinforcements to the islands and to patrol the archipelago. During the day they remained at Leros, believing that the AA batteries would repel German aircraft, but during a heavy air attack on 26 September 1943 *Vasilissa Olga* and HMS *Intrepid* were sunk in the harbour by eight Junkers Ju 88 bombers of LG 1 (Air Training Group 1). With the Greek ship perished her Captain M. Blessas and 71 crew members.

Both RHN destroyers were lost in the same year, after being separated in April 1941 to fight on different sides. During their short careers they served on same war theatre, but without encountering each other again.

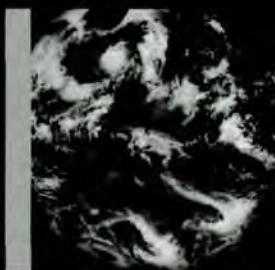
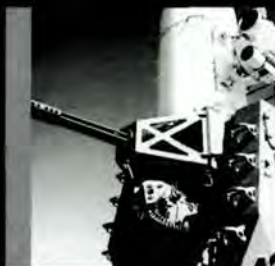


Vasilissa Olga off Malta 1943 (RAN History Directorate)

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Admiral Castex: the French Contribution to Maritime Strategy

By Commander Tom Mueller, RAN

The fundamentals of maritime strategy are derived from centuries of application and over a hundred years of study. Maritime strategy was born with the first use of boats to transport fighting bands across the sea. Whilst soldiers have always taken and held ground sailors consider their medium, the sea, as something to be traversed to prosecute the enemy and supply friendly forces. It has always been a source of sustenance and a mercantile trade route, and sometimes, a battlefield.

The study of maritime strategy has enabled states to consider in advance plans and responses that may be applied in a variety of contexts. In doing so it allows naval planners to theorise and develop operational plans to ensure the continued security of the state. Intelligently applied, maritime strategy can enable even relatively weak maritime nations to stand against the powerful. It has become the cornerstone of maritime planning in contemporary militaries.

Modern sailors think in terms of temporal control of the sea. Although it is coming ever more under state control as treaties and conventions carve it up, the sea remains essentially unchanged in its character. As a consequence, the strategies to be applied in periods of tension and war, too, remain essentially unchanged. Maxims penned over one hundred years ago hold as true today as they were then, despite the staggering quantum of technological change in the intervening period.

The aim of this paper is to explain the contribution of Admiral Victor Patrice Raoul Castex (1878-1968) to contemporary understanding of maritime strategy. Perhaps not so well known, due to limited translation of his works into English, Castex has nonetheless written extensively on maritime strategic thought.

Material and Historical Schools

While the terms navy and maritime are not necessarily synonymous, navies are an integral part of the maritime world. On the one hand, a

navy is linked to the full range of activities in national defence, while on the other it is tied to the entire spectrum of civil activities relating to the sea. Therefore naval strategy may be divided into those aspects for which the sea was used and the means of ensuring that use can be continued. Early discussion centred on command of the sea to facilitate merchant activity. Later theorists suggested that the term command was too absolutist, preferring instead control of the sea. The former implies untrammelled power to range at will while the latter is limited temporally and spatially.¹ Maritime strategy can be defined as the comprehensive direction of the national power to achieve specific policy goals in a situation by exercising some degree of control at sea.²

Around the end of the 19th Century a number of bodies of thought on naval strategy began to crystallise, forming what is now recognised as the first real discussion of maritime strategy. A number of schools of naval strategy and sea power developed; two of which were the material school (of which the French *Jeune Ecole* or 'new school' was a part) and the historical school. Although the *Jeune Ecole's* main focus was the demise of Britain by war on commerce, their instruments were to be new submarines and torpedo boats, placing them squarely in the material camp. Within the material school, the debate was about the new weapons, such as the submarine and the torpedo versus the more traditional gunners. Both groups sought dominion over the historical school, which espoused careful study of previous events in order to glean insights to contemporary problems.³

The historical school emerged in the 1880's; some proponents were Rear Admiral Alfred Thayer Mahan, Sir Julian Corbett and Admiral Sir Herbert Richmond. Their premise was that one needed to examine past conflicts and all associated issues to determine alternative approaches to contemporary strategic problems. This allowed consideration of all politico-strategic and legal aspects of total, and also limited, wars but did not adequately consider the dramatic technological changes wrought through

this period. It is argued that the material school, without being self aware, had held sway throughout the 19th Century, driving technological advances during the period.

Baron Richard Grivel saw the possibilities in some of the new technologies and founded the *Jeune Ecole*. He argued that *guerre de course* (war on commerce) could finally defeat Britain. Consequently, in 1886, France's battleship program was switched to building small, agile torpedo boats and conducting research into submarines. However, the *Jeune Ecole* lost influence over the ensuing decade and in 1901 France resumed building battleships.⁴ Notwithstanding this setback, the material school still held that technical and materiel superiority could deliver sea dominance.

The material versus historical battle raged in the late 19th Century. Into it marched a junior French naval officer, Raoul Victor Patrice Castex, who became a prolific writer on naval strategy, had a number of sea commands and rose to the rank of Admiral in the French Navy. Castex sought to unite the main schools of naval strategic thought, arguing that France could not prevail without consideration of all.⁵ Castex understood that the polarities in naval strategic thought were destructive to the advance of France's naval might due to the paralysing effect of the argument. He recognised the inherent value of the tenets of both main schools. Consequently, Castex's works bring many of the contesting ideas together, forming a unifying whole.

Largely dismissed at home by an establishment unable to confront the inadequacies of French defence policy, Castex was popular overseas.⁶ He was quickly translated into Spanish, Serb-Croat and Russian and also interpreted by English naval strategists. Curiously, some of his works have still not been translated into English, but this is less surprising when one considers the bitter debate between Castex and British strategists of the time. While they saw his work as facile and many deductions as self-evident,⁷ none attempted to develop as comprehensive a strategy as Castex did.

Castex's study of maritime strategy was largely theoretical, infrequently venturing into solutions for contemporary issues.⁸ And while many focused on naval supremacy as a general panacea for national power, Castex sought a more comprehensive strategy. He acknowledged that, for some nations, naval strategy would occupy a minor place in national strategy,

thereby catering for smaller nations that needed the synergy a holistic view offers.⁹ Hence, his ready acceptance by less powerful maritime nations of the time.

Castex's contribution to the evolution of modern maritime strategy has been immense. He supported *Jeune Ecole* arguments for *guerre de course*, differentiating it clearly from piracy and privateering.¹⁰ He accepted Mahanian concepts of the sea as a means of communication,¹¹ but decried the importance of command of the sea.¹² He did, however, recognise the utility of the more flexible concept of sea control.¹³ He supported material school notions of the importance of updating equipment and exploring innovations such as the submarine and the aircraft.¹⁴ He was an early advocate of joint operations before that term became popular.¹⁵ Finally, he argued for a unifying *strategie generale* incorporating naval and continental strategy.¹⁶ While all of these seem like glimpses of the blindingly obvious to the contemporary sailor they serve to show how far ahead of its time Castex's thinking was. It also demonstrates the timelessness of his work. Many of his theories have been validated by subsequent events, and others reflect advanced thinking on past events.

One example of Castex's prescience is his prediction of unrestricted maritime warfare. Between the two world wars Castex argued strongly for *guerre de course*. He saw this as the only recourse for the smaller navy and, going further, predicted its inevitability. This position was supported by German submarine and cruiser warfare during both world wars, which was reminiscent of the arguments of the *Jeune Ecole*. Here, it could be argued, Castex was merely reflecting the realities of WWI and contemporary German thought, but in other cases he was more inventive.

Mastery of the Sea

In his discussions regarding control of the sea Castex had a new approach. The fundamental focus of the military element in maritime strategy centres on the control of human activity at sea, through the use of armed force, in order to contribute to the broad ends established in a national maritime policy. There are two parts to this: establishing control against opposition and using control, once it has been established.¹⁷

In discussing mastery of the sea, Castex was exploring Mahanian concepts of sea command and sea control. The 19th Century term Pax Britannica described Royal Navy (RN)

dominance of the maritime environment, referred to then as command of the sea. Castex argued that command of the sea is only useful if it can be used to act effectively against the land,¹⁸ and he used the period between the battles of Trafalgar and Waterloo to demonstrate the point.

Having achieved command of the sea at Trafalgar, some naval strategists argued that Britain could starve France into submission. However, France had command of continental Europe and could not be starved out. Indeed the opposite was the case because Britain, locked out of markets and trade, was forced to negotiate with Napoleon. When these negotiations broke down Wellington had to finish the job that Nelson had half completed, leading Britain inevitably to Waterloo.¹⁹ Using this example Castex successfully argued that command of the sea is no guarantor of dominion. He then deals with the issue of sea control.

Castex argues that command is only really possible for limited times in limited areas. This limited command is further exacerbated by the access to the sea afforded by submarines and aircraft. His theme is that sea control is more achievable and command is a thing of the past as it is undermined by new ways to access the sea. The concept of sea control has since been further divided into sea use and sea denial by such luminaries as Admiral Stansfield Turner, USN. The former refers to subsistence, mercantile and transport (military or merchant) usage while the latter is characterised by offensive operations to deny enemies access to the sea.²⁰

The validity of Castex's maxim on control versus command was borne out by the Falklands War of 1982. Here the RN demonstrated sea control by achieving maritime superiority for a limited time, over a defined area.²¹ It has been argued that the USN has enjoyed command of the sea since the demise of the Soviet empire. Further it is suggested that in the Gulf War of 1991 the US-led Coalition demonstrated sea command. While they certainly enjoyed almost untrammelled sea control, other navies, such as Iran, continued to exercise their use of the maritime environment and Iraqi shore missile batteries also ate away at the parts of the sea that the coalition 'commanded'.²² The author argues that Command was not achieved. Those that argue for the existence of a new Pax Americana contest this point. However, applied to the smaller forces for which Castex wrote it

certainly has validity and supports his arguments for the utility of the term sea control over sea command. It also demonstrates that careful analysis and well thought out theory will often enjoy considerable longevity. However Castex offered more than analysis and validation of esoteric theoretical concepts. He also accepted many material school arguments.

Technology

Castex did not accept that historical analysis, the gun, aircraft or other surface and submarine vessels alone offered naval superiority. He argued that all have a role to play towards that achievement.²³ Subsequently, the advent of the torpedo, submarine, tactical bomber and later the sea-skimming missile, offered the possibility of relatively easy defeat of the conventional warship. They also reduced the effectiveness of close blockade due to warship vulnerability to the new threat near enemy ports.²⁴

In a complex argument, which the author admits seems to lose in translation from then to now and from French to English, Castex discusses the material and historical schools. He calls them empirical and doctrinaire, arguing that the best of both must be absorbed, whilst admitting a leaning towards the latter group. Yet he considered that the empiricists, previously focused entirely on surface warfare, needed to bring their theories up to date by incorporating emerging technologies.²⁵

In the period between the wars and the end of WWII the advent of the aircraft carrier changed the force structure of the major navies. It relegated the battleship from the pre-eminent element of sea power to a useful, but subsidiary, weapon system.²⁶ The battleship became an escort for the new capital ship - the aircraft carrier. In the process escorts came to be more lightly armoured and smaller. This process began after battleships repeatedly demonstrated their vulnerability to carrier borne air power through WWII.²⁷ This period assisted the ascendancy of the material school of maritime strategy that, arguably, continues to this day.

The submarine too, continued the ascendancy it began in WWI. France had of course ignored its value after the fall of the *Jeune Ecole* and her resumption of battleship construction. The submarine's value was validated by events subsequent to Castex's material school predictions. The German U-boat campaign of WWII and subsequent development of nuclear and ballistic missile submarines bears this out. Some have even argued that the

submarine could replace the carrier,²⁸ but this does not appear to have borne fruit.

Manoeuvre

Castex was a strategic manoeuvrist in an attritionist culture yet argued for pursuit and destruction of the enemy fleet as a precondition to all other activities.²⁹ This maxim was borne out by the events of two major wars.

Castex's critique of German naval activities in the North Sea during WWI focuses heavily on their repudiation of the importance of *manoeuvre*. Germany used the strategy of a fleet in being in the North Sea in 1914, generating a four year long stand off with Britain. The presence of the High Seas Fleet forced the British to concentrate naval strength in the Grand Fleet, reducing their effectiveness elsewhere.³⁰ Castex argues that Germany allowed a stalemate to develop, which gave Britain time to manoeuvre politically to bring other nations into the war.³¹

In Admiral Scheer's attempts to lure smaller sections of the Grand Fleet towards pre-positioned submarine forces Castex found much to be admired. He refers to this as *manoeuvre*. Dogged by poor Zeppelin reconnaissance at Jutland and Helgoland, Germany abandoned *manoeuvre*. They withdrew the submarines from the fleet support role, and committed them to *guerre de course*. He argues that despite its apparent lack of success, *manoeuvre* remains a valid and useful strategy for the inferior fleet.³² This is the essence of the fleet in being strategy.

The USN also operated as a fleet in being against Japan in 1942, after Pearl Harbour. Bernard Brodie noted that the USN learned an important lesson on the fleet in being strategy during this period. The remnant US Pacific Fleet (shrewdly and aggressively handled), denied the Japanese command or even control of the sea. By 1944, a series of Japanese disasters reversed the situation with Japan using the same strategy against the US as its maritime might waned.³³ The foregoing examples show Castex to be an able synthesist of contemporary dilemmas and demonstrate his ability to extract valid principles and theories.

Joint Operations

Castex was a joint warrior, again arguing from the perspective of the less powerful. In his search for a holistic defence strategy, Castex articulated arguments for jointness, although he preferred the term unity of war.³⁴ In discussion of the importance of cooperation between the

Army and Navy he compared it to the close relationship between infantry and artillery. In this he was attempting to generate an overarching strategy, which he came to call *strategie generale*. Similar treatises have been variously described as maritime strategy by Corbett and grand strategy by Anglo-American writers.³⁵ Castex illustrates this with the siege of Port Arthur by the Japanese Army.

The Japanese Navy had blockaded the Russian fleet into Port Arthur but could not get in to finish the job. In order to protect its sea lines of communication and further the overall strategy, the Army laid siege and eventually destroyed the Russian fleet for the Navy. In the intense competition for recognition between air, sea and continental strategists between the wars the idea of Army-Navy collaboration was tantamount to anathema. This Army-Navy collaboration would today be titled a joint operation. The importance of jointness is increasingly being recognised as militaries the world over shrink and lose access to funds. The Australian Defence Force is no exception to this trend.³⁶

Conclusion

Castex's recognition of the validity of the major schools of maritime strategic thought is a logical and sensible position. His is not a compromise position, as both points of view must be fully accommodated if a nation is to evolve an effective maritime strategy. His was a commonsense view of particular utility to smaller navies.³⁷

The evolution of modern maritime strategy owes much to the early proponents of the various schools but these lacked a unifying thread. The debate between the historical and material schools of maritime strategy was, in essence, about the learning the lessons history versus finding new ways to fight. The *Jeune Ecole* argued *guerre de course*, which was as much about the contemporary construct of asymmetric attack as it was an evolution of privateer operations. These were the key schools from which contemporary maritime strategy evolved, and study of them provided Castex insights into maritime warfare. His deft combination of their tenets provides an authoritative guide for the contemporary maritime strategist.

Castex was accused by British strategists of the time as unimaginative and his arguments were held to be self-evident statements of the obvious. There may even be a

grain of truth to these accusations, although this is said with the benefit of hindsight. However, Castex's aim was to develop a comprehensive strategy that would enable France to improve her performance at sea - and this he did. Sadly his ideas were not adopted by the very nation that had the most to gain from them. Castex's *strategie generale* translated to a strategy for smaller maritime nations and as such has much utility for the Royal Australian Navy. Castex was snapped up by many of these but ignored by Britain and America who subscribed grander maxims of naval domination.

It is difficult to say whether Castex drove the development of his many ideas, regurgitated and recombined those of others, or truly foresaw the eternal reality. Whatever the case his contribution, much overlooked and occasionally decried, was immense and warrants closer examination by contemporary strategists.

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²⁰ Till, *Maritime Strategy and the Nuclear Age*, pp. 190-191.

²¹ Admiral Sandy Woodward with Patrick Robinson, *One Hundred Days. The Memoirs of the Falklands Battle Group Commander*, Naval Institute Press, Annapolis, 1992, p. 22.

²² The author's own experience at sea during the Gulf crisis supports this.

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²⁴ *ibid.*, p. 126.

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²⁶ Till, p. 109.

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²⁸ Till, p. 87.

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³⁰ Daniel A. Baugh, 'Admiral Sir Herbert Richmond and the Objects of Sea Power', in James Goldrick and John B Hattendorf (eds) *MAHAN IS NOT ENOUGH: The Proceedings of a Conference on the Works of Sir Julian Corbett and Admiral Sir Herbert Richmond*, p. 19.

³¹ Castex, p. 50.

³² Till, p. 182.

³³ *ibid.*, p. 133.

³⁴ Castex, p. 44.

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Shiphandling Corner

BROWN WATER MARINERS - CARGO SHIPS ON THE FLY RIVER

by Jerry Lattin



The two great river systems in Papua New Guinea (PNG) are the Fly on the south coast, and the Sepik on the north. Both rivers are navigable in favourable conditions by ocean-going vessels for several hundred nautical miles (nm) from the sea.

The whole island of New Guinea is poorly served by land communications. There are no railways; the roads are rudimentary and weather-limited. The island's rivers merit strategic interest because of the access they provide to its interior, particularly to the remoter parts of the PNG/Indonesia border areas. These great rivers are, or can be, major lines of communication. Their use by merchant ships shows their potential as avenues of logistic support if peacekeeping operations in the area are ever required. There is therefore benefit in defence planners being aware in general terms of what options are available for riverine operations.

Of all the island's rivers, the Fly offers unrivalled access to the border. In fact it is the border for nearly 90nm, and in terms of tonne-miles moved and shipping activity is the most economically important of New Guinea's rivers.

Characteristics of the Fly River

A position on the Fly is customarily denoted by the location's approximate distance in river (nautical) miles from the sea, or ARM (Adoptive River Miles).

Approaching the Fly from seaward, the first 60nm are the delta, shallow, filled by islands wooded with mangrove and nipa palm. Above that, there is another 60nm of shallow, changeable riverscape before tidal influence stops and the Fly starts to behave like a river at about ARM120. The banks here are covered in magnificent lowland forest. The Fly's biggest

tributary, the Strickland, joins it at ARM214, as the river enters the vast central grassland swamp - which extends both sides of the border. Land movement through this area is impossible for much of the year.

The river is the border with Indonesia between ARMs 320 and 407, and becomes increasingly dependent on rainfall in the catchment area. Bends become tighter; the channel, narrower; the forest returns. The Alice River joins the Fly at ARM 436 at D'Albertis Junction.

The river port of Kiunga at ARM458 is connected to the Ok Tedi mine at Tabubil by 140km of all-weather road and a copper concentrate pipeline. (The road does not connect to the PNG road system.) The mine began production in 1986 after a long development period. It is of considerable economic importance to PNG, and depends upon the river, the road and the pipeline for its operation.

This article does not specify water depths found in the river, because the information can be misleading. Vessel dimensions and under-keel clearances are more significant, and will be addressed later.

The river bottom is mostly very soft fine material, in a state of semi-suspension. The river banks likewise are soft soil, with very few rocky intrusions.

As rivers go the Fly is remarkably flat, the decrease in elevation from an average river level at Kiunga to mean sea level at the mouth being only about 30 metres. This results in river currents of only 1 to 2 knots in average conditions.

The river is sparsely populated. Between the sea and Kiunga, there are about fifteen major concentrations of river people totalling probably less than 15,000 people. Between these villages, camps and temporary settlements are occupied only intermittently.

River shipping

The major commercial user of the Fly River is Ok Tedi Mining Limited (OTML). OTML operates eight copper-concentrate bulk carriers and numerous other vessels, most under time charter from two companies, and is the prime source of expertise and information on the river. The largest vessel in their fleet, MV *Kiunga Chief* (length 90m, beam 22.5m) operates with displacement up to 6,200 tonnes and 4.8m draught (in favourable river conditions) between Kiunga and Australian ports. All major fleet units were purpose-built for the river. The OTML bulk carriers discharge their cargoes to a silo vessel outside the river mouth.

The ideal river cargo ship is flat-bottomed with well-inboard screws, skegged rudders, and bow thruster if single-screw. Keel cooling is a great asset. MV *Kiunga Chief's* dimensions probably represent the limiting dimensions for sustained river operations to Kiunga.

Prolonged droughts are rare, and seem linked closely to El Nino events. The most recent, in 1997, saw all river activities cease for three months; ships stayed where they were in slowly dwindling puddles of water, with most of their crews sent home.

Generally the river level on the Kiunga gauge varies from less than one metre (serious drought; nothing moves on the river, current almost undetectable) to over 11 metres (serious flooding; too high to load bulk carriers). The Kiunga river gauge's relationship to general river depths downstream varies considerably. During June 2002 ships operated to a 3.9m draught (full load for most bulk carriers) on a five-metre river, but on occasions in the past an eight-metre river has been needed for this draught.

Rainfall affects not only the river surface level. The scouring effect of sustained above-average rain lowers the river bottom. Prolonged below-average rainfall means slower currents; suspended solids precipitate out and



Typical Fly River OTML bulk carrier

Factors affecting river operations

Navigability of the Fly above ARM320 is dependent upon rainfall in the catchment. Although some times of the year are more likely than others to give good river conditions, drought and a low river can occur at any time.

the river bottom rises.

Variations in river level can occur rapidly; a six-metre river can drop to five metres in 24 hours after nil rain in the catchment. OTML regularly monitors catchment rainfall and river depths in several locations, and keeps river masters well informed of changes. The

company has developed considerable expertise in forecasting both short- and long-term trends.

There is no pilotage system for the river. Vessels requiring pilotage assistance may be allocated two experienced river helmsmen accustomed to working without supervision.

The only official hydrographic survey of the Fly River (from the mouth to Kiunga, ARM458) was completed by SMEC in 1981. An experienced Fly River master, Captain R Taylor, conducted another survey in 1992. Both surveys were commissioned by OTML. The rate of change in the Fly is such that any whole-river survey is out-of-date somewhere almost as soon as it is published. Nevertheless, the SMEC and Taylor surveys remain reasonably accurate and useful over much of the river.

OTML provides basic navigation marks in the river. In the main, these are confined to:

- ARM markers (on trees) every five nm;
- single 'aiming marks' at a few difficult points; and
- below ARM120, transit beacons in pairs, sometimes associated with battery-powered small flashing lights, on a few of the more difficult crossings in the tidal region.

The daymarks are usually made of night-reflective material. All marks are unreliable due to rampant vegetation and other factors.

Tidal predictions are listed for Umuda Island at the river mouth, but most masters base their tidal predictions on Mackay (Outer Harbour). A table (based on Mackay) is available to calculate the approximate times of high and low water at various points up to ARM105. The high water peak moves up-river at about 18.5 knots, and the low water trough at about 14.5 knots.

Tidal streams are strongest between ARM45 and ARM100, where the spring flood will reach six to eight knots. Tide heights are not predicted except for Umuda Island, where the range is about four metres. Tidal range of this order applies up to about ARM100.

Slower vessels can use these tidal streams to considerable advantage. By entering the river at low water, a nine-knot vessel will pick up flood stream and carry it for 12 hours - for a 50% increase in speed, and without payback later.

Navigation, steering and ship-handling techniques

In most of the ships operating regularly on the Fly River, the helmsman takes the vessel up- and down-river without direction, at least above ARM120. In the delta, where a ship may be a mile or more from land, some masters prefer to use conventional OOW navigation rather than trust the helmsman. Despite the featureless and changeable nature of the delta, it requires precise navigation and is particularly suitable for GPS.

Good Fly River helmsmen are specialists, who know where the ship has to go and how to take it there - not the easiest task in a laden ship doing 10 knots downhill under current. They must also have formidable powers of concentration; standard tricks are three or four hours.

A downstream loaded ship demands delicacy of touch. The current sweeps the vessel round bends, and very little wheel is needed to start a turn; full opposite lock may be needed to stop it. On tight turns, loaded bulk carriers lose most of their speed, and almost stop.

Going upstream, things happen more slowly and the ship gets no help from the current in making a turn. Full helm is often needed early in the bend.

Contrary to popular belief, the deepest water in a winding river is not always on the outside of the bends - though on the Fly that is usually the case. Nevertheless, there are places where disaster lurks on the outside of the bend and the ship must stay mid-river; others where the bend is so sharp that the ship will not round it at all unless she cuts the inside bank fine; and still others where the deepest water actually lies on the inside of the bend.

River geometry usually encourages the current - and therefore the channel - to follow a clearly-defined path. A handful of locations, however, give the river no such encouragement; those are the spots where problems may be met on a low river. They always lie on straighter stretches of river and between bends. Except in direly low-river conditions, most problems are between ARM345 and D'Albertis Junction at ARM436.

Downstream loaded ships have tenuous control over their speed and direction. If an emergency stop is needed, a controlled U-turn is often the best option. Full-load bulk carriers can do a 180 in about 1.5 x their own length

sideways and 3 x to 4 x their length along track, at full ahead and full helm.

Underkeel clearances, both in the delta and in problem areas on a low river, can be small, with less than half-a-metre quite normal. In the shallowest part of the delta, between ARM070 and ARM100, ships often anchor to await favourable tide height before proceeding.

Mud-running and its consequences

Sometimes river conditions are marginal, but commercial imperatives may require cargo to move if at all possible. The navigational limits of the river must be pushed.

using astern power are twofold: Buckley's and none.

A master before departing Kiunga therefore seeks the most up-to-date intelligence available from ships that have recently gone through. Usually he knows to within a hundred metres or so where the trouble spots are going to be, and will be in the wheelhouse when they are reached. If the ship touches, the aim is to keep the bow pointing down channel and the vessel moving downstream. At the first bump, the master will push the throttles to 'full ahead', and press on.

If a downstream ship fails to recover

View from the bridge of a downstream ship at ARM175



A loaded vessel heading upstream in low river conditions will trim down by the bow. This enables shallow water to be 'tested' without risk of the vessel broaching under river current if she grounds. Heading can then be maintained using rudders, and if necessary the vessel can back off to deeper water downstream.

Downstream passages on a low river are a challenge. The option of trimming by the stern to prevent broaching is not available in a ship loaded to carry optimum cargo, and she will be trimmed flat. No matter how cautiously the ship is handled, the chances of 'backing off' from a downstream grounding

quickly from a grounding, she will usually settle beam-on to the current. The current will scour one or more channels under the ship and there will be heavy turbulence immediately downstream - which within an hour will become a sandbank. The ship may not be completely stationary at this stage, and here lies the best hope of recovery. Provided main engines can be operated, they are used to try to develop a swing, back and forth, and move one end of the ship towards deeper water. Often this is successful, even on a falling river.

If recovery efforts fail, the master eventually will accept the inevitable, shut down main engines, and wait for a rise in river level -

which might be weeks away. Standard practice is to drop an anchor underfoot, to hold the bow upstream. Depending on how the ship is lying, thought may be given to the safety of the rudders when the river rises and the anchor takes hold.

Similar principles apply in grounding and recovery of light ships heading upstream, except that such vessels have the additional option of ballasting/deballasting. Groundings in the tidal region enjoy yet another benefit of being able to rely upon high water to help refloat within 12 hours; but the strong tidal streams there increase considerably the stresses upon the hull.

One other common downstream grounding occurrence is the sideways skid into a river bank - usually the result of human error on the helmsman's part. Normally the ship will bounce off and continue downstream, but occasionally such bumps can damage screws and rudders. It is sometimes better to accept the bump on the hull, rather than risk the rudders by trying to avoid it.

Those versed in naval navigational standards may read the preceding paragraphs with increasing astonishment. In practice, thanks to robust ship design, hull damage from a grounding is extremely rare. Damage to screws and rudders happens sometimes, but is always capable of being rectified, if not by ship's staff, at least by facilities at Kiunga.

Other standard operating procedures

OTML's fleet works 24 hours a day, with all ships being fitted with high-powered searchlights. River helmsmen learn quickly also to steer by radar, since its plan-view presentation closely mimics the map they work from. Radar can be helpful in picking the channel in doubtful areas - the current's favoured line, where the deeper water is, is often revealed in subtle variations in the line of the bank which show up well on radar but cannot be seen by eye.

It is customary on the river to anchor as far out of the channel as depth of water allows. On a low river this may not be very far, but the aim is to at least leave enough room for another ship to get past. Anchoring on bends is avoided. In the tidal region, masters avoid anchoring in conspicuously deep channels where holding is poor.

Given its volume, river traffic coordination is clearly desirable for safety.

OTML conducts a daily radio sked in which all river vessels report their position and movement. River vessels also make general calls reporting position and speed every four hours, when entering or leaving the river, and when departing Kiunga for downstream. It is therefore easy to calculate when and where meetings will occur. Passing arrangements are coordinated between ships by VHF, and the vessel proceeding upstream gives way. In the upper part of the river this will normally involve the upstream vessel stopping next to the bank until the other vessel is past. Passing arrangements and position reports are taken seriously. In the forested upper river, uninformed vessels can meet with almost no warning. Serious collisions have occurred.

River masters must also consider river residents, because the navigable channel often passes only 50-100m away from villages. Standard procedure involves slowing down to clutch speed well before reaching a village or any small craft such as canoes.

Special hazards

Tidal bores may be encountered on the river between ARM60 and ARM100, normally within 24 hours of a spring tide - though some spring tides produce no bore. The bore travels upstream at about 18 knots. It moves over the top of the ebb stream, but breaks only in shallow water or none. In water over two metres it is just a wave. Small vessels at anchor in shallow water or aground are most at risk.

Snags present a threat to the screws of vessels bound upstream. The problem ones are whole trees anchored to the river bottom by their root ball. Often there is no sign of the snag on the surface. The best defence is a bow-down trim to help push them out of the way.

Saltwater crocodiles occur throughout the navigable length of the Fly. Commonsense dictates that people should never swim in the river, loiter near the water's edge, or allow any part of the body to project outboard in a small boat. Local villagers, fatalistically, do not always follow these basic rules - and most river residents have lost at least one relative to a crocodile.

Fog is occasionally encountered in the river anywhere above the delta, and visibility of less than 100m may be experienced

Notes on the border

The northern portion of the PNG/Indonesian

border is fixed on the meridian of 141 degrees east longitude, and the southern portion lies about 1.8nm further east. Between the two, the Fly River portion of the border follows the 'thalweg' which is the centre of the river's main navigable channel. Therefore, not only does the border move if the river changes its course; it moves if the main channel moves.

It is of interest also that the Britain/Netherlands 1895 border treaty includes the clause: '*Navigation on the Fly River is free for the subjects of both Contracting Powers...*'. This clause now applies to PNG and Indonesia as successors to the contracting powers, and therefore gives freedom of navigation on the whole of the Fly River to their vessels.

Support facilities on the river

There is infrastructure already in place, which could help logistic support of military units. Much of it is under the control of OTML, and its accessibility for defence purposes would be entirely at OTML's discretion. Facilities available include supply of fuel (gas oil), fresh water, and mechanical maintenance. Two of the three wharves at Kiunga, and a 93-tonne heavy lift derrick, are OTML property. Kiunga also has a government-controlled barge ramp and two commercial supermarkets.

Provisions such as frozen barramundi, free-range venison, mud crabs and fresh vegetables are also sometimes available from down-river villages by cash purchase or barter.

The airstrips at Kiunga and Aiambak (ARM249) are useable by commuter-size turboprops. More basic airstrips/landing grounds are at ARMs 218, 100, 052 and 019. Helicopter landing sites away from the airstrips are comparatively rare, except in low river conditions when there may be landing sites on sandbanks.

Past defence force activity

The defence forces of both Australia and PNG operated vessels - namely, *Attack* Class patrol boats, LCHs and LCM9s - on the Fly River in the 1970s, but there has been no such activity for many years. Until recently, an infantry detachment of the PNG Defence Force (PNGDF) was permanently based at Kiunga. It made no use of the river system for movement or patrolling. Any residual expertise in river operations held by the defence forces of either

PNG or Australia must be, at best, old and rusty.

Conclusion

The Fly River offers access to a substantial part of the PNG/Indonesia border where land communications are difficult. In the RAN's present inventory, LCHs have operated on the river before and remain the most suitable vessels for river operations in the unlikely event that such a need ever arises. Appropriate crew training would be needed, and an operational deployment plan would need to address the contingency of low river conditions.

Any defence commitment to river operations would benefit from up-to-date information on the many river variables and perhaps from local logistic support. If the commitment takes place after closure of the Ok Tedi mine (expected in 2010 at current copper prices), it may be necessary to re-establish by other means at least some of the river services now provided by OTML.

The manner in which commercial interests have tamed and used the Fly River - despite its inherent difficulties and navigational problems - shows the potential in other great rivers on this huge island. In a place short on roads, these rivers - made and largely maintained by nature - are the roads.

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About the author

Jerry Lattin joined the RAN in 1952 and left it in 1979. In between, he commanded two small ships for over three years in PNG and Pacific islands waters, and was XO (and briefly CO) of a DDG. In civilian life, he worked on Christmas Island for five years, and played agri-politics for nine. Between 1993 and 1999 he commanded bulk carriers on the Fly River, and elsewhere between Bangkok and Townsville.

BOOK REVIEWS



Fundamentals of Australian Aerospace Power

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It is fair to say that strategic-level doctrine has undergone something of a renaissance in recent years. From an almost standing start, there has been a sudden outpouring of publications that fall into this 'keystone' or 'capstone' category of doctrine. In the joint arena, we now have the capstone Foundations of Australian Military Doctrine as well as the trilogy comprising The Australian Approach to Warfighting, FORCE 2020, and the emergent Future Warfighting Concept. The individual services have not been immune to this trend either. Many readers will be familiar with Navy's groundbreaking Australian Maritime Doctrine, and we have recently seen the culmination of Army's extensive efforts in the 2002 edition of Land Warfare Doctrine 1: The Fundamentals of Land Warfare.

But it is not simply the plethora of publications that constitutes this renaissance. A considerable amount of thought and effort has gone into creating these texts and therefore into making the doctrine they embody more accessible, informative and appealing than in previous volumes. A combination of cutting edge publishing and design, innovative thinking, and embracing of technological opportunities have added new dimensions both to form and content alike.

The RAAF's latest contribution to strategic doctrine, Fundamentals of Australian Aerospace Power, exemplifies this new generation of doctrine manual. It is designed to replace the earlier Air Power Manual series, but comparing the two is like dealing with proverbial apples and oranges. The last Air Power Manual was an uninspiring 57 page all-text booklet with a dull cover. Fundamentals is a very slick and glossy production with an abundance of illustrations and supporting text boxes, the latter offering historical examples, advice on further reading, and key definitions. Marginal summaries are provided and there are helpful references at the end of each chapter. Overall, the layout and design of Fundamentals represent a generational leap over those of its forerunner.

What about content? Given the title Fundamentals of Australian Aerospace Power, this reviewer expected to find ideas about how aerospace power might be applied most effectively by the ADF in terms of our unique experiences and culture. The introduction reinforced this expectation by claiming that 'this publication is both a record of the development of aerospace doctrine in the Australian context and a forecast of what it might be.' Unfortunately it appears to be nothing of the sort. It is predominantly a volume about the history, evolution, theory and application of airpower rather than Australian aerospace doctrine. The 'Characteristics of Aerospace Power' chapter draws upon such episodes and capabilities as the shooting down of Gary Powers, the Enola Gay, the USAF JSTARS (Joint Surveillance Target Attack Radar System), USAF F-4 Phantoms over North Vietnam, the Gulf War, and the SR-71 Blackbird to illustrate its points. Similarly, but perhaps more surprisingly, the chapter on 'Australian Aerospace Power Roles' draws upon such evidence as the Normandy landings, F-4G 'Wild Weasels' over Vietnam and the Gulf, the strategic bombing of Germany, Colonel Hans Rudel (a famous Stuka 'tank busting' pilot on the Russian Front), the Berlin Airlift, Operation Deliberate Force over Bosnia, the Yom Kippur War, and even Offensive and Defensive Counterspace roles. Unfortunately, even the ten Australian principles of war have only two Australian supporting

examples (the Bismarck Sea and Milne Bay). It strikes one also that much of the work produced over the last decade by respected Australian RAAF historian and airpower theorist Alan Stephens - on Australian commanders and on strategy and doctrine in the RAAF (especially *Power Plus Attitude: Ideas, Strategy and Doctrine in the Royal Australian Air Force 1921-1991* and *High Fliers: Leaders of the Royal Australian Air Force*) is notably absent.

For these reasons, one could describe *Fundamentals* as a comprehensive volume on the history, development, theory and application of aerospace power within the framework of national security issues. In this sense, it is an authoritative source that covers everything from the definition of doctrine to national security and the nature of conflict, and much in-between. 'Comprehensive' here means lengthy, and the size of this volume has been the subject of frequent criticisms of it.

In creating *Fundamentals*, its authors noted that 'many hours were spent researching the doctrine of other nations' in order to 'find the best solutions for Australian aerospace power.' In the end one has the impression that *Fundamentals* is strong on the former, but misses the mark on the latter. The aerospace doctrines and experiences of other nations (particularly those of the US) overshadow here our own history, culture, and context. Despite this, *Fundamentals* remains an engaging and valuable text for students and practitioners of aerospace power.

Reviewed by Doug Steele, Department of Defence

British Shipbuilding and the State since 1918: A political economy of decline

by Lewis Johnman and Hugh Murphy
University of Exeter Press, Exeter, 2002
Softcover, 306pp, £16.99

The prolonged death of the British shipbuilding industry is probably well known in outline but perhaps not in detail. This excellent book provides the detail of how British shipbuilding went into terminal decline from being an economic powerhouse in the mid to late 19th Century to a rump in the later part of the 20th Century. While it is predominantly concerned with merchant shipping, it does consider naval shipbuilding where relevant.



The standard explanation for declining economic competitiveness in any shipbuilding industry is poor industrial relations, where it is alleged the affected trade unions refuse to change working practices in line with changes in technology and manufacturing practices. While this was certainly a factor in Britain, what comes as a shock is the sheer bloody mindedness and conservative attitudes of the shipbuilders themselves who preferred to retain traditional arrangements rather than adopt overseas manufacturing and business practices.

As is well known, until just after WWI British shipbuilding produced more tonnage than any other country, ranging between 60-80% of world output, with Britain owning about 40% of world shipping. One of the major structural problems for British shipbuilding was the relationship between the shipbuilder and the shipowner. In what is termed a bespoke arrangement, there were direct links between owners and builders, where certain yards would build solely for one owner. While such an approach kept the work in British shipyards it distorted the industry, as shipbuilding was geared to production rather than to the market. This meant the shipbuilders produced a variety of ships without being able to specialise to a few ship types, and they did not know how to market their ships to overseas buyers outside these arrangements. Both of the factors would haunt the shipbuilding industry through the 20th Century.

After WWII it was apparent to many that there would be a sustained and prolonged increase in the growth of world trade, with new routes and trades opening. Such growth would place ships at a

premium, but the shipbuilders preferred to continue building the same type of ships, operating along traditional routes for their longstanding customers. Many countries adopted the methods used to produce the wartime *Liberty* ships, particularly in Asia, but there was a lack of interest in Britain to modernise plant and production methods. When combined with a lack of interest in aggressively seeking export markets, such managerial irresponsibility could only lead to market failure.

At various times the British Government was called upon to assist the industry, not least because the shipyards were located in the north of England and provided employment in economically depressed areas. The industry's attitude to Government support was based on the rationale that when financial assistance was required, the Government should provide it, but otherwise the Government should not interfere in how the industry was structured and how it operated. Subsidies would either be to the shipowners to encourage them to purchase British built ships, or to the shipbuilders to offset their higher prices compared to overseas builders. Interestingly, the shipbuilders did not appear interested in trying to lower their production costs, rather the Government should assist them to compete against foreign builders who had a lower cost structure; clearly this was not a sustainable approach.

During the 1940s and 1950s there were numerous Government reviews over the shipbuilding industry's future and what possible Government involvement would be required. In order to manage the shipbuilding industry, the Government encouraged and financially supported the amalgamations of yards on a regional basis, although this approach appeared to be more concerned with increasing the capacity of conglomerates rather than updating plant and employee training to lower production costs. The major problem facing British shipbuilding was that it could not meet quality assurance requirements or delivery schedules sought by customers, and thereby began losing orders to foreign builders. The post-WWII sections are the most difficult part of the book to read, as it outlines the inability of the shipbuilders to adapt to the demands of the new shipping market. They maintained a blinkered attitude towards productivity - in their dealings with Government they continually noted that tonnage production remained at similar levels to those in the past, conveniently ignoring the relative decline and importance of British shipbuilding as the global supply of merchant shipping increased dramatically after the war. The final result of Government intervention to manage an ailing industry was nationalisation in the 1970s to be followed by privatisation in the 1980s.

What lessons are there for Australia from the British experience? Certainly there have been major problems with Australian naval shipbuilding during the 20th Century, with a public perception of the Government-owned naval dockyards as one of intransigent trade unions causing cost blowouts and excessive delays in meeting delivery schedules. But a reading of many of the inquiries into the dockyards shows serious management problems, which when combined with an overly bureaucratic Government procurement cycle, seriously impacted on efficient and effective ship production.

During the 1980s the Government began the process of selling or closing the naval dockyards with the expectation that private ownership would force the efficiencies that could not be gained under Government ownership. However the Australian naval shipbuilding industry has been unsuccessful in generating foreign orders and could be considered to be in a bespoke arrangement with the Government, being solely reliant on them for orders. This has now come to a head with the shipbuilding program commencing in the mid-1980s coming to an end. With the proposed new program being about half the size of its predecessor, Government intervention of some sort is expected to rationalise the industry. The Department of Defence, in conjunction with the shipbuilders, has developed a strategic plan for the shipbuilding and ship repair industry based on consolidation to a sole-source arrangement. Given the experiences of the British shipbuilding industry and the Australian naval dockyards, it is not clear that such an approach will ensure low costs, high productivity and the ability to meet delivery schedules over the long haul. It will be interesting to see how the Australian Government reacts to the plan and whether it agrees to its implementation.

Reviewed by Andrew Forbes - Navy Headquarters

Naval Cooperation and Coalition Building in Southeast Asia and the Southwest Pacific: Status and Prospect

by Chris Rahman

RAN Sea Power Centre Working Paper No. 7 (WP7)

October 2001, Softcover, 70pp.

Analysis of Contemporary and Emerging Navigational Issues in the Law of the Sea

by Martin Tsamenyi and Kwame Mfodwo

RAN Sea Power Centre Working Paper No. 8 (WP8)

November 2001, Softcover, 47pp.

Seaborne Trade Flows in the Asia Pacific: Present and Future Trends

by Commander Christopher Baldwin RAN

RAN Sea Power Centre Working Paper No. 9 (WP9)

November 2001, Softcover, 44pp.

These three monographs are the initial product of a three-year directed research program agreed between the Royal Australian Navy and the Centre for Maritime Policy at the University of Woollongong. The research is conducted by University-based researchers and published in the Sea Power Centre's Working Papers series to foster debate and discussion on key maritime issues. Copies of these papers are available on request from the Director, Sea Power Centre, RAAF Base Fairbairn, Canberra, ACT 2600.

WP7 investigated current trends in naval and maritime cooperation in Southeast Asia and the Southwest Pacific and the prospects for further cooperation and potential coalition building. While identifying the benefits and rationales for naval cooperation, the paper rightly gives attention also to the limitations and costs of cooperation. WP7 concludes with a useful review of policy implications for Australia, including the role for the RAN as an instrument of foreign policy in maximising Australia's regional influence, particularly in the "inner arc" of Indonesia, East Timor, PNG, and the islands of the Southwest Pacific. It notes that the expansion of regional coastguards, especially when they are part of civilian agencies, might detract not only from the RAN's international engagement program but also from Australia's ability to use the RAN as a diplomatic instrument. Naval cooperation has the potential to produce a large return from a relatively small investment but it must be managed carefully. WP7 argues that there is scope for some expansion of existing programs. For example, the Defence Fellowship scheme might be extended to include research as well as coursework programs.

WP8 assessed contemporary as well as emerging navigational issues under the 1982 UN Convention on the Law of the Sea (LOSC). It provides a useful review of state practice in the region and concludes with discussion of a range of trends and developments which could lead to changes in the current framework of rules. The paper makes many important points including that state practice is now a more accurate guide to the state of international law than the strict terms of the LOSC and that the concept of an exclusive economic zone (EEZ) still involves aspects of rights and duties that have not yet crystallised into custom. Many states claim powers in their EEZ beyond those contained in the Convention. WP8 is an important little book which has much to say about long-term pressures on navigational regimes. As it rightly recognises, it is "the less visible and less predictable long-term pressures, which are likely to impact more decisively on the framework of rules over the next 30 years". These pressures are economic, environmental, technological and political in nature.

WP9 is a first attempt at analysing strategic considerations in relation to seaborne trade flows in the Asia-Pacific region. Data on seaborne trade which provides an accurate guide to the relative importance and vulnerabilities of different cargoes, ships and routes is notoriously difficult to obtain and previous studies in this field have all had weaknesses due to the availability and quality of data. WP9 encountered similar problems but still throws good light on the question of why the security of seaborne trade is a major regional concern and vulnerability despite occasional arguments to the contrary. It is to be hoped that research on this topic will continue.

The research for these monographs was conducted prior to 11 September 2001. Events on that day would fall well within the category of "less predictable pressures" recognised in WP8. The conclusions of that monograph, particularly with regard to uncertainty about the law of the sea, might have been put even more strongly if they had been written after September 11 rather than before. In the current international environment, the United States is now less likely to ratify the LOSC and is much more likely to press its interpretation of "customary" international law against the state practices of other nations. Similarly, the goal posts of naval cooperation have changed to some extent with a major "new player" on the field in Southeast Asia as India pushes strongly for cooperative arrangements with the "Straits' States" of Indonesia, Malaysia and Singapore, while concurrently cooperating with the U.S. in escorting selected shipping through the Malacca and Singapore Straits.

The topics covered by these three working papers are all major issues for the region and well deserving of research and consideration from an Australian perspective. The papers all make useful contributions to the body of maritime strategic knowledge in Australia. This process of using university-based researchers, including serving naval officers, to undertake directed research into issues of naval and maritime strategic interest is relatively new in Australia but not uncommon overseas. It could be gainfully expanded with benefits both for the Navy and the university sector.

Reviewed by Dr Sam Bateman

Three Great Novels: Fortunes of War, Cuba, Hong Kong

by Stephen Coonts,

Orion, London, 2002, distributed in Australia by Allen & Unwin, Softcover, 958pp, \$29.95



'Great' novels are surely in the eye of the beholder. I doubt that these qualify, unless in terms of a publisher's advertising claim. Interesting, exciting and gripping at times these certainly are, and for those looking for an extremely readable package of three novels dealing with topical areas in terms of possible strategic hotspots, this 'blockbusting package', as the back cover insists, is excellent value. The plots are intricate and absorbing, the characterisation minimal but acceptable (not everyone, thank goodness, is or wants to be a person of Booker Prize proportions of introspection), and the descriptions of military action, with their interplay of human and technical involvement, rang true, at least to me. I found the passages in *Fortunes of War* that dealt with submarine operations particularly effective, conveying as they did the claustrophobic atmosphere of the submarine, the silent waiting, and the move and counter-move. By contrast I was less convinced by the descriptions of aerial combat, since the extreme speed at which this takes place seemed ill suited to the comparative leisureliness of the printed word. Still, I was increasingly drawn into the explanations of the various pieces of equipment (for want of a better word) that make up modern war-fighting platforms. As reading for escapist pleasure, this omnibus can be highly recommended.

I felt, though, that it met another purpose. In the military profession, experience is traditionally thought to be of two sorts. Past experience can be captured through military history and the precarious exercise of drawing lessons. Real-time experience has somehow to be captured, digested and assimilated into current and future practice, especially through the development of doctrine. There is a

third sort of experience which is usually not given the weight it deserves. This is the experience of the imagination. Coonts' novels fall into this category. At first glance, the plots seem to verge on the overheated, almost on the fantastic. In *Fortunes of War* the Emperor of Japan is assassinated by a right-wing government and Japan invades Siberia to secure its oil supplies; the US backs Russia and sends aircraft to assist, the result being a threat of mutual nuclear destruction. In *Cuba*, claimants to Castro's inheritance threaten to use biological warheads against the United States. In *Hong Kong* the collapse of Japanese banks that have lent billions to uneconomic Chinese state enterprises threatens to bring about the bloody demise of the Beijing Communist government. Fantastic? Hollywood hype? Perhaps it was when the novels were first published in 1998, 1990, and 2000 respectively. After 11 September 2001, can we still believe that these sorts of things cannot happen? Will not happen? I think not.

Many academic historians are dismissive of 'counter-factual' history, what used to be called 'iffy' history. If we hadn't realised it before-and I think most of us hadn't-we must surely acknowledge now that with terrorists deliberately flying civil aircraft into massive skyscrapers and into the Pentagon, the world has changed. The unimaginable has become the reality, and who knows what lies beyond? These three novels provide both entertainment and food for thought. What better recommendation could be had?

Reviewed by Professor Peter Dennis, School of History, UNSW-ADFA

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